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Air Force Institute of Technology
Research Report 2017

Period of Report: 1 Oct 2016 to 30 Sep 2017

Graduate School of Engineering and Management

GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

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For additional information, please call or email:

937-255-3633  
DSN 785-3633  
research@afit.edu

or visit the AFIT website: www.afit.edu
Research programs at the Air Force Institute of Technology (AFIT) are aligned with national defense priorities and provide valuable technical and management experiences that enhance our graduates’ performance throughout their careers. AFIT works closely with research sponsors from many Air Force and DOD organizations to identify high interest problems that match our faculty expertise and educational requirements to maximize value.

AFIT’s Autonomy and Navigation Technology Center, Center for Cyberspace Research, Center for Directed Energy, Center for Operational Analysis, Center for Technical Intelligence Studies and Research, Center for Space Research and Assurance and other research groups serve as focal points for many of our research initiatives. Emerging research groups are addressing game-changing technologies including hypersonics, human-machine systems, data sciences, and developing defense-related additive manufacturing applications. AFIT advises over 40 major acquisition programs through the Scientific Test & Analysis Techniques Test & Evaluation Center of Excellence to achieve maximum effectiveness of test resources. New consultation efforts include exploration of multi-domain approaches to the Air Force’s core missions.

AFIT has strategic partnerships with the Air Force Research Laboratory, the National Air and Space Intelligence Center, the Air Force Life Cycle Management Center, the United States Transportation Command, and many other organizations and operational communities to maximize the contributions of our research programs to national defense needs. Our faculty and students also engage in collaborations with researchers at universities throughout the nation to advance the state-of-the-art in a variety of disciplines. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry through Cooperative Research and Development Agreements (CRADAs).

This Research Report is prepared annually to summarize the significant contributions of AFIT; to solicit continued involvement and support from our Air Force, DOD, and other federal partners; and to encourage new sponsors to participate in AFIT’s research programs. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students. Additional information is available at http://www.afit.edu/ENR/.

Heidi R. Ries, Ph.D.
Dean for Research
Graduate School of Engineering and Management
Air Force Institute of Technology
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(INTENTIONALLY BLANK)
1. INTRODUCTION

1.1. OVERVIEW

This Research Report presents the FY17 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF or DOD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DOD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through Cooperative Research and Development Agreements (CRADAs). Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in this document or via the AFIT Directory at http://www.afit.edu/directory_search.cfm.

Additional information on the research programs at AFIT may also be found on the research web home page at http://www.afit.edu/ENR/. The Office of Research and Sponsored Programs, Graduate School of Engineering and Management can be reached at 937-255-3633, (DSN 785-3633) or by email: research@afit.edu. The primary points of contact are the Director of Sponsored Programs, 937-255-3636 x7104, DSN 785-3636 x7104 and Dr. Heidi R. Ries, Dean for Research, 937-255-3636 x4544, DSN 785-3636 x4544.

1.2. THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

As detailed in the 2015-2017 catalog at http://www.afit.edu/docs/20152017AFITcatalog.pdf, AFIT offers Master’s and Doctoral programs in a variety of disciplines through six departments: the Department of Aeronautics and Astronautics (ENY), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Mathematics and Statistics (ENC), the Department of Operational Sciences (ENS), and the Department of Systems Engineering and Management (ENV). In all of these disciplines, research is an integral component of graduate education, developing an individual student’s skills and providing new knowledge of interest to many.

A brief listing of each department’s research areas of emphasis appears below. Please contact the faculty or relevant departmental office for further information, or visit the Graduate School of Engineering and Management departmental websites at http://www.afit.edu/en/.

The **Department of Aeronautics and Astronautics**, as well as its resident **Center for Space Research & Assurance**, invites research topic proposals and collaborative suggestions for the Aeronautical Engineering, Astronautical Engineering, Materials Science, and Space Systems programs. The following list highlights the Department’s research specialties:

- Aeroelasticity and Design Optimization
- Aerospace Structures and Materials
- Aircraft Survivability
- Autonomous Control of UAVs
- Compact Combustor Development
- Computational Fluid Dynamics
- Control of High Performance Aircraft
- Dynamic Flight Simulation
- Experimental Fluid Dynamics
- High Velocity Impact
- Impact Dynamics
- Inflatable Space Structures
- Materials and Structural Analysis
- Mechanics of Materials and Structures
- Micro Air Vehicles
- Non-Linear Dynamics
- Re-entry Dynamics
- Rocket & Space Propulsion
- Rotorcraft Aeromechanics
- Satellite Cluster Dynamics, Navigation, & Control
- Spacecraft Dynamics & Control
- Spacecraft/Sensor Integration and Testing
- Thermal Control of Spacecraft
- Turbine Heat Transfer
- Weapon Aerodynamic
The **Department of Electrical and Computer Engineering**, as well as its resident the **Autonomy and Navigation Technology Center** and the **Center for Cyberspace Research**, invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering, Computer Science, Cyber Operations, and Cyber Warfare programs. The following list highlights the Department’s research specialties:

<table>
<thead>
<tr>
<th>Advanced Security-Focused Computing</th>
<th>Evolutionary Algorithms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectures</td>
<td>Guidance, Navigation, and Control</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>Hardware Assurance</td>
</tr>
<tr>
<td>Automatic Target Recognition</td>
<td>Information Visualization</td>
</tr>
<tr>
<td>Communications/Radar</td>
<td>Micro- and Nanosystems</td>
</tr>
<tr>
<td>Computer Communication Networks</td>
<td>Navigation Warfare</td>
</tr>
<tr>
<td>Cryptography</td>
<td>Parallel and Distributed Processing</td>
</tr>
<tr>
<td>Cyber Operations and Security</td>
<td>Signal and Image Processing</td>
</tr>
<tr>
<td>Electromagnetics/Low Observables</td>
<td>Software Protection</td>
</tr>
<tr>
<td>Electro-Optics</td>
<td>Wireless Networks</td>
</tr>
<tr>
<td>Electronic Warfare</td>
<td>Wireless Sensor Network</td>
</tr>
</tbody>
</table>

The **Department of Engineering Physics**, as well as its resident **Center for Directed Energy** and **Center for Technical Intelligence Studies and Research**, invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Optical Sciences and Engineering, Materials Science (jointly operated with the Department of Aeronautics and Astronautics), and Combating Weapons of Mass Destruction programs. The following list highlights the Department’s research specialties within these programs:

<table>
<thead>
<tr>
<th>Adaptive Optics, Aero-Optics and Beam Control</th>
<th>Nanomaterials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Characterization and Compensation</td>
<td>Nanomechanics</td>
</tr>
<tr>
<td>Atmospheric Effects on Weapons Systems</td>
<td>Nuclear Forensics</td>
</tr>
<tr>
<td>Atmospheric Electricity</td>
<td>Nuclear Survivability</td>
</tr>
<tr>
<td>Aviation Weather Forecasting</td>
<td>Nuclear Weapons Effects</td>
</tr>
<tr>
<td>Biological and Chemical Weapon Technologies</td>
<td>Numerical Weather Prediction</td>
</tr>
<tr>
<td>Computational Physics</td>
<td>Physics-Based Scene Modeling</td>
</tr>
<tr>
<td>Defects in Crystalline Solids</td>
<td>Positron Spectrometry</td>
</tr>
<tr>
<td>Directed Energy Weapons Effectiveness</td>
<td>Radiation and Particle Detection</td>
</tr>
<tr>
<td>High Energy Density Physics</td>
<td>Radiation Effects on Materials and Electronics</td>
</tr>
<tr>
<td>Imaging Science</td>
<td>Radiation Transport</td>
</tr>
<tr>
<td>Lasers and Electro-Optics</td>
<td>Remote Sensing and Signature Analysis</td>
</tr>
<tr>
<td>Muon Detection</td>
<td>Satellite Meteorology</td>
</tr>
<tr>
<td>Materials – Bio, Nuclear and Sensor</td>
<td>Semiconductors</td>
</tr>
<tr>
<td>Microscopic Imaging of Surfaces</td>
<td>Space Physics</td>
</tr>
<tr>
<td>Modeling and Simulation of Atmospheric Effects</td>
<td>Tropical Cyclone Analysis and Forecasting</td>
</tr>
<tr>
<td>Modeling and Simulation of Atmospheric Effects</td>
<td>Weather Radar</td>
</tr>
</tbody>
</table>

The **Department of Mathematics and Statistics** invites research topic proposals and collaborative suggestions for the following research specialties:

<table>
<thead>
<tr>
<th>Acoustic Wave Scattering</th>
<th>Network Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayesian Analysis</td>
<td>Nonlinear Waves</td>
</tr>
<tr>
<td>Biostatistics</td>
<td>Numerical Analysis</td>
</tr>
<tr>
<td>Categorical Data Analysis</td>
<td>Optimization</td>
</tr>
<tr>
<td>Control Theory</td>
<td>Partial Differential Equations</td>
</tr>
<tr>
<td>Data Analytics</td>
<td>Rarefied Gas Dynamics</td>
</tr>
<tr>
<td>Design of Experiments</td>
<td>Regression Modeling</td>
</tr>
<tr>
<td>Electromagnetics</td>
<td>Stochastic Processes</td>
</tr>
<tr>
<td>Fluid Dynamics</td>
<td>Structural Health Monitoring</td>
</tr>
<tr>
<td>Functional Analysis</td>
<td>Wavelets</td>
</tr>
<tr>
<td>Human Performance</td>
<td></td>
</tr>
<tr>
<td>Information Fusion</td>
<td></td>
</tr>
</tbody>
</table>

2
The **Department of Operational Sciences**, as well as its resident **Center for Operational Analysis**, invites research topic proposals and collaborative suggestions within the areas of Operations Research, Logistics, and Supply Chain Management programs. The following list highlights the Department’s research specialties:

<table>
<thead>
<tr>
<th>Agile Combat Support Prioritization</th>
<th>Network Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Target Recognition</td>
<td>Neural Networks</td>
</tr>
<tr>
<td>Autonomous System Operations and Testing</td>
<td>Operations Management</td>
</tr>
<tr>
<td>Big Data and Analytics</td>
<td>Operations Research</td>
</tr>
<tr>
<td>Combat Modeling</td>
<td>Optimization</td>
</tr>
<tr>
<td>Decision Analysis</td>
<td>Organization Behavior</td>
</tr>
<tr>
<td>Design and Analysis of Experiments</td>
<td>Petroleum Management</td>
</tr>
<tr>
<td>Enterprise Level Depot Sustainment</td>
<td>Repair Network Integration</td>
</tr>
<tr>
<td>Evaluation of Autonomous Systems</td>
<td>Robust Decision Making</td>
</tr>
<tr>
<td>Facility Location Optimization</td>
<td>Robust Design</td>
</tr>
<tr>
<td>Force Structure Analysis Tool Development</td>
<td>Robust Mobility Modeling</td>
</tr>
<tr>
<td>Information Modeling</td>
<td>Scheduling</td>
</tr>
<tr>
<td>Inventory Analysis</td>
<td>Service Operations Management</td>
</tr>
<tr>
<td>Irregular Warfare</td>
<td>Social Network Modeling and Analysis</td>
</tr>
<tr>
<td>Irregular Warfare Model Development</td>
<td>Statistical Process Monitoring</td>
</tr>
<tr>
<td>Lean Operations</td>
<td>Stochastic Modeling</td>
</tr>
<tr>
<td>Logistics</td>
<td>Strategic Sourcing</td>
</tr>
<tr>
<td>Machine Learning</td>
<td>Supply Chain Management and Resource Optimization</td>
</tr>
<tr>
<td>Maintenance and Production Management</td>
<td>Test and Evaluation</td>
</tr>
<tr>
<td>Managerial Economics</td>
<td>Test Science</td>
</tr>
<tr>
<td>Manpower Modeling and Forecasting</td>
<td>Time Series Analysis</td>
</tr>
<tr>
<td>Materials Research Test Planning</td>
<td>Transportation Policy and Strategic Modeling</td>
</tr>
<tr>
<td>Mathematical Programming</td>
<td></td>
</tr>
<tr>
<td>Modeling and Simulation</td>
<td></td>
</tr>
</tbody>
</table>

The **Department of Systems Engineering and Management** is a multidisciplinary department offering graduate degrees in seven different majors and conducting research in collaboration with the wide spectrum of programs throughout AFIT. The mission of the Department is to provide defense-focused graduate education and engage in interdisciplinary research to achieve integrated solutions to current and future Air Force challenges and enhance the interface between technology and human resources by focusing on systems, processes, and management. The following list highlights the Department’s research specialties:

<table>
<thead>
<tr>
<th>Acquisition Learning Curves</th>
<th>Infrastructure Asset Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Environmental Sciences</td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>Built Environment Microbiome</td>
<td>Model-Based Systems Engineering</td>
</tr>
<tr>
<td>Cognitive Mentorship and Performance</td>
<td>Modeling and Simulation</td>
</tr>
<tr>
<td>Computer and Network Security</td>
<td>Occupational/Environmental Exposures</td>
</tr>
<tr>
<td>Construction Management</td>
<td>Neck Injury Biomechanics</td>
</tr>
<tr>
<td>Cost Analysis</td>
<td>Operations Research</td>
</tr>
<tr>
<td>Cyber Attack on UAS</td>
<td>Organizational Change</td>
</tr>
<tr>
<td>Data Analytics</td>
<td>Permafrost</td>
</tr>
<tr>
<td>Design and Analysis of Experiments</td>
<td>Photovoltaics</td>
</tr>
<tr>
<td>Ecological Engineering</td>
<td>Physiologically-Based Pharmacokinetic Modeling Analysis</td>
</tr>
<tr>
<td>Emergency Management</td>
<td>Product Design and Development</td>
</tr>
<tr>
<td>Facility and Infrastructure Management</td>
<td>Project Management</td>
</tr>
<tr>
<td>Fuels Microbiology</td>
<td>Project Delivery</td>
</tr>
<tr>
<td>Geographical Information Science</td>
<td>Reliability Engineering</td>
</tr>
<tr>
<td>Human Systems Integration</td>
<td>Strategic Decision Support</td>
</tr>
<tr>
<td>Human-Agent Interaction</td>
<td>Structural Health Monitoring</td>
</tr>
<tr>
<td>Indoor Air Quality</td>
<td>Structural Performance</td>
</tr>
<tr>
<td>Image and Display Science</td>
<td></td>
</tr>
<tr>
<td>Information Assurance and Security</td>
<td></td>
</tr>
</tbody>
</table>
Another avenue for educational and research collaboration with the Graduate School of Engineering and Management is through association with one or more of AFIT’s Research Centers. A brief listing of each Center’s research or educational areas of emphasis appears below. Please contact the Centers directly (see Chapter 6) or visit http://www.afit.edu/ENR/page.cfm for further information.

The **Autonomy and Navigation Technology (ANT) Center** is a forward-looking research center seeking to identify and solve tomorrow’s most challenging navigation and autonomous and cooperative control problems by focusing on three research thrusts: autonomous and cooperative systems, non-GPS precision navigation, and robust GPS navigation/NAVWAR.

The **Center for Cyberspace Research (CCR)** conducts cyber security and cyber operations research at the Master’s and PhD levels. CCR affiliated faculty teach and direct graduate research focusing on understanding and developing advanced cyber-related theories and technologies, such as critical infrastructure protection, cyber-physical systems, network intrusion detection and avoidance, insider threat mitigation, cyberspace situational awareness, malicious software detection and analysis, software protection, and anti-tamper technologies. The CCR is forward-looking and responsive to the changing educational and research needs of the Air Force, Department of Defense, and the federal government. CCR faculty’s research and teaching establishes AFIT as a national Center of Academic Excellence in Research (CAE-R) and Center of Academic Excellence in Cyber Operations (CAE-CO), designated by the Department of Homeland Security (DHS) and the National Security Agency (NSA).

The **Center for Directed Energy (CDE)** is dedicated to Air Force and DOD research in high energy lasers (HELs), high power microwaves (HPMs), and their enabling technologies. The Center is an advocate for transitioning these systems to the battlefield through vigorous scientific and engineering research, graduate education programs and diverse consulting activities.

The **Center for Operational Analysis (COA)** conducts defense-focused research which directly supports DOD strategic objectives. The COA applies rigorous quantitative and qualitative tools, methodologies and approaches to identify, analyze and solve complex operations and supply chain problems while developing critical and forward-thinking analysts, managers, and leaders.

The **Center for Space Research and Assurance (CSRA)** is focused on delivering highly-valued resilient, responsive and reliable space capabilities to the DOD and Intelligence Community through executing cutting-edge space technology development, science and space experiments in collaboration with government organizations, to meet the challenges of tomorrow by developing the technical space cadre through world-class research and immersive hands-on graduate education.

The **Center for Technical Intelligence Studies and Research (CTISR)** is focused on Air Force, DOD and Intelligence Community’s scientific, technical and operational activities through graduate research programs. Activities are directed on improving technical intelligence gathering via remote sensing. Current research is focused on signature measurement, phenomenological understanding, and algorithm development for target detection and tracking, battle space combustion characterization, event classification, and material identification.

The **Center of Excellence (COE) for Scientific Test and Analysis Techniques (STAT) in Test & Evaluation (T&E)** is a reach-back T&E capability that provides advice and assistance in the application of scientific test and analysis techniques in the development of Test & Evaluation Master Plans (TEMP). The COE provides value to the PEOs/PMs across the DOD through assistance provided to the Chief Developmental Tester (T&E Program Leads) during the T&E planning, execution and assessment. The COE provides an additional resource of subject matter expertise for the program managers and chief developmental testers of Major Defense Acquisition Programs (MDAP) and Major Automated Information Systems (MAIS) during the T&E planning, execution, and assessment process.
2. SPECIAL RECOGNITIONS

2.1 FACULTY FELLOWS

BADIRU, ADEDEJI B., Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the Nigerian Academy of Engineering.

COLLINS, PETER J., Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of AMPTA.

DECKRO, RICHARD F., Professor of Operations Research, Department of Operational Sciences, Fellow of the Military Operations Research Society.

*ELROD, WILLIAM E., Distinguished Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

*FRANKE, MILTON E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

*GOLTZ, MARK N., Professor Emeritus of Engineering and Environmental Management, Department of Systems Engineering and Management, Fellow of the Society of American Military Engineers.

GRIMAILA, MICHAEL R., Professor and Head, Department of Systems Engineering and Management, Fellow of the Information System Security Association.

*HENGHELD, ROBERT L., Professor Emeritus of Physics, Department of Engineering Physics, Fellow of the American Physical Society.

*HOUPIS, CONSTANTINE H., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

MALL, SHANKAR, Distinguished Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

*MAYBECK, PETER S., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

PACHTER, MEIR, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.


PERRAM, GLEN P., Professor of Physics, Department of Engineering Physics, Fellow of the Directed Energy Professional Society.

PIGNATIELLO, JOSEPH J., Professor of Operations Research; Head, Department of Operational Sciences; Fellow of the Institute of Industrial and Systems Engineers; Fellow of the American Society for Quality.

POLANKA, MARC D., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

RAQUET, JOHN F., Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Navigation.
RUGGLES-WRENN, MARINA B., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

TERZUOLI, ANDREW J., Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Electromagnetics Academy.


WEIR, JEFFERY W., Professor and Associate Department Head, Department of Operational Sciences, Fellow of the Southwestern Ohio Council for Higher Education.

*Emeritus faculty
2.2 PROFESSIONAL CERTIFICATIONS

AHNER, DARRYL K., Professional Engineer (Commonwealth of Virginia)

BADIRU, ADEDEJI B., Certified Project Management Professional (PMP), Leadership Certificate (University of Tennessee Leadership Institute), Professional Engineer (State of Oklahoma)

CHRISSIS, JAMES W., Professional Engineer (Florida #37247)

CUNNINGHAM, WILLIAM A., Certified in Transportation and Logistics (CTL)

ENINGER, ROBERT M., Lt Col, Certified Industrial Hygienist

FASS, ROBERT D., Certified Cost Estimator/Analyst (International Cost Estimating and Analysis Association)

FEE, JAMES R., Lt Col, Nuclear Weapons Effects, Policy, and Proliferations Graduate Certificate

FREELS, JASON K., Maj, Systems Planning, Research, Development and Engineering (SPRDE) Certification, Level III

GOLTZ, MARK N., Board Certified Environmental Engineer (American Academy of Environmental Engineers), Professional Engineer (State of Minnesota)

GREENDYKE, ROBERT B., Professional Engineer (State of Texas)


HARPER WILLIE F., Jr., Professional Engineer (State of Arizona)

HAZEN, BENJAMIN T., Maj, Certified Lean Six Sigma Black Belt, Certified Six Sigma Green Belt, Certificate in Transportation and Logistics Regulation, Certification in Transportation and Logistics (CTL)

HOISINGTON, ANDREW, J., Professional Engineer (State of Michigan)

HOUPIS, CONSTANTINE H., Professional Engineer (State of Ohio)

KUNZ, DONALD L., Professional Engineer (Commonwealth of Virginia)


LOPER, ROBERT D., APDP Level II Certification – SPRDE, APDP Level II Certification – S&T Management, APDP Level I Certification – Program Management

LUCAS, BRANDON M., Certified Cost Estimator/Analyst (ICEAA), DOD Financial Management Level 3

MAILLOUX, LOGAN O., Maj, Certified Information System Security Professional (CISSP), Certified Systems Engineering Professional (CSEP)
MARCINIAK, MICHAEL A., APDP Level II Certification – SPRDE, APDP Level II Certification – Program Management, APDP Level I Certification – Test and Evaluation, Certified Laser Safety Officer (Board of Laser Safety, Orlando, FL)

MBONIMPA, ERIC G., Professional Engineer (State of Michigan)

MERKLE, LAURENCE D., Acquisition Professionals Development Program Level 2

MULLINS, BARRY E., Professional Engineer (State of Colorado)

OVERSTREET, ROBERT E., Lt Col, Certified in Transportation & Logistics (CTL)

PALAZOTTO, ANTHONY N., Professional Engineer (State of Ohio)

PARR, JEFFREY C., Lt Col, Systems Planning, Research, Development and Engineering (SPRDE) Certification, Level III

PERRAM, GLEN P., Professional Engineer (State of Ohio)

REEDER, MARK F., Professional Engineer (State of Ohio)

RITSCHEL, JONATHAN, Lt Col, APDP Business-Cost Estimation Certification, Level II

RUTLEDGE, JAMES L., Maj, Professional Engineer (State of Texas)

SLAGLEY, JEREMY M., Board Certified Industrial Hygienist, Board Certified Safety Professional

STONE, BRIAN B., Maj, Six Sigma Black Belt Certification (Arizona State University), Certificate in Statistics (Arizona State University)

THOMAS, LEVI, M., Maj, Professional Engineer (State of Colorado)

TUTTLE, RONALD F., APDP Level III Certification – Program Management, APDP Level III Certification – SPRDE
2.3 RESEARCH AND TEACHING AWARDS

2.3.1 FACULTY

BINDEWALD, JASON M., Maj,
2017 Air Force Research and Development Award

BOEHMKE, BRADLEY C.,
ASEE Engineering Economy Division Eugene L. Grant Award for Best Publication

CANCIANI, AARON J., Capt,
2017 John L. McLucas Basic Research Award

CARBINO, TIMOTHY J., Maj,
2017 Air Force Science & Engineering Award- Advance Technology Development

FEE, JAMES R., Lt Col,
Winner of the 2016 AFIT Volunteer of the Year Award

FICKUS, MATTHEW C.,
ENC Instructor of the Quarter, 2016 Fall Quarter
ENC Instructor of the Quarter, 2017 Summer Quarter
ENC Instructor of the Year, 2016-2017

FRANZ, ANTHONY L., Lt Col,
2017 Southwestern Ohio Council for Higher Education (SOCHE) Faculty Excellence Award.

HARPER, WILLIE F. Jr,
2016 John L. McLucas Basic Research Award
2017-2018 Embassy Science Fellow

HAZEN, BENJAMIN T., Maj,
SOCHE 2016 Faculty Excellence Award

LAKE, ROBERT A., Capt,
Air Force Outstanding Scientist & Engineer Award

LUNDAY, BRIAN J.,
Outstanding Young Member OR/MS Award, INFORMS Cincinnati-Dayton Chapter
MAILLOUX, LOGAN, O. Maj,
2016 AFIT Outstanding Military Instructor of the Year

PRIGGE, DIEDRICH, V.,
2016-2017 Sigma Iota Epsilon - Instructor of the year award

REEGER, JONAH A., Maj,
ENC Instructor of the Quarter, 2017 Winter Quarter

RUGGLES-WRENN, MARINA B.,
2017 ASME Dedicated Service Award
2017 ASME Board of Governors Award
2017 ASME Pressure Vessel and Piping Division Certificate of Appreciation.

WHITE, EDWARD D. III,
SOCHE Faculty Excellence Award, November 2016
Dr. Leslie M. Norton Teaching Excellence Award, March 2017
ENC Instructor of the Quarter, 2017 Spring Quarter

2.3.2 STUDENTS

BARNES, DANIEL R.,
2017 Space Best Presentation Award – 42nd AIAA Dayton Cincinnati Aerospace Sciences Symposium

CARLSON, NATHAN J.,
2017 Secretary James G. Roche Award honoring the enlisted student who best demonstrates academic, leadership, research, and service achievements.

CHALAOPAK, KASIDIT V.,
2017 AFIT Chapter of the American Nuclear Society Best Thesis Award

COLLIS, SCHUYLER L.,
Navigation Research Excellence Award

DUNKEL, MELISSA A.,
2017 Optimization Best Presentation Award – 42nd AIAA Dayton Cincinnati Aerospace Sciences Symposium
FAIN, BENJAMIN M.,
2017 Dean’s Award for the most exceptional master’s thesis by a graduating student in the Electrical and Computer Engineering. Thesis title: “Small Fixed-wing Aerial Positioning using Inter-vehicle Ranging Combined with Visual Odometry.”

FERGUSON, MATTHEW D.,
Military Operations Research Society (MORS) Dr. James T. Moore Graduate Research Prize

HALLADA, FRANCIS D.,
2017 Dean’s Award for the most exceptional master’s thesis by a graduating student in the Department of Engineering Physics. Thesis title: “The Fresnel Zone Light Field Spectral Imager.”
2017 Chancellor's Award for the most exceptional master’s thesis by a graduating student. Thesis title: “The Fresnel Zone Light Field Spectral Imager.”
2017 International Society for Optics and Photonics (SPIE) Excellence in Optics and Photonics Research Award
2017 Advanced Technical Intelligence Association (ATIA) Outstanding Student Award

HAWS, DEREK W.,
2017 Air Force Historical Foundation General Bryce Poe II Award

HOEFFNER, ZACHARY W.,
2017 Mervin E. Gross Award, that recognizes a graduating master’s student who has demonstrated the most exceptional academic achievement and high qualities of character, initiative and leadership.

KNAPP, KEVIN R.,
2017 Lockheed-Martin Best Student Paper Award – 2017 AIAA SciTech Conference
2017 Dean’s Award for the most exceptional master’s thesis by a graduating student in the Department of Aeronautics and Astronautics. Thesis title: “Time-Dependent Validation of Finite Element Strain Distribution of a Plastically-Deformed Plate via Digital Image Correlation.”

LEFGREN, SCOTT J.,
AOC Academic Research Excellence Award

LENKER, RONALD J.,
2017 Edwin E. Aldrin, Sr. Award which is given for displaying the most exceptional leadership characteristics while in the graduate program.

LIM, GAYLEEN S.A.,
March 2017 Jerome G. Peppers Jr., Outstanding Student Award which is given to a member of each graduating class whose academic record and research significantly contributes to the field of logistics.
LIU, KAN,

PITMAN, BRIAN W.,
2017 MASINT Committee Award of Academic Excellence

PORTANTE, ANTHONY A.,
2017 Best Masters Paper and Presentation at the 12th International Conference on Cyber Warefare and Security

RIGOLET, TAYLOR S.,
June 2017 Jerome G. Peppers Jr., Outstanding Student Award which is given to a member of each graduating class whose academic record and research significantly contributes to the field of logistics.

ROSE, ANTHONY J.,
2017 Louis F. Polk Award which is given for exhibiting the highest standards of academic and professional accomplishment and through their research made a significant contribution toward strengthening the nation's industrial defense base.

SCHWEMMER, JOSEPH R.,
2017 Dean’s Award for the most exceptional master’s thesis by a graduating student in the Department of Operational Sciences. Thesis title: “Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle.”

STELZER, DYLAN,

STERN, JORDAN L.,

WATCHEL, STEVEN T.,
2017 Dean’s Award for the most exceptional master’s thesis by a graduating student in the Department of Systems Engineering and Management. Thesis title: “Genetic Algorithm Optimization of Geosynchronous Earth Orbit Space Situational Awareness Systems via Parallel Evaluation of Executable Architectures.”
3. RESEARCH STATISTICS

3.1 RESEARCH AND CONSULTING OUTPUT MEASURES

There are measurable indicators of AFIT’s contribution to the engineering and scientific community and AFIT’s success in staying well informed of technical possibilities and scientific opportunities. These indicators include the number and quality of technical publications accepted by the editors of journals; the number of presentations accepted for regional, national and international conferences; the number of sponsor funded research projects conducted; and finally, the number of student Graduate Research Papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY17, these output measures are shown in Tables 3.1a and 3.1b for the Departments and Centers, respectively.

### Table 3.1a Faculty Research and Sponsored Programs Output, by Department

<table>
<thead>
<tr>
<th>Graduate School, by Department</th>
<th>Math &amp; Stats (ENC)</th>
<th>Electrical &amp; Comp Eng (ENG)</th>
<th>Engineering Physics (ENP)</th>
<th>Operational Sciences (ENS)</th>
<th>Sys Eng &amp; Management (ENV)</th>
<th>Aeronautics &amp; Astro (ENY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Faculty (FTE)*</td>
<td>133</td>
<td>17</td>
<td>33</td>
<td>26</td>
<td>20</td>
<td>18</td>
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<tr>
<td>Number of Research Faculty (FTE)</td>
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<td>-</td>
<td>2</td>
<td>8</td>
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<td>-</td>
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<tr>
<td>Refereed Publication Authorships**</td>
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<td>30</td>
<td>43</td>
<td>60</td>
<td>58</td>
<td>52</td>
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<tr>
<td>Refereed Conferences on the Basis of Full Paper Review**</td>
<td>152</td>
<td>3</td>
<td>77</td>
<td>21</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Refereed Conferences on the Basis of Abstract Review**</td>
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<td>10</td>
<td>33</td>
<td>51</td>
<td>42</td>
<td>27</td>
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<tr>
<td>Sponsor Funded Projects***</td>
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<td>5</td>
<td>59</td>
<td>55</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Books &amp; Chapters in Books**</td>
<td>19</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Patents****</td>
<td>24</td>
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<td>8</td>
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<td>5</td>
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<tr>
<td>Doctoral Dissertations Advised</td>
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<td>Master's Theses Advised</td>
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<td>66</td>
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<tr>
<td>Graduate Research Papers Advised</td>
<td>28</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>28</td>
<td>-</td>
</tr>
</tbody>
</table>

*FTE: Full-time equivalent military and permanent civilian faculty

**Publications/Presentations are counted by faculty authorships.

***One project associated with the Office of Research and Sponsored Programs (ENR) is reflected in Graduate School (EN) Total.

****Includes: Patents awarded, patent applications, and invention disclosures counted by faculty authorships.
### Table 3.1b Faculty Research and Sponsored Programs Output, by Center

<table>
<thead>
<tr>
<th>Center Total</th>
<th>ANT</th>
<th>CCR</th>
<th>CDE</th>
<th>COA</th>
<th>CSRA</th>
<th>CTISR</th>
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</thead>
<tbody>
<tr>
<td>Number of Affiliated Faculty*</td>
<td>143</td>
<td>25</td>
<td>26</td>
<td>16</td>
<td>16</td>
<td>40</td>
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<tr>
<td>Refereed Publication Authorships**</td>
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<td>22</td>
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<td>29</td>
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<td>6</td>
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<tr>
<td>Refereed Conferences on the Basis of Full Paper Review**</td>
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<td>33</td>
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<tr>
<td>Refereed Conferences on the Basis of Abstract Review**</td>
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<td>21</td>
<td>2</td>
<td>26</td>
<td>3</td>
<td>14</td>
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<td>30</td>
<td>12</td>
<td>20</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Books &amp; Chapters in Books**</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Patents***</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Doctoral Dissertations Advised</td>
<td>18</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Master's Theses Advised</td>
<td>111</td>
<td>26</td>
<td>33</td>
<td>3</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>Graduate Research Papers Advised</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>

*Some faculty are affiliated with multiple centers.

**Publications/Presentations are counted by faculty authorships.

****Includes: Patents awarded, patent applications, and invention disclosures counted by faculty authorships.
3.2 RESEARCH AND CONSULTING SPONSORSHIP

As part of an Air Force institution, the faculty members of the Air Force Institute of Technology focus their research on current problems as well as future systems of the Air Force and other DOD organizations. Evidence of this focus is that 95% of all theses, dissertations, and graduate research papers listed in Table 3.1a are externally sponsored by Air Force, DOD and government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DOD units. The data are summarized in Figure 3.1 and Table 3.2.

Figure 3.1 Sponsors of AFIT Theses, Dissertations, and Graduate Research Papers
<table>
<thead>
<tr>
<th>SPONSOR ORGANIZATION</th>
<th>PhD Dissertations</th>
<th>Master’s Theses</th>
<th>Graduate Research Papers</th>
<th>Funded Projects</th>
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<td>OFFICE OF THE SECRETARY OF THE AIR FORCE</td>
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<td>HQ UNITED STATES AIR FORCE</td>
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<td>AIR COMBAT COMMAND</td>
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<td>AIR FORCE MATERIEL COMMAND</td>
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<td>412th Test Wing</td>
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<td>46th Test Group</td>
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<td>704th Test Group</td>
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<tr>
<td>746th Test Squadron</td>
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<tr>
<td>812th Test Squadron</td>
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<tr>
<td>Air Force Life Cycle Management Center</td>
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<tr>
<td>Air Force Nuclear Weapons Center</td>
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<tr>
<td>Air Force Research Laboratory (AFRL)</td>
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<td>711 Human Performance Wing (RH)</td>
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<td>Aerospace Systems Directorate (RQ)</td>
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<td>Information Directorate (RI)</td>
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<td>Space Vehicles Directorate (RV)</td>
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<td>Air Force Test Pilot School</td>
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<td>DOD Cyber Crime Center</td>
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<tr>
<td>Booz Allen Hamilton Inc.</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>Cummons Inc</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>Innovative Scientific Solutions Inc.</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lincoln Laboratory - MIT</td>
<td>1</td>
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<tr>
<td>Lockheed Martin</td>
<td>3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ohio Federal Research Network</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raytheon Space and Airborne Systems</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandia National Laboratories</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spectral Sciences, Inc</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Optical Sciences Company</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Charles Stark Draper Laboratory, Inc</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkish Air Force</td>
<td>1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>UK Ministry of Defense</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>30</td>
<td>231</td>
<td>23</td>
<td>227</td>
</tr>
</tbody>
</table>
3.3 EXTERNAL SPONSOR FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management’s theses and research projects completed under faculty supervision are funded in part by other Air Force, DOD and government units and agencies. Often, this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Figure 3.2 summarizes the past ten fiscal years of sponsored funding. Tables 3.3 and 3.4, and Figure 3.3, summarize external funding for FY17.

![Figure 3.2 New Award History FY08-FY17](image)

**Table 3.3 FY17 External Funding & Research Expenditures for Academic Departments & Research Centers ($1,000's)**

<table>
<thead>
<tr>
<th>Department</th>
<th>Newly Awarded Research Projects</th>
<th>Newly Awarded Education Projects</th>
<th>Total FY17 Newly Awarded Projects</th>
<th>Total FY17 Research Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td># $k</td>
<td># $k</td>
<td># $k</td>
<td>$k</td>
</tr>
<tr>
<td>Mathematics &amp; Statistics (ENC)</td>
<td>5 288</td>
<td>-</td>
<td>5 288</td>
<td>539</td>
</tr>
<tr>
<td>Electrical &amp; Computer Eng (ENG)</td>
<td>57 5,950</td>
<td>2 228</td>
<td>59 6,178</td>
<td>7,871</td>
</tr>
<tr>
<td>Engineering Physics (ENP)</td>
<td>54 5,719</td>
<td>1 9</td>
<td>55 5,728</td>
<td>7,066</td>
</tr>
<tr>
<td>Research &amp; Sponsored Programs (ENR)</td>
<td>1 280</td>
<td>-</td>
<td>1 280</td>
<td>-</td>
</tr>
<tr>
<td>Operational Sciences (ENS)</td>
<td>35 9,976</td>
<td>4 286</td>
<td>39 10,262</td>
<td>11,534</td>
</tr>
<tr>
<td>Systems Eng &amp; Management (ENV)</td>
<td>17 1,249</td>
<td>1 400</td>
<td>18 1,649</td>
<td>1,863</td>
</tr>
<tr>
<td>Aeronautical &amp; Astronautical Eng (ENY)</td>
<td>48 3,275</td>
<td>2 59</td>
<td>50 3,334</td>
<td>6,320</td>
</tr>
<tr>
<td>TOTAL</td>
<td>217 26,737</td>
<td>10 982</td>
<td>227 27,719</td>
<td>35,193</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Center</th>
<th>Newly Awarded Research Projects</th>
<th>Newly Awarded Education Projects</th>
<th>Total FY17 Newly Awarded Projects</th>
<th>Total FY17 Research Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td># $k</td>
<td># $k</td>
<td># $k</td>
<td>$k</td>
</tr>
<tr>
<td>Autonomy and Navigation Technology (ANT)</td>
<td>30 3,792</td>
<td>-</td>
<td>30 3,792</td>
<td>5,101</td>
</tr>
<tr>
<td>Center for Cyberspace Research (CCR)</td>
<td>10 668</td>
<td>2 228</td>
<td>12 896</td>
<td>1,161</td>
</tr>
<tr>
<td>Center for Directed Energy (CDE)</td>
<td>19 3,025</td>
<td>1 9</td>
<td>20 3,034</td>
<td>3,186</td>
</tr>
<tr>
<td>Center for Operational Analysis (COA)</td>
<td>24 7,516</td>
<td>2 180</td>
<td>26 7,696</td>
<td>9,640</td>
</tr>
<tr>
<td>Center for Space Research and Assurance (CSRA)</td>
<td>26 2,484</td>
<td>-</td>
<td>26 2,484</td>
<td>3,549</td>
</tr>
<tr>
<td>Center for Tech Intel Studies &amp; Research (CTISR)</td>
<td>15 1,552</td>
<td>-</td>
<td>15 1,552</td>
<td>1,836</td>
</tr>
<tr>
<td>TOTAL</td>
<td>124 19,037</td>
<td>5 417</td>
<td>129 19,454</td>
<td>24,473</td>
</tr>
</tbody>
</table>

Notes: Total research expenditures reported include institutional cost sharing, which is not included in newly awarded projects. Numbers reported to the ASEE and NSF research expenditure surveys vary somewhat due to differences in definitions. All Center funds are also included in departmental funding.
Figure 3.3 New FY17 Awards by Sponsor

*Pie Chart on the right shows breakdown by AFRL Technology Directorates

Table 3.4 New FY17 Awards to Academic Departments & Research Centers by Sponsor

<table>
<thead>
<tr>
<th>Dept.</th>
<th>AFRL</th>
<th>AFMC (Non-AFRL)</th>
<th>Other USAF</th>
<th>Other DOD</th>
<th>Other Federal</th>
<th>Non-Federal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>284</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>288</td>
</tr>
<tr>
<td>ENG</td>
<td>3,102</td>
<td>-</td>
<td>589</td>
<td>1,950</td>
<td>195</td>
<td>341</td>
<td>6,178</td>
</tr>
<tr>
<td>ENP</td>
<td>1,552</td>
<td>-</td>
<td>521</td>
<td>3,172</td>
<td>359</td>
<td>124</td>
<td>5,728</td>
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<tr>
<td>ENR</td>
<td>280</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>280</td>
</tr>
<tr>
<td>ENS</td>
<td>617</td>
<td>2,722</td>
<td>2,978</td>
<td>3,320</td>
<td>625</td>
<td>-</td>
<td>10,262</td>
</tr>
<tr>
<td>ENV</td>
<td>286</td>
<td>400</td>
<td>512</td>
<td>229</td>
<td>223</td>
<td>-</td>
<td>1,649</td>
</tr>
<tr>
<td>ENY</td>
<td>1,031</td>
<td>-</td>
<td>-</td>
<td>2,223</td>
<td>-</td>
<td>80</td>
<td>3,334</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>7,152</strong></td>
<td><strong>3,122</strong></td>
<td><strong>4,600</strong></td>
<td><strong>10,894</strong></td>
<td><strong>1,406</strong></td>
<td><strong>545</strong></td>
<td><strong>27,719</strong></td>
</tr>
</tbody>
</table>

Note: “Other DOD” in this table includes the DEJTO, OSD, NGA, NSA, US Army, and US Navy pie slices from Figure 3.3, plus funding from other DOD organizations.

Center

<table>
<thead>
<tr>
<th>Dept.</th>
<th>AFRL</th>
<th>AFMC (Non-AFRL)</th>
<th>Other USAF</th>
<th>Other DOD</th>
<th>Other Federal</th>
<th>Non-Federal</th>
<th>Total</th>
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<tbody>
<tr>
<td>ANT</td>
<td>1,892</td>
<td>-</td>
<td>350</td>
<td>1,400</td>
<td>30</td>
<td>120</td>
<td>3,792</td>
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<tr>
<td>CCR</td>
<td>349</td>
<td>-</td>
<td>59</td>
<td>293</td>
<td>195</td>
<td>-</td>
<td>896</td>
</tr>
<tr>
<td>CDE</td>
<td>770</td>
<td>-</td>
<td>9</td>
<td>1,816</td>
<td>119</td>
<td>320</td>
<td>3,034</td>
</tr>
<tr>
<td>COA</td>
<td>445</td>
<td>2,699</td>
<td>2,602</td>
<td>1,840</td>
<td>110</td>
<td>-</td>
<td>7,696</td>
</tr>
<tr>
<td>CSRA</td>
<td>445</td>
<td>-</td>
<td>35</td>
<td>2,004</td>
<td>-</td>
<td>-</td>
<td>2,484</td>
</tr>
<tr>
<td>CTISR</td>
<td>259</td>
<td>-</td>
<td>318</td>
<td>951</td>
<td>-</td>
<td>24</td>
<td>1,552</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>4,160</strong></td>
<td><strong>2,699</strong></td>
<td><strong>3,373</strong></td>
<td><strong>8,304</strong></td>
<td><strong>454</strong></td>
<td><strong>464</strong></td>
<td><strong>19,454</strong></td>
</tr>
</tbody>
</table>

Note: All Center funds are also included in departmental funding
4. SPONSORSHIP OF STUDENT RESEARCH

4.1. OFFICE OF THE SECRETARY OF THE AIR FORCE

MASTER'S THESES


GRADUATE RESEARCH PAPERS

NOLAN, STEVEN T., *An Intrinsic Case Study Analysis of Air Force Company Grade Officers as High-Potential Officers.* AFIT/ENS/MS/17J-039. Faculty Advisor: Lt Col Robert E. Overstreet Sponsor: SAF.

4.2. HEADQUARTERS UNITED STATES AIR FORCE

DOCTORAL DISSERTATIONS


MASTER'S THESES


GRADUATE RESEARCH PAPERS


4.3. AIR COMBAT COMMAND

MASTER'S THESES


WILLIAMS, RUSSELL H., Predicting Failure Rates for the B-1B Bomber. AFIT/ENS/MS/17M-163. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: AFGSC. [COA]

GRADUATE RESEARCH PAPERS

JONES, ELIZABETH M., The Culture of Deterrence. AFIT/ENS/MS/17J-032. Faculty Advisor: Col Adam D. Reiman. Sponsor: AFGSC.

4.4. AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY

DOCTORAL DISSERTATIONS

BURGI, KENNETH W., Reflection Matrix Method for Controlling Light after Reflection from a Diffuse Scattering Surface. AFIT/ENP/DS/16D-011. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.


DAILEY, WHITMAN T., Special Features of the Air-to-Space Neutron Transport Problem. AFIT/ENP/DS/17S-022. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

LAURVICK, TOD V., Improvements to Micro-Contact Performance and Reliability. AFIT/ENG/DS/16D-003. Faculty Advisor: Capt Robert A. Lake. Sponsor: N/A.

MILLAR, JEREMY R., A Stochastic Model of Plausibility in Live-Virtual-Constructive Environments. AFIT/ENG/DS/17S-015. Faculty Advisor: Dr. Douglas D. Hodson. Sponsor: N/A. [CCR]

OWENS, CHRISTOPHER T., Effects of Mechanical Load History on Lamb Wave Interactions with Fatigue Cracks in Aluminum Plates. AFIT/ENY/DS/17S-061. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.

RODEWALD, JOSHUA V., An Information Theoretic Investigation Of Complex Adaptive Supply Networks With Organizational Topologies. AFIT/ENV/DS/16D-029. Faculty Advisor: Dr. John M. Colombi. Sponsor: N/A.


MASTER'S THESES

ALATAWI, NAIF H., RSAF F-15 Reparable Items Capacity Planning & Execution. AFIT/ENS/MS/17S-033. Faculty Advisor: Dr. William A. Cunningham. Sponsor: N/A.


ALZAHRAHNY, RYADH A., Corrosion Fatigue Behavior of AISI 4340 Steel Coated With Cadmium and Zinc-Nickel with and Without Scribed Damage in Saltwater Environment. AFIT/ENY/MS/17S-001. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.


ATKINSON, JOHN D., Diffusion of Autonomous Vehicles as an Organizational Innovation. AFIT/ENS/MS/17M-112. Faculty Advisor: Maj Benjamin T. Hazen. Sponsor: N/A. [COA]

AUST, MATTHEW E., Proactive Host Mutation in Software-Defined Networking. AFIT/ENG/MS/17M-003. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A. [CCR]


BURNETT, JONATHON M., Building Character: Positive Psychology & the Air Force Core Values. AFIT/ENS/MS/17M-116. Faculty Advisor: Dr. Kenneth L. Schultz. Sponsor: N/A.

CABERTO, EDDIE K., Securing Controller Area Networks in Vehicles via Packet Switched Network Segregation. AFIT/ENG/MS/17M-009. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A. [CCR]


CARLSON, NATHAN J., Multiple Criteria Decision Making on the Load Planning Process to Enhance Cargo Compartment Utilization. AFIT/ENS/MS/17M-118. Faculty Advisor: Col Adam D. Reiman. Sponsor: N/A.

CHAMBERLAIN, CHAD N., Genetic Algorithm Receiver Optimization for Passive, Bi-static Synthetic Aperture Radar. AFIT/ENG/MS/17S-007. Faculty Advisor: Dr. Julie A. Jackson. Sponsor: N/A.

COOPER, KEVIN S., Process Categorization using Tree Edit Distance. AFIT/ENG/MS/17M-018. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A. [CCR]


CUNNINGHAM, CAMERON R., Evaluation of Networked Satellite Command & Control via Internet Conduit. AFIT/ENY/MS/17M-254. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]

DAZZIO, ELAINE L., Statistically Modeling Fuel Consumption with Heteroscedastic Data. AFIT/ENG/MS/17J-075. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A. [CCR]


DUNKEL, PATRICK N., Application of RF-DNA Fingerprinting Techniques to ICOM Radio Satellite Communication. AFIT/ENY/MS/17M-258. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]

GOODGION, JONATHON S., Active Response using Host-Based Intrusion Detection System and Software-Defined Networking. AFIT/ENG/MS/17M-032. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A. [CCR]


GUERRERO, JUSTIN, GNSS Receiver Front-End Component Characterization for High Fidelity Signal Deformation Monitoring Applications. AFIT/ENG/MS/17M-033. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: N/A. [ANT]


JONES, ANDREW M., Investigations Into Near Infrared Sensitive Solar Cells. AFIT/ENG/MS/17M-037. Faculty Advisor: Capt Robert A. Lake. Sponsor: N/A.

KACZMAREK, JEREMY J., Analysis of Image Processing and Data Reduction for Space Situational Awareness Applications in CubeSats. AFIT/ENY/MS/17M-268. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]


LANZO, DANIEL T., Additively Manufactured Spacecraft Thermal Control System. AFIT/ENY/MS/17M-271. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: N/A. [CSRA]


LUGO, DANIEL, A Sandbox in Which to Learn and Develop Soar Agents. AFIT/ENG/MS/17M-047. Faculty Advisor: Dr. Douglas D. Hodson. Sponsor: N/A. [CCR]
MASON, MICHAEL P., Cost Versus Risk: The Policy of Nuclear Weapon Maintenance of Tritium Based Limited Life Components. AFIT/ENS/MS/17M-143. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.


ORTIZ, ROSEMBERG, Scouting in Real-Time Strategy Games: Theory, Methods and Implementation. AFIT/ENG/MS/17M-056. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: N/A.

PETREE, OLIVER W., On the Application of FLO_K and PPTE to Extract the Permittivity and Permeability Tensors of Split Ring Resonator Structures. AFIT/ENG/MS/17M-058. Faculty Advisor: Maj Michael D. Seal. Sponsor: N/A.


PROVCHY, ZACHARIAH A., Topology Optimized Perforator for Multi-Layered Target. AFIT/ENY/MS/17M-283. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: N/A.


REBOULET, AMANDA M., Organizational Strategic Basing Framework with Infusion of Multi-Dimensional Uncertainty. AFIT/ENY/MS/17M-068. Faculty Advisor: Dr. Bradley C. Boehmke. Sponsor: N/A. [COA]

ROSS, JOHN S., Total Electron Count Variability and Stratospheric Ozone Effects on Solar Backscatter and LWIR Emissions. AFIT/ENP/MS/17M-103. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: N/A. [CDE/CSRA]

ROTH, KRISTA, Analysis of an Experimental Space Debris Removal Mission. AFIT/ENY/MS/17J-071. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]

SADOWSKI, JUSTIN A., Dynamic Logical Mission Modeling Tool. AFIT/ENY/MS/17M-290. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]

SCHUH, ERIK B., Examining Regionalization Efforts to Develop Lessons Learned and Consideration for Department of Defense Medical Facilities. AFIT/ENS/MS/17M-156. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: N/A.

SCIACCA, JOSEPH R., AFIT’s Random Noise Radar Characterization. AFIT/ENG/MS/17M-068. Faculty Advisor: Dr. Peter J. Collins. Sponsor: N/A.

STUART, KENNETH J., KAM Tori from Two-Line Element Sets: A Comparison to SGP4. AFIT/ENY/MS/17M-293. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A. [CSRA]

TOMMILA, CHRISTOPHER D., Performance Losses in Additively Manufactured Low Thrust Nozzles. AFIT/ENY/MS/17M-295. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: N/A. [CSRA]

UMODU, KEBIN, Hypergame Analysis of Cyber Systems. AFIT/ENG/MS/17M-075. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: N/A.


YIELDING, NICHOLAS J., Statistically Applied Non-Uniformity Correction. AFIT/ENG/MS/17M-084. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

GRADUATE RESEARCH PAPERS

DAWSON, JEREMY D., Deterring the Russian Tactical Nuclear Arsenal. AFIT/ENS/MS/17J-020. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: N/A. [COA]

DIAZ, CHRISTOPHER J., Using Social Media to Measure Deterrence. AFIT/ENS/MS/17J-021. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

GAMEL, JUSTIN L., Modernizing USAF Escalation Control. AFIT/ENS/MS/17J-027. Faculty Advisor: Maj Heidi M. Tucholski. Sponsor: N/A.

LOUIE, ALAN K., Nuclear Weapons Capabilities Required for the 21st Century. AFIT/ENS/MS/17J-033. Faculty Advisor: Dr. William A. Cunningham. Sponsor: N/A.


4.5. AIR FORCE MATERIEL COMMAND

MASTER'S THESES

CREAN, RYAN C., Benchmarking DOD use of Additive Manufacturing and Quantifying Costs. AFIT/ENS/MS/17M-121. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFMC. [COA]

LEIGHTON, JASON M., Common Support Equipment and its Impact on Aircraft Availability. AFIT/ENS/MS/17M-141. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFMC.


O'NEAL, BRENDAN M., Aircraft Availability Metric Refinement Based on a 9-Tiered Sub-metric Indication. AFIT/ENS/MS/17M-151. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: AFMC.


704TH TEST GROUP

MASTER'S THESES

DAY, JOSHUA A., Signature Analysis, Basis Editing, and Reconstruction (SABER) Tool Study. AFIT/ENG/MS/17M-022. Faculty Advisor: Dr. Peter J. Collins. Sponsor: 704 TG.
KNISELY, ANDREW J., Design and Development of a Unique Two-Way Field Probe System using a Shielded Octocopter. AFIT/ENG/MS/17M-042. Faculty Advisor: Dr. Peter J. Collins. Sponsor: 704 TG.

AIR FORCE LIFE CYCLE MANAGEMENT CENTER

MASTER'S THESESES


GALBRAITH, VIRGINIA L., Analysis of Factors Related to Turnover Intentions Among the Financial Management (65Fx/65Wx) Career Field. AFIT/ENV/MS/17M-187. Faculty Advisor: Dr. Brandon M. Lucas. Sponsor: AFLCMC.

RHEA, AARON M., Comparison of Profit Margin Percentages Between Prime Contractors and Subcontractors for Aircraft, Missiles, and Unmanned Aerial Vehicles. AFIT/ENV/MS/17M-215. Faculty Advisor: Lt Col Brandon M. Lucas. Sponsor: AFLCMC.

TRUDELLE, RYAN C., Using Multiple and Logistic Regression to Estimate the Median Will-Cost and Probability of Cost and Schedule Overrun for Program Managers. AFIT/ENC/MS/17M-231. Faculty Advisor: Dr. Edward D. White. Sponsor: AFLCMC.

AFRL: 711th HUMAN PERFORMANCE WING

MASTER'S THESESES


SWIFT, CHRISTOPHER A., M1A1 Abrams Main Battle Tank Crew Member Occupational Health Hazard Analysis during Live-Fire Operations. AFIT/ENV/MS/17M-228. Faculty Advisor: Dr. Eric G. Mbonimpa. Sponsor: 711 HPW/USAFSAM.
AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

DOCTORAL DISSERTATIONS

COTTLE, ANDREW E., Flow Field Dynamics in a High-g Ultra-Compact Combustor. AFIT/ENY/DS/16D-037. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: AFOSR.

MASTER'S THESES


JOHNSON, CLIFFORD D., A Framework for Analyzing and Discussing Level of Human Control Abstraction. AFIT/ENV/MS/17M-197. Faculty Advisor: Dr. Michael E. Miller. Sponsor: AFOSR. [ANT]

LANARI, ANN M., Numerical Wave Optics Investigation of Optical Scatter from Statistically Rough Surface. AFIT/ENP/MS/17M-099. Faculty Advisor: Maj Samuel D. Butler. Sponsor: AFOSR.

LENKER, RONALD C., Characterization of Neutron and Proton Exposure on the Radiation Resistant Bacterium, deinococcus radiodurans. AFIT/ENP/MS/17M-100. Faculty Advisor: LTC Douglas R. Lewis. Sponsor: AFOSR.


SCHWEMMER, JOSEPH R., Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle. AFIT/ENS/MS/17M-158. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFOSR.

SNYDER, JORDAN W., A Study of Quasi-Static and Dynamic Analyses of a Hexakis Icosahedron Frame for use in a Vacuum Lighter Than Air Vehicle. AFIT/ENY/MS/17M-291. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFOSR.


THOMAS, SARAHKATIE, Transient Nonlinear Optical Properties of Thin Film Titanium Nitride. AFIT/ENP/MS/17M-106. Faculty Advisor: Maj Manuel R. Ferdinandus. Sponsor: AFOSR.

VORGERT, CHRISTOPHER J., Relating Film Cooling Performance Between Ambient and Near Engine Temperatures. AFIT/ENY/MS/17M-298. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: AFOSR.

**AFRL: AEROSPACE SYSTEMS DIRECTORATE**

**DOCTORAL DISSERTATIONS**


**MASTER'S THESES**


LUM, ERIC W., Mechanical Properties of Additively Manufactured Stainless Steel. AFIT/ENY/MS/17M-273. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RQ.


PETRIE, RYAN C., Characterization of the Variable Camber Compliant Wing using a Vortex Panel Method. AFIT/ENY/MS/17M-281. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: AFRL/RQ.


ROBINSON, CHRISTINE, Evaluating the Viability of Planar Laser-Induced Fluorescence to Determine the Constituents of AF-M315E Exhaust Plume. AFIT/ENY/MS/17M-287. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: AFRL/RQ. [CSRA]


TOSCANO, LIDIA, Effectiveness of Inter-Vehicle Communications and On-Board Processing for Close Unmanned Autonomous Vehicle (UAV) Flight Formations. AFIT/ENV/MS/17M-230. Faculty Advisor: Dr. John M. Colombi. Sponsor: AFRL/RQ. [ANT]

WELCH, LUKE A., Computational Optimization under Uncertainty of an Active Flow Control Jet. AFIT/ENY/MS/17M-299. Faculty Advisor: Lt Col Jacob A. Freeman. Sponsor: AFRL/RQ.

AFRL: DIRECTED ENERGY DIRECTORATE

MASTER'S THESE


AFRL: INFORMATION DIRECTORATE

DOCTORAL DISSERTATIONS


MASTER'S THESES


COON, CAMERON W., *Comparative Analysis of RF Emission Based Fingerprinting Techniques for ZigBee Device Classification*. AFIT/ENG/MS/17M-017. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI. [CCR]


AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

MASTER'S THESES


MITCHELL, RONALD K., *Creep of Hi-Nicalon™S Ceramic Fiber Tows at 900°C In Air and In Silicic Acid-Saturated Steam*. AFIT/ENY/MS/17M-277. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

VIENS, MADILYNN E., *Liquid Crystal Performance Limitations due to Thermal Loading and Oblique Incident Angles*. AFIT/ENP/MS/17M-108. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.
AFRL: MUNITIONS DIRECTORATE

MASTER'S THESES

BOWER, ANDREW D., Investigation of Dynamic Store Separation out of a Weapons Bay Cavity Utilizing a Low Speed Wind Tunnel. AFIT/ENY/MS/17M-244. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RW.


COOPER, MATTHEW A., Converting a 2D Scanning LiDAR to a 3D System for use on Quad-Rotor UAVs in Autonomous Navigation. AFIT/ENG/MS/17M-019. Faculty Advisor: Dr. John. F. Raquet. Sponsor: AFRL/RW. [ANT]


LEE, JOSHUA J., Study of Chaotic Behavior in the Nonlinear Dynamic Response of an Airfoil with a Trailing Edge Flap. AFIT/ENY/MS/17M-272. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RW.

AFRL: SENSORS DIRECTORATE

DOCTORAL DISSERTATIONS


O'KEEFE, DANIEL S., Oblique Longwave Infrared Atmospheric Compensation. AFIT/ENP/DS/17S-030. Faculty Advisor: Dr. Kevin C. Gross. Sponsor: AFRL/RY. [CTISR]

RICE, JOHN C., RF-DNA Aided Ambiguity Resolution in a Dual Process Electronic Warfare Receiver. AFIT/ENG/DS/16D-001. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RY. [CCR]

MASTER'S THESES


ERSTEIN, ELLIOT R., Experimental Validation of a Heterogeneous Radar Clutter Statistical Estimation Method. AFIT/ENG/MS/17M-026. Faculty Advisor: Dr. Julie A. Jackson. Sponsor: AFRL/RY.

FOGARTY, BENJAMIN I., Single Layer Permittivity Extraction from Multilayered Biaxial Anisotropic Media using a Rectangular Waveguide. AFIT/ENG/MS/17M-028. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/RY.

KAVAL, WILLIAM G., Electrostrictive Polymers for Mechanical to Electrical Energy Harvesting. AFIT/ENG/MS/17M-038. Faculty Advisor: Capt Robert A. Lake. Sponsor: AFRL/RY.


WEATHERS, DAVID L., Sound Based Positioning. AFIT/ENG/MS/17M-081. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RY. [ANT]

WIREMAN, MARK J., Signal Deformation Analysis of the GLONASS Constellation using Chip Shape Processing. AFIT/ENG/MS/17M-082. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: AFRL/RY. [ANT]

WURST, NATHAN P., Improved Atmospheric Characterization for Hyperspectral Exploitation. AFIT/ENP/MS/17J-014. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFRL/RY. [CDE]

ZIMMERMAN, NICOLAS H., The Effects of Multi-static Processing and Autofocusing on an Experimental Passive Synthetic Aperture Radar Imaging System. AFIT/ENG/MS/17M-085. Faculty Advisor: Dr. Julie A. Jackson. Sponsor: AFRL/RY.
AFRL: SPACE VEHICLES DIRECTORATE

DOCTORAL DISSERTATIONS


LOTT, GORDON E., Three-Dimensional Imaging of Cold Atoms in a Magneto-Optical Trap with a Light Field Microscope. AFIT/ENP/DS/17S-029. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RV.

MASTERS THESES


DOWNEY, JACOB J., Structural Analysis of a 3D Printed Composite Truss. AFIT/ENY/MS/17M-256. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: AFRL/RV. [CSRA]


NGUYEN, HAI-DANG, Use of Artificial Neural Networks to Classify CB-DNA Fingerprints by Radio of Origin. AFIT/ENS/MS/17M-150. Faculty Advisor: Dr. John O. Miller. Sponsor: AFRL/RV.

OLIVER, RACHEL, Model Fidelity Analysis for Production of Accurate Theoretical Light Curves. AFIT/ENY/MS/17M-279. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV. [CSRA]


STROM, ALEX R., Correction of Stair Mode for an Optical Phased Array using an ArrayTilt Estimator. AFIT/ENG/MS/17M-073. Faculty Advisor: Lt Col Milo W. Hyde. Sponsor: AFRL/RV.


WATCHEL, STEVEN T., See STERN, JORDAN L. [CSRA]
AIR FORCE INSTALLATION AND MISSION SUPPORT CENTER

MASTER'S THESES

FREEBORN, CODY S., An Analysis of Forecasting Methods on Supply Discrepancy Reporting. AFIT/ENS/MS/17M-130. Faculty Advisor: Capt Michael P. Kretser. Sponsor: AFIMSC.

AIR FORCE SUSTAINMENT CENTER

DOCTORAL DISSERTATIONS


MASTER'S THESES


4.6. AIR MOBILITY COMMAND

DOCTORAL DISSERTATIONS

ROBERTS, MATTHEW D., Development and Investigation of an Air Transportation Operations Safety Climate Scale. AFIT/ENS/DS/17S-042. Faculty Advisor: Dr. Matthew A. Douglas. Sponsor: AMC.

GRADUATE RESEARCH PAPERS


DAVIS, JEFFREY C., Mobility Air Force Aircrew Flight Training Requirements Validation Through the use of Line Oriented Safety Audit Data. AFIT/ENS/MS/17J-019. Faculty Advisor: Lt Col Matthew A. Douglas. Sponsor: AMC.


GILLET, BRANDON G., Cost Comparison of Military versus Commercial Airlift. AFIT/ENS/MS/17J-028. Faculty Advisor: Dr. William A. Cunningham Sponsor: AMC.


PARISE, NICHOLAS A., Chutes Over Pope: Air Mobility Support to GRF Airborne Readiness Training. AFIT/ENS/MS/17J-041. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: 18AF/A3D.


4.7. AIR FORCE SPACE COMMAND

MASTER'S THESES


4.8. AIR FORCE SPECIAL OPERATIONS COMMAND

MASTER'S THESES


4.9. USAF FIELD OPERATING AGENCIES/DIRECT REPORTING UNITS

AIR FORCE CIVIL ENGINEERING CENTER

MASTER'S THESES

ALLEN, BRIAN R., Actionable Stitched Images from an Unmanned Aerial System. AFIT/ENV/MS/17M-168. Faculty Advisor: Dr. John M. Colombi. Sponsor: AFCEC.

BLAESS, MICHAEL J., A Portfolio Decision Analysis Study for Improving Consequence of Facility Failure Indices. AFIT/ENV/MS/17M-175. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEC.

BUYER, JOSEPH C., Refining Air Force Asset Management Strategy: Connecting Air Force Infrastructure to Core Missions. AFIT/ENV/MS/17M-177. Faculty Advisor: Lt Col Vhance V. Valencia Sponsor: AFCEC.


GUINN, VICTOR L., Smartphone-Based Infrastructure Work Order Submission. AFIT/ENV/MS/17M-192. Faculty Advisor: Lt Col Brent T. Langhals. Sponsor: AFCEC.


**AIR FORCE COST ANALYSIS AGENCY**

**MASTER’S THeses**


**AIR FORCE MEDICAL OPERATIONS AGENCY**

**MASTER’S THeses**

HUGHES, KELSIE L., *Supply Base Reduction Efforts Regarding Laboratory Reagents within Hospital Networks.* AFIT/ENS/MS/17M-134. Faculty Advisor: Dr. Jeffrey A. Ogden. Sponsor: AFMOA.
AIR FORCE RAPID CAPABILITY OFFICE

MASTER'S THESES

BARRETT, DONALD A., Development of the Architecture Cost Effectiveness Framework and Application to Open Systems Architectures. AFIT/ENV/MS/17M-171. Faculty Advisor: Dr. John M. Colombi. Sponsor: AFRCO.

AIR FORCE TECHNICAL APPLICATIONS CENTER

DOCTORAL DISSERTATIONS

BURLEY, JARRED L., A Computational Tool for Hyperspectral Propagation of NUDET Effects. AFIT/ENP/DS/17S-021. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFTAC. [CDE]

MASTER'S THESES

SCHULMEISTER, TAYLOR R., Modeling the White Sands Missile Range Fast Burst Reactor using a Discrete Ordinates Code, PENTRAN. AFIT/ENP/MS/17M-104. Faculty Advisor: Lt Col James R. Fee, Jr. Sponsor: AFTAC.


NATIONAL AIR AND SPACE INTELLIGENCE CENTER

MASTER'S THESES

BROCH, LAURA H., Constellation Architecture Design for Persistent Space Situational Awareness of Direct Ascent to Geosynchronous Orbit. AFIT/ENY/MS/17M-247. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: NASIC. [CSRA]

CERANSKI, ALISON M., Simulation of Aerothermal and Chemical Concentrations for an RDX Explosion. AFIT/ENY/MS/17M-250. Faculty Advisor: Dr. Robert B. Greendyke. Sponsor: NASIC.


HOEFFNER, ZACHARY W., A Computational Study: The Effect of Hypersonic Plasma Sheaths on Radar Cross Section for Over the Horizon Radar. AFIT/ENP/MS/17M-097. Faculty Advisor: Maj Charlton D. Lewis. Sponsor: NASIC.

JENKINS, MATHEW K., See CUHRAN, JOSEPH J. [CSRA]

LISKOWCYZ, MATTHEW M., SpaceX: Breaking the Barrier to the Space Launch Vehicle Industry. AFIT/ENV/MS/16D-045. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: NASIC.

WALTERS, MICHAEL J., See CUHRAN, JOSEPH J. [CSRA]

US AIR FORCE ACADEMY

GRADUATE RESEARCH PAPERS

WRIGHT-PATTERSON AFB FIRE EMERGENCY SERVICES

MASTER'S THESES


4.10. DEPARTMENT OF DEFENSE

MASTER'S THESES


GRADUATE RESEARCH PAPERS

ZENNER, AMANDA L., An Analysis of E-3A Component’s End of Lifecycle Spare Parts Reclamation. AFIT/ENS/MS/17J-055. Faculty Advisor: Dr. Kevin J. Gaudette. Sponsor: LWS.

DEFENSE THREAT REDUCTION AGENCY

DOCTORAL DISSERTATIONS

KANANEN, BRANT T., Luminescence in Lithium Borates. AFIT/ENP/DS/17S-027. Faculty Advisor: Dr. John W. McClory. Sponsor: DTRA.


MASTER'S THESES

CHALAOPAK, KASIDIT V., Rapid Location and Characterization of Radioactive Sources using an Autonomous Unmanned Aerial Vehicle. AFIT/ENP/MS/17M-090. Faculty Advisor: Dr. Justin A. Clinton. Sponsor: DTRA.


HAWS, DEREK W., Using Principal Component Analysis to Improve Fallout Characterization. AFIT/ENP/MS/17M-096. Faculty Advisor: Dr. John W. McClory. Sponsor: DTRA.

LOGAN, JULIE V., Rotating Scatter Mask for Gamma Source Imaging. AFIT/ENP/MS/17M-101. Faculty Advisor: Lt Col Buckley E. O'Day. Sponsor: DTRA.

DOD CYBER CRIME CENTER

MASTER'S THESES

DIRECTED ENERGY JOINT TECHNOLOGY OFFICE

DOCTORAL DISSERTATIONS


EMMONS, DANIEL J., Analysis of Ar(1s5) Metastable Populations in High Pressure Argon-Helium Gas Discharges. AFIT/ENP/DS/17S-025. Faculty Advisor: Dr. David E. Weeks. Sponsor: DEJTO. [CDE]


GONZALES, ASHLEY E., Kinetics of Graphite Oxidation in Reacting Flow from Imaging Fourier Transform Spectroscopy. AFIT/ENP/DS/17J-012. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO. [CDE]

HALUSKA, NATHAN D., Cascade and Two-Photon Lasing from Two-Photon Excitation of Cesium 62D. AFIT/ENP/DS/17S-026. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO. [CDE]

JOINT CHIEF OF STAFF

MASTER'S THESES


GRADUATE RESEARCH PAPERS

RIGOLLET, TAYLOR S., One Size Does Not Fit All: Removing Unnecessary Barriers To Entry In The Pilot Community. AFIT/ENS/MS/17J-047. Faculty Advisor: Maj Benjamin T. Hazen. Sponsor: JCS/J4. [COA]

JOINT WARFARE ANALYSIS CENTER

MASTER'S THESES


KLINE, ALEXANDER G., Real-Time Heuristic Algorithms for the Static Weapon-Target Assignment Problem. AFIT/ENS/MS/17M-139. Faculty Advisor: Dr. Darryl K. Ahner. Sponsor: JWAC.

MUNIZ, MEGAN L., Analyzing the Critical Supply Chain for Unmanned Aircraft Systems. AFIT/ENS/MS/17M-149. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: JWAC.

WILLIAMS, RANDI D., Optimal Location of Integrated Air Defense Radars and Interceptor Batteries within a Game Theoretic Framework. AFIT/ENS/MS/17J-052. Faculty Advisor: Dr. Brian J. Lunday. Sponsor: JWAC.

MISSILE DEFENSE AGENCY

MASTER’S THESES

THORP, ETHAN D., RbHe Potential Energy Surface Sensitivity Study. AFIT/ENP/MS/17M-107. Faculty Advisor: Maj Charlton D. Lewis. Sponsor: MDA.
OFFICE OF THE SECRETARY OF DEFENSE

DOCTORAL DISSERTATIONS

ATKINSON, ANDREW D., Wavelet-Based Simulation Model Validation of Functional Data. AFIT/ENS/DS/17S-034. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD

STORM, SCOTT M., Validation of Discrete and Functional Simulation Responses over Experimental Regions using Response Surfaces. AFIT/ENS/DS/17S-044. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD.

MASTER’S THESES


BENSON, BENJAMIN, An Initial Ambient Noise Database Based on National Park Service Data. AFIT/ENS/MS/17M-114. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD.

DILLARD, DOUGLAS A., Reduction Methods of Wind Tunnel Testing Data Requirements. AFIT/ENS/MS/17M-124. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD.

UNITED STATES ARMY

DOCTORAL DISSERTATIONS

ROBINSON, PAUL D., Duality Behaviors of the Quantile Regression Model Estimation Problem. AFIT/ENS/DS/17S-043. Faculty Advisor: Dr. James W. Chrissis. Sponsor: ARCYBER.

MASTER’S THESES


FERGUSON, MATTHEW D., A Scenario-Based Parametric Analysis of Stable Marriage Approaches to the Army Officer Assignment Problem. AFIT/ENS/MS/17M-128. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: AHRC.


UNITED STATES NAVY

MASTER’S THESES


HARRIS, SHARIF F., Learning Curves: An Alternative Analysis. AFIT/ENV/MS/17M-193. Faculty Advisor: Dr. John Elshaw. Sponsor: NPS.
POST, CASSANDRA R., Towards Automation of Tipping and Cueing between Small Satellites in a Constellation. AFIT/ENG/MS/17M-061. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: NPS.

UNITED STATES EUROPEAN COMMAND

GRADUATE RESEARCH PAPERS


UNITED STATES SPECIAL OPERATIONS COMMAND

MASTER'S THESES

COX, TRAVIS L., The use of Data Mining and Network Algorithms for Chemical Warfare Agent Interdiction. AFIT/ENS/MS/17M-120. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: USSOCOM.


UNITED STATES TRANSPORTATION COMMAND

DOCTORAL DISSERTATIONS


MASTER'S THESES

FAIRMAN, CHRISTIANA R., Intermodal Shipment Planning Over the USPACOM Distribution Network: An Analysis of the Tradeoff Space. AFIT/ENS/MS/17M-126. Faculty Advisor: Dr. Brian J. Lunday. Sponsor: USTRANSCOM.

SCHULTE, KATLYN A., Resilience Analysis of Distribution Networks In Response to Regional Disruption, as Applied to the USPACOM Area of Responsibility. AFIT/ENS/MS/17M-157. Faculty Advisor: Dr. Brian J. Lunday. Sponsor: USTRANSCOM.

4.11. OTHER FEDERAL AGENCIES

DEPARTMENT OF HOMELAND SECURITY

DOCTORAL DISSERTATIONS

LOPEZ, JR., JUAN, Enhanced Industrial Control System (ICS) and Supervisory Control and Data Acquisition (SCADA) Security for ISA99 Level-0 using Field Device Wired Signal Distinct Native Attributes (WS-DNA) Fingerprints. AFIT/ENG/DS/16D-008. Faculty Advisor: Dr. Michael A. Temple. Sponsor: DHS. [ANT/CCR]

MASTER'S THESES


**DOMESTIC NUCLEAR DETECTION OFFICE**

**DOCTORAL DISSERTATIONS**

MATTERS, DAVID A., Nuclear Structure of $^{186}$Re. AFIT/ENP/DS/16D-017. Faculty Advisor: Dr. John W. McClory. Sponsor: DNDO.

**MASTER'S THESES**

ENVIRONMENTAL PROTECTION AGENCY

DOCTORAL DISSERTATIONS


MASTER’S THESES


FEDERAL EMERGENCY MANAGEMENT AGENCY

GRADUATE RESEARCH PAPERS


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

MASTER’S THESES


NATIONAL NUCLEAR SECURITY ADMINISTRATION

MASTER’S THESES

SHELBY, CLINTON A., *Tumbler-Snapper Atmospheric Nuclear Test Series Streak Film Analysis*. AFIT/ENP/MS/17M-105. Faculty Advisor: Dr. John W. McClory. Sponsor: NNSA.

4.12. NON-FEDERAL SPONSORS

ARGENTINE AIR FORCE MATERIEL GENERAL DIRECTORATE

MASTER’S THESES

BOOZ ALLEN HAMILTON, INC

MASTER’S THERSES


CUMMONS INC

MASTER’S THERSES


INNOVATIVE SCIENTIFIC SOLUTIONS, INC.

MASTER’S THERSES

ASHBY, ROBERT W., Scaling Film Cooling Performance from Ambient to Near Engine Temperatures. AFIT/ENY/MS/17M-240. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: Innovative Scientific Solutions, Inc.

LINCOLN LABORATORY – MIT

MASTER’S THERSES

LAPP, KEVIN P., Design and Testing of a Micro-Scale Wave Rotor System. AFIT/ENY/MS/17S-067. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: MIT/LL.

LOCKHEED MARTIN

MASTER’S THERSES


CORBETT, STUART, Agent-Based Modeling to Analyze the Tactical Employment of a Small Advanced Capability Missile. AFIT/ENS/MS/17M-119. Faculty Advisor: Dr. John O. Miller. Sponsor: Lockheed Martin.

MAATZ, IAN M., Computational Evaluation of the Aerodynamics of a Missile Undergoing a Prescribed Pitching Motion. AFIT/ENY/MS/17M-274. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: Lockheed Martin.

THE CHARLES STARK DRAPER LABORATORY, INC

MASTER’S THERSES

RAYTHEON SPACE AND AIRBORNE SYSTEM

MASTER’S THESES


SANDIA NATIONAL LABORATORIES

MASTER’S THESES


TURKISH AIR FORCE

MASTER’S THESES

BINGOL, GUNDUZ, Simulation of Aircraft Sortie Generation under an Autonomic Logistics System. AFIT/ENS/MS/16D-052. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: TuAF.

UK MINISTRY OF DEFENCE

GRADUATE RESEARCH PAPERS

5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION
5.1. DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

Access Phone: 937-255-3069, DSN 785-3069
Fax: 937-656-7621, DSN 986-7621
Homepage: [http://www.afit.edu/ENY/](http://www.afit.edu/ENY/)

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CARR, RYAN W., Optimal Control Methods for Missile Evasion. AFIT/ENY/DS/17S-055. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RQ.

COTTLE, ANDREW E., Flow Field Dynamics in a High-g Ultra-Compact Combustor. AFIT/ENY/DS/16D-037. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: AFOSR.

GREENE, KARA M., Toward a Flying Qualities Standard for Unmanned Aircraft. AFIT/ENY/DS/17M-260. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: AFRL/RQ.

OWENS, CHRISTOPHER T., Effects of Mechanical Load History on Lamb Wave Interactions with Fatigue Cracks in Aluminum Plates. AFIT/ENY/DS/17S-061. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.


5.1.2. MASTER'S THESES


ALZAHRANY, RIYADH A., Corrosion Fatigue Behavior of AISI 4340 Steel Coated With Cadmium and Zinc-Nickel with and Without Scribed Damage in Saltwater Environment. AFIT/ENY/MS/17S-001. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.


ASHBY, ROBERT W., Scaling Film Cooling Performance from Ambient to Near Engine Temperatures. AFIT/ENY/MS/17M-240. Faculty Advisor: Dr. Marc D. Polanka. Sponsor: Innovative Scientific Solutions, Inc.


BOUCHER, NICHOLAS J., Fatigue Behavior of an Advanced Melt-Infiltrated SiC/SiC Composite at 1200°C in Air and in Steam. AFIT/ENY/MS/17M-242. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.


BOWER, ANDREW D., Investigation of Dynamic Store Separation out of a Weapons Bay Cavity Utilizing a Low Speed Wind Tunnel. AFIT/ENY/MS/17M-244. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RW.


DOWNEY, JACOB J., *Structural Analysis of a 3D Printed Composite Truss*. AFIT/ENY/MS/17M-256. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: AFRL/RV. [CSRA]


KACZMAREK, JEREMY J., *Analysis of Image Processing and Data Reduction for Space Situational Awareness Applications in CubeSats*. AFIT/ENY/MS/17M-268. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A. [CSRA]


MAATZ, IAN M., *Computational Evaluation of the Aerodynamics of a Missile Undergoing a Prescribed Pitching Motion.* AFIT/ENY/MS/17M-274. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: Lockheed Martin.

MITCHELL, RONALD K., *Creep of Hi-Nicalon™S Ceramic Fiber Tows at 900°C In Air and In Silicic Acid-Saturated Steam.* AFIT/ENY/MS/17M-277. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.


PETRIE, RYAN C., *Characterization of the Variable Camber Compliant Wing using a Vortex Panel Method.* AFIT/ENY/MS/17M-281. Faculty Advisor: Dr. Donald L. Kunz. Sponsor: AFRL/RQ.


ROBINSON, CHRISTINE, *Evaluating the Viability of Planar Laser-Induced Fluorescence to Determine the Constituents of AF-M315E Exhaust Plume.* AFIT/ENY/MS/17M-287. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: AFRL/RQ. [CSRA]


STUART, KENNETH J., *KAM Tori from Two-Line Element Sets: A Comparison to SGP4.* AFIT/ENY/MS/17M-293. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A. [CSRA]


5.1.3. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliations are listed in [ ] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

AYRES, BRADLEY J.,
Visiting Assistant Professor of Systems Engineering (through Aerospace Corp.), Department of Aeronautics and Astronautics, AFIT Appointment Date: 2012 (AFIT/ENY); BS, Chemical Engineering, University of Missouri, Columbia, 1982; MA, Procurement and Acquisition Management, Webster University, St. Louis, 1991; MS, Software Systems Management, Air Force Institute of Technology, 1992; PhD, Business Administration specializing in MIS, Florida State University, 2003. Dr. Ayres' research interests include development of complex systems. He is a member of AIAA, the Project Management Institute, and the International Council on Systems Engineering. AFIT research center affiliation(s): CSRA. Tel. 937-255-3355 x3422, email: Bradley.Ayres.ctr@afit.edu

BETTINGER, ROBERT A., Maj,
Assistant Professor of Astronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2017 (AFIT/ENY); BS, Astronautical Engineering, United States Air Force Academy, 2007; MA, History, American Public University, 2010; MS, Astronautical Engineering, Air Force Institute of Technology, 2011; PhD, Astronautical Engineering, Air Force Institute of Technology, 2014. Maj Bettinger's research interests include reentry dynamics, spacecraft design, and optimization and control for aerospace applications. Recent research includes developing optimal skip reentry maneuvers for altering spacecraft orbital elements. Maj Bettinger is a member of Tau Beta Pi and Sigma Gamma Tau. Tel. 937-255-3636 x4578, email: Robert.Bettinger@afit.edu

COBB, RICHARD G.,
Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2001 (AFIT/ENY); BS, Pennsylvania State University, 1988; MS, Air Force Institute of Technology, 1992; PhD, Air Force Institute of Technology, 1996. Dr. Cobb teaches courses on control theory, optimization and satellite design. His research focuses on dynamics and control of space structures for space-based remote sensing, and optimization and control for aerospace applications. Recent research includes developing optimal trajectory plans for Global Strike missions, maneuver planning for satellite proximity operations, and dynamics and control techniques for lightweight space optics and sensor systems for Space Situational Awareness. While on active duty, Dr. Cobb served as the technical advisor for AFRL’s Space Vehicles Technology Branch, and led several space flight experiment programs, including the Vibration Isolation and Suppression System sponsored by BMDO and the Satellite Ultra-quiet Isolation Technology Experiment. Dr. Cobb also served as a launch operations officer at Cape Canaveral AFS on the Global Positioning System program, responsible for the integration and launch of the GPS Block II satellite constellation. Dr. Cobb is an Associate Fellow of AIAA. AFIT research center affiliation(s): ANT, CDE, CSRA and CTISR. Tel. 937-255-3636 x4559, email: Richard.Cobb@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Optimization and Computer Vision for Proximity Operations.” Sponsor: Undisclosed. Funding: $40,000 – Cobb 50%, Swenson 50%. [CSRA]

“Optimization for Tactical Off-Board Sensing and Persistent Intelligence, Surveillance, and Reconnaissance.” Sponsor: AFRL/RQ. Funding: $35,000 – Cobb 50%, Kunz 50%. [ANT]

“Optimization and Decision Support for TMAP.” Sponsor: NASIC. Funding: $35,000. [CSRA]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


COMER, ADAM L., Capt,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2015 (AFIT/ENY); BS, Mechanical Engineering, United States Air Force Academy, 2009; PhD, Engineering, University of Cambridge, 2013. Capt Comer’s research interests include fluid mechanics, combustion, and computational fluid dynamics-based design optimization with a focus on developing and applying practical and advanced computational models of turbulent combustion and multiphase flows for gas turbine propulsion applications. Specific research efforts include an automated, CFD-based optimization of a gas turbine fuel injector and computational modeling of bluff-body flame dynamics and instability. During his previous assignment as a deputy branch chief and combustion research engineer at AFRL, he gained exposure to a variety of applied and fundamental research efforts for current and future combustion systems for propulsion. Tel. 937-255-6565 x4745, email: Adam.Comer@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


CROWE, DARRELL S., Maj,
Student Operations Division Chief and Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2015 (AFIT/ENY); BS, Aerospace Engineering, Texas A&M, 2003; MS, Aeronautical Engineering, Air Force Institute of Technology, 2008; PhD, Aeronautical Engineering, Air Force Institute of Technology, 2014. Maj Crowe’s research interests include computational fluid dynamics, weapon aerodynamics, propulsion systems integration, fuel film cooling, and grid generation methods. Maj Crowe teaches courses on computational fluid dynamics. He has experience in propulsion sustainment engineering and has worked as
a computational fluid dynamics engineer in the area of aircraft/store compatibility. He is a member of Tau Beta Pi, Sigma Gamma Tau, and AIAA. Tel. 937-255-3636 x4204, email: Darrell.Crowe@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Computational Fluid Dynamics Investigation Using Bleed as a Method of Active Flow Control.” Sponsor: AFRL/RQ. Funding: $5,450.

FREEMAN, JACOB A., Lt Col,
Deputy Head and Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2015 (AFIT/ENY); BS, Mechanical Engineering, Brigham Young University, 1997; MS, Aeronautical Engineering, Air Force Institute of Technology, 2003; PhD, Aeronautical Engineering, Virginia Tech, 2012. Lt Col Freeman’s research interests include computational fluid dynamics, optimization under uncertainty, and computational turbulence modeling. Lt Col Freeman has experience as the GPS deputy chief engineer; computational aircraft-store separation; computational, experimental and flight testing of a micro air vehicle; small-satellite testing, launch and operations; and as assistant professor of aeronautical engineering at the Air Force Academy; he also deployed to Guantanamo Bay, Cuba, to support Operation Enduring Freedom and to US Central Command Headquarters in Florida as a military strategic planner. He is a member of AIAA. Tel. 937-255-3636 x4901, email: Jacob.Freeman@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


FULLER, DANE F., Col
Senior Military Professor, School of Engineering and Management, AFIT Appointment Date: 2016 (AFIT/EN); BS Electrical Engineering, The University of Texas at Austin, 1993; MS Electrical Engineering, Air Force Institute of Technology, 1997; MS of Operational Art and Science, Air Command and Staff College, 2008, PhD Electrical Engineering, Air Force Institute of Technology, 2011; Col Fuller has over 23 years of active duty military service and experience. His research interests include space systems engineering and remote sensing, in particular radar imaging, electromagnetic scattering, and pattern recognition. Col Fuller is a member of Tau Beta Pi, and Eta Kappa Nu. AFIT research center affiliation(s): CSRA and CTISR. Tel. 937-255-3636 x4679, email: Dane.Fuller@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Long Wave Polarimetric Imaging Research.” Sponsor: Undisclosed. Funding: $150,000 – Fuller 20%, Gross 40%, Cobb 40%. [CSRA/CTISR]


“Radiation Testing Jeston TX1 and TX2.” Sponsor: Undisclosed. Funding: $24,300 – Fuller 10%, Hogsed 80%, Cobb 10%. [CSRA]

GEISEL, CHRISTOPHER D., Lt Col,
Assistant Professor of Astronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2014 (AFIT/ENY); BS, Astronautical Engineering, United States Air Force Academy, 2001; MS, Astronautical Engineering, Air Force Institute of Technology, 2008; PhD, Purdue University, 2013. Lt Col Geisel’s research interests include astrodynamics and dynamical systems theory. He has investigated spacecraft orbit design in a multi-body environment as well as navigation solutions for on-orbit inspection of satellites. Previously, he worked as an orbital analyst for the Advanced Payload Design Team at NASA’s Jet Propulsion Laboratory. At the Air Force Research Laboratory Sensors Directorate, he led the design of a sensor system for hypersonic vehicles. At the Space
and Missile Systems Center / Missile Defense Systems Group, he supervised development, integration, testing, and operator training for two satellites designed to track ballistic missiles. He also mentored Iraqi and Afghan security forces during Operation Iraqi Freedom and Operation Enduring Freedom. Lt Col Geisel is a member of Sigma Gamma Tau, Tau Beta Pi, and AIAA. AFIT research center affiliation(s): CSRA.

GREENDYKE, ROBERT B.,
Associate Professor of Aeronautics and Astronautics and Director, AFIT Scientist and Engineer Education Programs at Kirtland AFB, Department of Aeronautics and Astronautics, Appointment Date: 2005 (AFIT/ENY); BBA, Economics, Baylor University, 1979; BS, Aerospace Engineering, Texas A&M University, 1986; MS, Aerospace Engineering, Texas A&M University, 1988; PhD, Interdisciplinary Engineering, Texas A&M University, 1998. Dr. Greendyke's research interests include computational fluid dynamics, Direct Simulation Monte Carlo methods, hypersonic and reacting flows, radiation simulation, thermophysics, and plasma simulation. Dr. Greendyke was a Research Scientist at NASA-Langley Research Center studying re-entry and aerobraking flows, and an Associate Professor in the University of Texas at Tyler establishing a start-up Mechanical Engineering Program from concept through accreditation. He has published over 30 journal articles, technical reports and conference publications in multiple fields. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 937-255-3636 x4567, email: Robert.Greendyke@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Porosity Effects on Detonation Waves.” Sponsor: AFRL/RW. Funding: $9,265.

“Hypersonic Stability and Transition Analysis.” Sponsor: AFRL/RW. Funding: $45,000.


SPONSOR FUNDED EDUCATIONAL PROJECTS

“A Non-Technical Introduction to Hypersonics.” Sponsor: NASIC. Funding: $5,000.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HARTSFIELD, CARL R.,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2015 (AFIT/ENY); BS, Aerospace Engineering, Georgia Institute of Technology, 1991; MS, Aeronautical Engineering, Air Force Institute of Technology, 2001; PhD, Astronautical Engineering, Naval Postgraduate School, 2006. Dr. Hartsfield is a former faculty member of The Ohio State University, former space sensor payload program manager, and retired USAF Lt Col. His research interests include space and rocket propulsion and optimal design of spacecraft, including integration and testing of spacecraft. Dr. Hartsfield’s research focuses on experimental evaluation and diagnostics for space propulsion, analytic evaluation of spacecraft design, and applications of additive manufacturing for optimal spacecraft structures. He served as an invited space propulsion session co-chair at a 2011...
NASA GRC HBCUOMI Outreach Symposium, as a session chair at the 2011 and 2012 Dayton/Cincinnati Aerospace Sciences Symposia, and as chair for the technical program and session chair at the 2017 Dayton/Cincinnati Aerospace Sciences Symposium. Dr. Hartsfield is a member of AIAA, Sigma Gamma Tau, and the American Society for Engineering Education. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4667, email: Carl.Hartsfield@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HESS, JOSHUAH, A., Capt,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2016 (AFIT/ENY); BS, Aerospace Engineering, Virginia Polytechnic and State University, 2009; MS, Astronautical Engineering, Air Force Institute of Technology, 2011; PhD, Aeronautical Engineering, Air Force Institute of Technology, 2016. Capt Hess’s research interests include orbital mechanics, spacecraft attitude determination, relative satellite motion, estimation theory differential games, and optimal control theory. He has investigated adaptive estimation of nonlinear spacecraft attitude dynamics as well as the relative navigation between satellites conducting proximity operations. Previously, Capt Hess worked as a space systems engineer at the National Air and Space Intelligence Center (NASIC), and has deployed to Southwest Asia in support of Operation Enduring Freedom. He is a member of Tau Beta Pi, Sigma Gamma Tau, and AIAA. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x6190, email: JoshuaH.Hess@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


JOHNSON, KIRK, W., Lt Col,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2016 (AFIT/ENY); BS, Mechanical Engineering, Worcester Polytechnic Institute, 2000; MS, Astronautical Engineering, Air Force Institute of Technology, 2010; PhD, Aerospace Engineering, Texas A&M University, 2016. Lt Col Johnson's research interests include orbital mechanics and astrodynamics, focusing on satellite relative motion, formation flying, general perturbation methods, and space navigation. Lt Col Johnson has led engineering teams
performing analysis and modeling and simulation for the National Air and Space Intelligence Center and for the
Missile Defense Agency. He is a member of Tau Beta Pi, and Sigma Gamma Tau. AFIT research center affiliation(s):
CSRA. Tel. 937-255-3636 x4285, email: Kirk.Johnson@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Algorithms for Small-Satellite Formation Flying.” Sponsor: AFRL/RV. Funding: $10,750. [CSRA]

KOMIVES, JEFFREY R., Maj,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date:
2016 (AFIT/ENY); BS, Aeronautical & Astronautical Engineering, Purdue University, 2003; MS, Aeronautical
Engineering, Air Force Institute of Technology, 2009; PhD, Aerospace Engineering & Mechanics, University of
Minnesota, 2016. Maj Komives' research interests include aerodynamics, hypersonics, and computational fluid
dynamics. Maj Komives is a developmental engineer with experience in simulation, test and evaluation, and electronic
warfare. In his deployment to Operation Enduring Freedom he was responsible for Counter Remote Controlled-IED
Electronic Warfare training across most of Afghanistan. He is a member of Sigma Gamma Tau, AIAA, and
Association of Old Crows. Tel. 937-255-3636 x4744, email: Jeffrey.Komives@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Wall-Modeled Large Eddy Simulation of Non-Equilibrium Boundary Layers.” Sponsor: AFRL/RQ. Funding:
$13,184.

REFEREED JOURNAL PUBLICATIONS

Knight, D., Chazot, O., Austin, J., Badr, M.A., Candler, G., Celik, B., de Rosa, D., Donelli, R., Komives, J., Lani, A.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

Scramjet Flowfield with Hyperspectral Imaging. AIAA paper 2017-3554, 33rd AIAA Aerodynamic Measurement
Technology and Ground Testing Conference.

Reinert, J. D., Gs, S., Candler, G. V., & Komives, J. R. (2017). Three-Dimensional Simulations of Hypersonic Double
Wedge Flow Experiments. AIAA paper 2017-4125, 47th AIAA Fluid Dynamics Conference.

KUNZ, DONALD L.,
Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003
(AFIT/ENY); BS, Syracuse University, 1971; MS, Georgia Institute of Technology, 1972; PhD, Georgia Institute of
Technology, 1976; Dr. Kunz’s research interests include rotocraft dynamics, vibrations, and loads, structural
dynamics, aeroelasticity, flying qualities of UAVs, multibody dynamics, and computational structural mechanics. He
has published more than 100 journal articles, conference papers, and technical reports. Prior to coming to AFIT, Dr.
Kunz worked at the US Army Aeroflightdynamics Directorate, McDonnell Douglas Helicopter Company, Old
Dominion University, and the US Army Aviation and Missile Command. He is an Associate Fellow of AIAA, a
member of AHS and ASME, and a licensed professional engineer in the Commonwealth of Virginia.
Tel. 937-255-3636 x4548, email: Donald.Kunz@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Basic Research with Integrated Flight Test.” Sponsor: AFOSR. Funding: $91,714 – Kunz 50%, Reeder 20%, Cobb
20%, Crowe 10%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


LIEBST, BRADLEY S.,
Professor of Aerospace Engineering and Head, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1989 (AFIT/ENY); BS, Wichita State University, 1978; MS, Massachusetts Institute of Technology, 1979; PhD, Massachusetts Institute of Technology, 1981. Dr. Liebst's research interests include eigenstructure assignment and control, stability and control of aerospace vehicles, passive and active control of large flexible structures, and aircraft handling qualities. He has published over 30 articles and reports and chaired over 40 theses and dissertations. Prior to teaching at AFIT, Dr. Liebst was Assistant Professor of Aerospace Engineering for six years at the University of Minnesota where he was voted the 1987 Best Institute of Technology (U of M) Professor. Tel. 937-255-3636 x4636, email: Bradley.Liebst@afit.edu

LINGENFELTER, ANDREW J., Capt,
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2016 (AFIT/ENY); BS, Mechanical Engineering, University of Nebraska – Lincoln, 2008; MEng, Industrial and Systems Engineering, University of Florida, 2011; PhD, Aeronautical Engineering, Air Force Institute of Technology, 2016. Capt Lingenfelter’s research interests include aircraft survivability, weapons, weapons testing, and additive manufacturing. His previous research has focused on flow visualization and ballistically induced failure of aircraft fuel tanks. Capt Lingenfelter is a member of AIAA, Tau Beta Pi, and Sigma Gamma Tau. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4282, email: Andrew.Lingenfelter@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


SPONSOR FUNDED EDUCATIONAL PROJECTS

“Weapons and Aircraft Survivability Education and Research.” Sponsor: JASPO. Funding: $54,000.

REFEREED JOURNAL PUBLICATIONS


MALL, SHANKAR,
Distinguished Professor, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1986 (AFIT/ENY); BS, Mechanical Engineering, Banaras Hindu University, India, 1964; MS, Mechanical Engineering, Banaras Hindu University, 1966; PhD, Mechanical Engineering, University of Washington, 1977. Dr. Mall's research centers on composite and smart materials, fatigue and fracture. Dr. Mall has authored over 300 papers and has been the co-editor of a book and five conference proceedings. He is a Fellow of ASME and an Associate Fellow of AIAA. He was also the Principal Materials Research Engineer, Materials and Manufacturing Directorate, Air Force Research Laboratory.

SPONSOR FUNDED RESEARCH PROJECTS

“Applications of Carbon Nanotube (CNT) Fabric in Satellites including CubeSat.” Sponsor: Undisclosed. Funding: $25,520 – Mall 70%, Swenson 20%, Rutledge 10%.


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


O’HARA, RYAN P., Maj.
Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2015 (AFIT/ENY); BS, Mechanical Engineering, US Air Force Academy, 2000; MS, Aeronautical Engineering, Wright State University, 2005; PhD, Aeronautical Engineering, Air Force Institute of Technology, 2012. Maj O’Hara’s research focuses on the application of mechanical structures and structural dynamics. Areas of interest include turbine engines, laminate composites, small UAS, and additive manufacturing. AFIT research center affiliation(s): CSRA. Tel. 937-255-6565 x4542, email: Ryan.OHara@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Abnormal Grain Growth in Beta Annealed Ti-6Al-4V.” Sponsor: AFRL/RX. Funding: $40,000.


PALAZOTTO, ANTHONY N.,
Distinguished Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1975 (AFIT/ENY); BS, New York University, 1955; MS, Brooklyn Polytechnic Institute, 1961; PhD, New York University, 1968. Dr. Palazotto's interests include nonlinear mechanics, shell analysis, finite elements, composite materials, viscoplasticity, and nonlinear dynamics. Dr. Palazotto is the co-author of a textbook, “The Nonlinear Analysis of Shell Structures,” published in 1992 by the AIAA. In addition he has authored 242 archival technical
publications and more than 600 technical presentations and manuscripts. Dr. Palazotto received the Hetanyi Award in 1982 from the Society of Experimental Mechanics, the Cleary Award in 1981 from the Air Force Materials Lab, the Structures and Materials Award from the ASCE in 1986, and the AIAA Sustained Service Award in 2004. Dr. Palazotto is a Fellow of the ASCE, a Fellow of the AIAA, a Fellow of the American Academy of Mechanics, and a Fellow of the Engineering Mechanics Institute. He is a registered Professional Engineer in the State of Ohio. Tel. 937-255-3636 x4599, email: Anthony.Palazotto@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOOKS AND CHAPTERS IN BOOKS


Palazotto, A., Chapter 32. Impact Response of Titanium and Titanium Boride Monolithic and Functionally Graded Composite Plates.


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


PATENT APPLICATIONS


INVENTION DISCLOSURES


POLANKA, MARC D.,

Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2009 (AFIT/ENY); BS, Mechanical Engineering, University of Dayton, 1992; MS, Mechanical Engineering, Stanford University, 1993; PhD, Mechanical Engineering, University of Texas, 1999. Prior to accepting a position with AFIT, Dr. Polanka served 17 years in Turbine Engine Division of the Air Force Research Laboratory’s Propulsion Directorate. Dr. Polanka’s research interests include aspects of heat transfer, combustion, and fluid mechanics focusing on experimental applications involving turbine and combustor aerodynamics and cooling techniques. He has been published in a variety of journals including the AIAA Journal of Propulsion and Power, the ASME Journal of Turbomachinery and the Journal of Engineering for Gas Turbines and Power. He also has two patents to his credit. Dr. Polanka is an Associate Fellow of the AIAA, the past Section Chair of the Dayton-Cincinnati Section of the AIAA,
and the Honors and Awards Chair for the same section. Dr. Polanka serves as the Faculty representative for the AFIT
Student Section branch of AIAA. He is also a Fellow of the ASME and serves on the Executive Board of the K-14
Committee of the International Gas Turbine Institute where he is also a past Point Contact for the annual Turbo Expo
conference. Tel. 937-255-3636 x4714, email: Marc.Polanka@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Combustion Physics under High Centripetal Acceleration.” Sponsor: AFOSR. Funding: $54,390 – Polanka 85%,
Rutledge 15%.

“AFIT Combustion Laboratory Program Concerning UCC, RDE, Small Engines, and Secondary Reaction Combustion
Phenomena.” Sponsor: AFRL/RQ. Funding: $91,607 – Polanka 98%, Comer 2%.

REFEREED JOURNAL PUBLICATIONS


Greiner, N.J., Polanka, M.D., Rutledge, J.L., and Shewhart, A.T “Effect of Variable Properties and Radiation on
1:8, 2016. doi: 10.1115/1.4033537.

Polanka, M.D., Rutledge, J.L., Bogard, D.G., and Anthony, R.J., “Determination of Cooling Parameters for a High
doi: 10.1115/1.4033974.

Benhassen, F., Polanka, M.D., and Reeder, M.F., “Time Resolved Filtered Rayleigh Scattering Measurement of a

Rutledge, J.L., Polanka, M.D., Greiner, N.J., “Computational Fluid Dynamics Evaluations of Film Cooling Flow
Scaling Between Engine and Experimental Conditions,” Journal of Turbomachinery, Vol. 139(2), pp. 021004 1:7,

Ausserer, J.K., Polanka, M.D., Baranski, J.A., Grinstead, K.D., Litke, P.J., “Measurement of Loss Pathways in Small,


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

Ausserer, J.K., Polanka, M.D., Litke, P.J., and Baranski, J.R., “Mapping of Fuel Anti-Knock Requirements for Small
Remotely Piloted Aircraft Engines,” Small Engines Technology Conference, 16 SETC-0070, Charleston, S.C., 15-
17 November 2016.

Bohan, B.T., and Polanka, M.D., “Computational Analysis of a Novel Cooling Scheme for Ultra Compact Combustor

Infrared Thermography and Pressure Sensitive Paint Techniques,” ASME Turbo Expo, GT-2017-65019, Charlotte,
REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


INVENTION DISCLOSURES


REEDER, MARK F.,
Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2002 (AFIT/ENY); BS, Mechanical Engineering, West Virginia University, 1989; MS, Mechanical Engineering, The Ohio State University, 1991; PhD, Mechanical Engineering, The Ohio State University, 1994. Prior to accepting a position with AFIT, Dr. Reeder served as an NRC Research Associate at NASA Glenn and subsequently as the manager of Research and Development for a manufacturer of industrial mixing equipment. Dr. Reeder’s research interests include all aspects of fluid mechanics with an emphasis on experimental applications involving external aerodynamics, mixing enhancement, and propulsion. Publications include characterizations of store separation from a cavity using pressure sensitive paint and measurements relating to several types of aircraft using 6-DOF balances, particle image velocimetry, filtered Rayleigh scattering, and other diagnostic tools. He has also recently published in the area of low temperature ablation in a supersonic flow as applied to thermal management systems for space access vehicles. Dr. Reeder has been published in a variety of journals including Experiments in Fluids, Journal of Fluid Mechanics, The AIAA Journal, The AIAA Journal of Propulsion and Power, AIAA Journal of Aircraft, the AIAA Journal of Spacecraft and Rockets, Physics of Fluids, NASA Tech Briefs, the AIChE Journal, and Chemical Engineering Progress. He also has four patents to his credit, is a licensed Professional Engineer in the State of Ohio, and is an elected member of the Academy of Distinguished Alumni, Department of Mechanical and Aerospace Engineering, West Virginia University. Dr. Reeder currently serves as the editor-in-chief of the International Journal of Micro Air Vehicles. Dr. Reeder is an Associate Fellow of the AIAA and a member of ASME. Tel. 937-255-3636 x4530, email: Mark.Reeder@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Missile Development Concepts and Solutions.” Sponsor: Lockheed Martin. Funding: $80,000 – Reeder 40%, Miller 40%, Crowe 20%.

“AFIT/ENY and AFRL/RQV Cooperative Research Agreement.” Sponsor: AFRL/RQ. Funding: $29,000.

“‘Flight Testing’ in the AFIT Low Speed Wind Tunnel Using the MTA System.” Sponsor: AFRL/RW. Funding: $65,000 – Reeder 50%, Cobb 50%.

“Drop Testing in the AFIT Small Supersonic Tunnel with Ejection Mechanism.” Sponsor: AFRL/RQ. Funding: $30,000 – Reeder 80%, Crowe 20%.

REFEREED JOURNAL PUBLICATIONS


RUGGLES-WRENN, MARINA B.,
Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2003 (AFIT/ENY); BS, Polytechnic Institute of New York, 1981; MS, Rensselaer Polytechnic Institute, 1983; PhD, Rensselaer Polytechnic Institute, 1987. Dr. Ruggles-Wrenn’s interests center on mechanics of materials and structures, including experimental investigation of material behavior in extreme environments, advanced structural materials, high-temperature structural design methods, and viscoplasticity. Dr. Ruggles-Wrenn has published over 140 peer reviewed scientific publications. Dr. Ruggles-Wrenn received several research and best paper awards; Stinson Trophy of the National Aernautic Association, Col Gage H. Crocker Outstanding Professor Award, as well as the AFIT Instructor of the Quarter Award. Prior to joining AFIT, Dr. Ruggles-Wrenn was a research scientist at the Oak Ridge National Laboratory (1987-2003). Dr. Ruggles-Wrenn is a member of the Editorial Board of Applied Composite Materials and an Associate Technical Editor of the ASME Journal of Pressure Vessel Technology. Dr. Ruggles-Wrenn is a Fellow of the American Society of Mechanical Engineers (ASME) and a member of the American Ceramic Society. She is the Chair of the ASME Pressure Vessels and Piping Division. Tel. 937-255-3636 x4641, email: Marina.Ruggles-Wrenn@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Effect of Film Cooling Holes on Damage Progression of CMCs.” Sponsor: AFRL/RX. Funding: $7,500.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS


EDITORSHIPS IN PROFESSIONAL JOURNALS

Editorial Board Member, Applied Composite Materials – International Journal for the Science and Application of composite Materials

Associate Technical Editor, ASME Journal of Pressure Vessel Technology

RUTLEDGE, JAMES L., Maj.
Associate Professor of Aerospace Engineering; Department of Aeronautics and Astronautics, AFIT Appointment Date: 2011 (AFIT/ENY); BS, Mechanical Engineering, University of Texas at Austin, 2002; MS, Mechanical Engineering, University of Texas at Austin, 2004; PhD, Aeronautical Engineering, Air Force Institute of Technology, 2009. Lt Col Rutledge’s research interests include experimental and computational investigations of gas turbine heat transfer, unsteady fluid mechanics, inverse heat transfer and aerothermodynamics. He holds a patent, has published over 20 archival journal articles and was awarded the Rohsenow Prize in 2008 by ASME. Lt Col Rutledge is a member of the ASME K-14 Gas Turbine Heat Transfer Committee, ASME, AIAA, and Tau Beta Pi. He is a registered professional engineer in the State of Texas and has deployed to Afghanistan in support of Operation Enduring Freedom. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4734, email: James.Rutledge@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Film Cooling Data Scaling From Experimental to Engine Conditions.” Sponsor: AFRL/RQ. Funding: $48,393 – Rutledge 90%, Polanka 10%.

REFEREED JOURNAL PUBLICATIONS


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW**


**OTHER SIGNIFICANT RESEARCH PRODUCTIVITY**


**INVENTION DISCLOSURE**


**SWENSON, ERIC D.,**
Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2006 (AFIT/ENY); BS, Civil Engineering, The Ohio State University, 1993; MS, Astronautical Engineering, Air Force Institute of Technology, 1998; PhD, Aerospace Engineering, University at Texas at Austin, 2006. Dr. Swenson is a retired Lt Col in the Air Force whose more than 25 years of service includes experience as an Astronautical Engineering Professor, Titan Launch Pad Engineer, Civil Engineer, and a Nuclear Measurements Technician. More recently, he has been a key player in AFIT’s recent expansion in space-related experimental research, including the development of 6U CubeSats, a satellite attitude simulator called SimSat, and various other space experiments. His previous research focused on solving multi-million degree of freedom finite element models with viscoelastic materials, satellite design and test, damage detection techniques, and system identification through optimization. He is a Technical Area Editor for the Journal of Small Spacecraft, and he is a member of Chi Epsilon, SPIE, Tau Beta Pi, and AIAA. AFIT research center affiliation(s): CSRA.

**SPONSOR FUNDED RESEARCH PROJECTS**


“Hybrid Flex Circuit Testing.” Sponsor: AFRL/RX. Funding: $15,000 – Swenson 50%, Hartsfield 50%. [CSRA]


THOMAS, LEVI M., Maj,
Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2017 (AFIT/ENY); BS, Aeronautical Engineering, United States Air Force Academy, 2006; MS, Aeronautical Engineering Air Force Institute of Technology, 2009; AA, Foreign Language, Defense Language Institute, 2011; PhD, Mechanical Engineering, Purdue University, 2017. Maj Thomas’ research interests include laser measurement techniques and combustion. He has experience as an intelligence analyst in foreign air-to-air weapon systems, as a combustion research engineer testing detonation combustors, and as an exchange officer working with the German Aerospace Center. Previous research included laser-based velocity measurements in the “Ultra-Compact Combustor,” and high-speed temperature measurements in spray combustion using coherent anti-Stokes Raman scattering spectroscopy. Maj Thomas is a member of AIAA and the Combustion Institute, and is a registered professional engineer in the state of Colorado. Tel. 937-255-3636 x4500, email: Levi.Thomas@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


TORVIK, PETER J.,
Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, (AFIT/ENY); BS, University of Minnesota, 1960; MS, University of Minnesota, 1962; PhD, University of Minnesota, 1965; BA, Wright State University, 1980. Professor Torvik is a specialist in theory of elasticity, wave propagation, shock and vibration, impact damage in aircraft systems, laser-material interactions, and aircraft survivability/vulnerability. His primary research interests include structural dynamics, specifically damping, impact, and penetration mechanics. Dr. Torvik is the author of over 100 technical papers and reports and some 30 other publications. He served as Head of the Department of Aeronautics and Astronautics, 1980-1990. He is the recipient of the AF Meritorious Civilian Service Award, the AF Exceptional Civilian Service Award, the Outstanding Civilian Career Service Award, USAF, and the John Leland Atwood Award and Medal, AIAA and ASEE. Dr. Torvik is a Fellow of AIAA, a Fellow of the ASME, and a Fellow of Ohio Academy of Science.

WIESEL, WILLIAM E., Jr.,
Professor of Astronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1977 (AFIT/ENY); BS, University of Massachusetts, 1970; MS, Harvard University, 1972; PhD, Harvard University, 1974. Dr. Wiesel's research interests include applications of dynamical systems theory to orbital mechanics and astrodynamics, especially KAM theory; estimation and control, planetary astronomy, stability theory, and optimal control. Dr. Wiesel is the author of Spaceflight Dynamics, a leading introductory text on astronautical engineering. He has authored over 50 technical papers and has been a member of the department for nearly 40 years. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4312, email: William.Wiesel@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Precision Onboard Orbit Determination.” Sponsor: Undisclosed. Funding: $120,000. [CSRA]

REFEREED JOURNAL PUBLICATIONS


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

Access Phone: 937-255-2024, DSN 785-2024
Fax: 937-656-7061, DSN 986-7061
Homepage: http://www.afit.edu/ENG/

5.2.1 DOCTORAL DISSERTATIONS 72
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5.2.1. DOCTORAL DISSERTATIONS


5.2.2. MASTER'S THESES


CABERTO, EDDIE K., Securing Controller Area Networks in Vehicles via Packet Switched Network Segregation. AFIT/ENG/MS/17M-009. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A. [CCR]


CHAMBERLAIN, CHAD N., Genetic Algorithm Receiver Optimization for Passive, Bi-static Synthetic Aperture Radar. AFIT/ENG/MS/17S-007. Faculty Advisor: Dr. Julie A. Jackson. Sponsor: N/A.

CHAPPELL, RICHARD E., A Game Theory Model for Allocating Scarce Resources in Critical Infrastructure Protection. AFIT/ENG/MS/17M-012. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI. [CCR]


CHOATE, JEFFREY L., Extending AFSIM with Behavioral Emergence. AFIT/ENG/MS/17M-014. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RQ.


COON, CAMERON W., Comparative Analysis of RF Emission Based Fingerprinting Techniques for ZigBee Device Classification. AFIT/ENG/MS/17M-017. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI. [CCR]

COOPER, KEVIN S., Process Categorization using Tree Edit Distance. AFIT/ENG/MS/17M-018. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A. [CCR]

COOPER, MATTHEW A., Converting a 2D Scanning LiDAR to a 3D System for use on Quad-Rotor UAVs in Autonomous Navigation. AFIT/ENG/MS/17M-019. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RW. [ANT]

DAOUD, JOSEPH K., Multi-PLC Exercise Environments for Training ICS First Responders. AFIT/ENG/MS/17M-020. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS. [CCR]

DAY, JOSHUA A., Signature Analysis, Basis Editing, and Reconstruction (SABER) Tool Study. AFIT/ENG/MS/17M-022. Faculty Advisor: Dr. Peter J. Collins. Sponsor: 704 TG.

DAZZIO, ELAINE L., Statistically Modeling Fuel Consumption with Heteroscedastic Data. AFIT/ENG/MS/17J-075. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A. [CCR]


ERSTEIN, ELLIOT R., Experimental Validation of a Heterogeneous Radar Clutter Statistical Estimation Method. AFIT/ENG/MS/17M-026. Faculty Advisor: Dr. Julie A. Jackson. Sponsor: AFRL/RY.

FOGARTY, BENJAMIN I., Single Layer Permittivity Extraction from Multilayered Biaxial Anisotropic Media using a Rectangular Waveguide. AFIT/ENG/MS/17M-028. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/RY.

GALLENSTEIN, JUSTIN K., Integration of the Network and Application Layers of Automatically Configured Programmable Logic Controller Honeypots. AFIT/ENG/MS/17M-029. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS. [CCR]


GOODGION, JONATHON S., Active Response using Host-Based Intrusion Detection System and Software-Defined Networking. AFIT/ENG/MS/17M-032. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A. [CCR]

GUERRERO, JUSTIN, GNSS Receiver Front-End Component Characterization for High Fidelity Signal Deformation Monitoring Applications. AFIT/ENG/MS/17M-033. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: N/A. [ANT]


JOHNSON, DANIEL T., Combined Stereo Vision and Inertial Navigation for Automated Aerial Refueling. AFIT/ENG/MS/17M-036. Faculty Advisor: Dr. Scott L. Nykl. Sponsor: AFRL/RQ. [ANT]

JONES, ANDREW M., Investigations Into Near Infrared Sensitive Solar Cells. AFIT/ENG/MS/17M-037. Faculty Advisor: Capt Robert A. Lake. Sponsor: N/A.

KAVAL, WILLIAM G., Electrostrictive Polymers for Mechanical to Electrical Energy Harvesting. AFIT/ENG/MS/17M-038. Faculty Advisor: Capt Robert A. Lake. Sponsor: AFRL/RY.


KNISELY, ANDREW J., Design and Development of a Unique Two-Way Field Probe System using a Shielded Octocopter. AFIT/ENG/MS/17M-042. Faculty Advisor: Dr. Peter J. Collins. Sponsor: 704 TG.


LUKO, DANIEL, A Sandbox in Which to Learn and Develop Soar Agents. AFIT/ENG/MS/17M-047. Faculty Advisor: Dr. Douglas D. Hodson. Sponsor: N/A. [CCR]


MAYS, CALEB E., Constructing Honeypots to Defend Building Automation Systems. AFIT/ENG/MS/17M-049. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS. [CCR]

MCCARGAR, ELWYN J., Synchronization Algorithms for Programmable Logic Controller Emulation. AFIT/ENG/MS/17M-050. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS. [CCR]


ORTIZ, ROSEMBERG, Scouting in Real-Time Strategy Games: Theory, Methods and Implementation. AFIT/ENG/MS/17M-056. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: N/A.


PETREE, OLIVER W., On the Application of FLO_K and PPTE to Extract the Permittivity and Permeability Tensors of Split Ring Resonator Structures. AFIT/ENG/MS/17M-058. Faculty Advisor: Maj Michael D. Seal. Sponsor: N/A.

PLUMLEY, EVAN G., A Framework for Categorization of Industrial Control System Cyber Training Environments. AFIT/ENG/MS/17M-059. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS. [CCR]


POST, CASSANDRA R., Towards Automation of Tipping and Cueing between Small Satellites in a Constellation. AFIT/ENG/MS/17M-061. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: NPS.


STROM, ALEX R., *Correction of Stair Mode for an Optical Phased Array using an ArrayTilt Estimator.* AFIT/ENG/MS/17M-073. Faculty Advisor: Lt Col Milo W. Hyde. Sponsor: AFRL/RY.


UMODU, KEBIN, *Hypergame Analysis of Cyber Systems.* AFIT/ENG/MS/17M-075. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: N/A.


WEATHERS, DAVID L., *Sound Based Positioning.* AFIT/ENG/MS/17M-081. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RY. [ANT]
WIREMAN, MARK J., Signal Deformation Analysis of the GLONASS Constellation using Chip Shape Processing. AFIT/ENG/MS/17M-082. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: AFRL/Ry. [ANT]

YANTERI, ERHAN E., Analysis of Small Muscle Movement Effects on EEG Signals. AFIT/ENG/MS/16D-051. Faculty Advisor: Dr. Brett J. Borghetti. Sponsor: AFOSR.


YIELDING, NICHOLAS J., Statistically Applied Non-Uniformity Correction. AFIT/ENG/MS/17M-084. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

5.2.3. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliations are listed in [ ] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BETANCES, JOAN A., Maj, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2016 (AFIT/ENG); BSEE, Walla Walla University, 2003; MS, Air Force Institute of Technology, 2012; PhD, Electrical Engineering, Air Force Institute of Technology, 2016. Maj Betances’ research interests include software-defined radios, cognitive radios, and wireless security. He is a member of Eta Kappa Nu and Tau Beta Pi honor societies. AFIT research center affiliation(s): ANT and CSRA. Tel. 937-255-3636 x3305, email: Joan.Betancesjorge@afit.edu

Sponsor Funded Research Projects


Referenced Conference Papers Accepted on the Basis of Full Paper Review


BINDEWALD, JASON M., Maj, Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2015 (AFIT/ENG); BA, Computer Science, Gettysburg College, 2005; MS, Cyber Operations, Air Force Institute of Technology, 2015; PhD, Computer Science, Air Force Institute of Technology, 2015. Maj Bindewald’s research interests include human-machine teaming, machine learning, autonomous agents, and player modeling. He is a member of AAAI, HFES, and Tau Beta Pi engineering honorary society. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-3636 x4614, email: Jason.Bindewald@afit.edu

Sponsor Funded Research Projects


“Cyber Operations and Behavior Modeling in AFSIM.” Sponsor: AF/A9. Funding: $59,000 – Bindewald 34%, Hodson 33%, Peterson 33%. [CCR]

Referenced Conference Papers Accepted on the Basis of Full Paper Review


Referenced Conference Papers Accepted on the Basis of Abstract Review


BORGHETTI, BRETT J.,
Associate Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 2008 (AFIT/ENG); BSEE, Worcester Polytechnic Institute, 1992; MSCS, Air Force Institute of
Technology, 1996; PhD, Computer Science, University of Minnesota, 2006. Dr. Borghetti’s research interests include
machine learning, autonomous agents, and multi-agent systems. AFIT research center affiliation(s): ANT and CCR.
Tel. 937-255-3636 x4612, email: Brett.Borghetti@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

[CCR]

REFEREED JOURNAL PUBLICATIONS

memory structure model temporal dependencies improving cognitive workload estimation,” Pattern Recognition

Neuroergonomic Modeling Approach,” Human Factors, Vol. 59, No. 1, Feb 2017, pp. 134-146. doi:
10.1177/0018720816672308. [ANT]

Rusnock, C.F., and Borghetti, B.J., “Workload Profiles: A continuous Measure of Mental workload,” International

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

International Conference on Machine Learning and Applications (ICMLA’16), December 18-20, 2016, Anaheim,
California, USA. [ANT]

Mash, R.L., Borghetti, B.J., Pecarina, J.M., “Improved Aircraft Recognition for Aerial Refueling through Data
Augmentation in convolutional Neural Networks,” Proceedings of the 12th International Symposium on visual
Computing (ISVC’16), December 12-14, 2016, Las Vegas, Nevada, USA. [ANT]

BROWN, FRANK M.,
Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment
Date: 1961 (AFIT/ENG); BS, MS, PhD, The Ohio State University. Dr. Brown’s research interests are discrete
mathematics and operations research.

CAIN, STEPHEN C.,
Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 2003 (AFIT/ENG); BSEE, University of Notre Dame, 1992; MSEE, Michigan Technological
University, 1994; PhD, University of Dayton, 2001. Dr. Cain’s research interests include electro-optics, remote
sensing, and signal processing. Tel. 937-255-3636 x4716, email: Stephen.Cain@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Improved Resident Space Object Detection via Atmospheric Scintillation Effects.” Sponsor: AFOSR. Funding:
$42,136 – Cain 50%, Vitayaudom 50%.

REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PATENT APPLICATIONS


INVENTION DISCLOSURES


CANCIANI, AARON J., Capt,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2015 (AFIT/ENG); BSEE, Air Force Academy, 2010; MSEE, Air Force Institute of Technology, 2012; PhD, Electrical Engineering, Air Force Institute of Technology, 2016. Capt Canciani’s research interests include GPS-alternative navigation systems using environmental signals. He is a member of The Institute of Navigation (ION). AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x4618, email: Aaron.Canciani@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Magnetic Anomaly Navigation for Naval Platforms.” Sponsor: ONR. Funding: $250,000. [ANT]

“Cooperative Navigation and Magnetic/Vision Navigation Approaches.” Sponsor: AFRL/RW. Funding: $100,000 – Canciani 80%, Raquet 20%. [ANT]

REFEREEED JOURNAL PUBLICATIONS


CANCIANI, AARON J., Capt,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2015 (AFIT/ENG); BSEE, Air Force Academy, 2010; MSEE, Air Force Institute of Technology, 2012; PhD, Electrical Engineering, Air Force Institute of Technology, 2016. Capt Canciani’s research interests include GPS-alternative navigation systems using environmental signals. He is a member of The Institute of Navigation (ION). AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x4618, email: Aaron.Canciani@afit.edu

REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


CASEY, DANIEL J., Maj,
Instructor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2016 (AFIT/ENG); BS, Computer Science, United States Air Force Academy, 2006; MS, Computer Science, Southern Methodist University, 2009. Maj Casey’s research interests include software defined networking and reverse engineering. He is a member of Tau Beta Pi Engineering Honor Society. AFIT research center affiliation(s): CCR. Tel 937-255-3636 x4613, email: Daniel.Casey@afit.edu

CHANDRAHALIM, HENGKY,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2017 (AFIT/ENG); BSC, The Ohio State University, 2000; MEng, Cornell University, 2004; MSc, Cornell University, 2008; PhD, Electrical and Computer Engineering, Cornell University, 2009. Dr. Chandrahalim’s research interests include mutually enhancing electronic, phononic, and photonic multifunctional microsystems, fabrication techniques for novel integrated nanosystems, and molecular scale sensing. Tel. 937-255-3636 x4483, email: Hengky.Chandrahalim@afit.edu

COLLINS, PETER J.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2006 (AFIT/ENG); BA, Bethel College, MN, 1985; BSEE, University of Minnesota, 1985; MSEE, Air Force Institute of Technology, 1990; PhD, Air Force Institute of Technology, 1996. His research interests include low observables, computational electromagnetics, radar cross section metrology, remote sensing, and electromagnetic material design and analysis. He is a senior member of the IEEE. AFIT research center affiliation(s): ANT, CCR, and CSRA. Tel. 937-255-3636 x7256, email: Peter.Collins@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

Knisely, Andrew and Collins, Peter J., “Utilizing A Shielded Drone As A Two-Way Field Probe At A Radar Cross Section Range,” The 38th Antenna Measurement Techniques Association Symposium, Austin, Texas, 30 October – 4 November 2016. [ANT]


CORBELL, PHILLIP M., Lt Col,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2014 (AFIT/ENG); BSEE, Southern Illinois University, 1998; MSEE, Air Force Institute of Technology, 2000; PhD, Air Force Institute of Technology, 2006. Lt Col Corbell’s research interests include Electronic Warfare, Navigation Warfare, Waveform Diversity, Phased array, Adaptive, Cognitive, MIMO, multi-static MTI Radar architectures, Software Defined Radios and other disruptive technologies. He is a member of Tau Beta Pi, Eta Kappa Nu, Alpha Lambda Delta, and IEEE. AFIT research center affiliation(s): ANT, CCR, and CSRA. Tel. 937-255-3636 x4370, email: Phillip.Corbell@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“GNSS Timing Testbed.” Sponsor: Undisclosed. Funding: $200,000. [ANT]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


COUTU, RONALD, A., Jr.,
Adjunct Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2008 (AFIT/ENG); BSEE, University of Massachusetts, Amherst, 1993; MSEE, California Polytechnic (CalPoly) State University, San Luis Obispo, 1995; PhD, Air Force Institute of Technology, 2004. Dr. Coutu’s research interests include microelectronics, microelectromechanical systems (MEMS) and MEMS fabrication with emphasis on micro electrical contacts, phase change materials, tunable metamaterials and terahertz components. His areas of expertise include design, fabrication, and test of micro/nano devices. He is a member of Tau Beta Pi, Eta Kappa Nu, SEM, SPIE, MRS, and a Senior Member of the IEEE.

DAVIS, NATHANIEL J., IV,
Professor Emeritus, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2005 (AFIT/ENG); BSEE, Virginia Polytechnic Institute and State University, 1976; MSEE, Virginia Polytechnic Institute and State University, 1977; PhD, Purdue University, 1985. Dr. Davis’ research interests include computer communications networks, cyber operations, and large scale computer architectures. He is a senior member of the IEEE and a member of the Sigma Xi, Eta Kappa Nu, and Tau Beta Pi honorary societies.

DEVER, MATTHEW C.,
Associate Director of the AF Cyberspace Technical Center of Excellence and the Center for Cyberspace Research, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2014 (AFIT/ENG); BS Communications, Ohio University, 1986; MS, Cybersecurity, University of Maryland University College, 2013. Mr. Dever’s research interests include weapon system vulnerabilities and mitigation strategies, cyber operations, and legal
GRAHAM, SCOTT R.,
Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 2015 (AFIT/ENG); BS, Electrical Engineering, Brigham Young University, 1993; MS, Electrical
Engineering, Air Force Institute of Technology, 1999; PhD, Electrical Engineering, University of Illinois at Urbana-
Champaign, 2004. Dr. Graham’s research interests include the intersection between real physical systems and the
computers that control them. Specific areas of interest include trusted avionics and vehicular computer systems. AFIT
research center affiliation(s): CCR. Tel. 937-255-3636 x4491, email: Matthew.Dever@afit.edu

REFEREED JOURNAL PUBLICATIONS


Issue 3, 2017. [CCR]

Badenhop, C.W., Graham, S.R., Ramsey, B.W., Mullins, B.E., Mailloux, L.O., “The Z-Wave Routing Protocol and

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

European Conference on Cyber Warfare and Security (ECCWS 2017), Jun 2017. [CCR]

tracking of multiple connections,” International Conference of Critical Infrastructure Protection, Mar 2017. [CCR]

Warfare and Security (ICCWS 2017), Mar 2017. [CCR]

Conference on Cyber Warfare and Security (ICCWS 2017), Mar 2017. [CCR]

Cyber Warfare and Security (ICCWS 2017), Mar 2017. [CCR]

GUNAWARDENA, SANJEEV,
Research Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 2014 (AFIT/ENG); BSEE & BS, Engineering Physics, Ohio University, 1997; MSEE, Ohio
University, 2000; PhD, Ohio University, 2007. Dr. Gunawardena’s research interests include RF design, digital
systems design, reconfigurable computing, software-defined radio, navigation warfare, and all aspects of GNSS
receivers and associated signal processing. AFIT research center affiliation(s): ANT, CCR, and CSRA.
Tel. 937-255-3636 x4659, email: Sanjeev.Gunawardena@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“GPS Waveform Prototyping Platform (GWPP).” Sponsor: AFRL/RV. Funding: $300,000 – Gunawardena 90%,
Raquet 10%. [ANT]

“GNSS Testbed Development.” Sponsor: AFRL/RY. Funding: $454,000. [ANT]
Sponsor: AFRL/RV. Funding: $67,500. [CSRA]

REFEREED JOURNAL PUBLICATIONS

S. Gunawardena, J. Raquet, M. Carroll, “Innovation: Correlator Beamforming for Low-Cost Multipath Mitigation,”
GPS World, January 2017. [ANT]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


S. Gunawardena, “Correlator Beamforming for Multipath Mitigation in High-Fidelity GNSS Monitoring Applications,” Invited Talk, Dayton Section of The Institute of Navigation, Dayton, Ohio, May 2017. [ANT]


HARTRUM, THOMAS C.,
Associate Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1977 (AFIT/ENG); BEE, The Ohio State University, 1969; MS, The Ohio State University, 1969; PhD, The Ohio State University, 1973; MBA, Wright State University, 1979. Dr. Hartrum’s field of expertise is software engineering.

HAVRILLA, MICHAEL J.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2002 (AFIT/ENG); BS, Michigan State University, 1987; MSEE, Michigan State University, 1989; PhD, Michigan State University, 2001. Dr. Havrilla’s research interests include electromagnetic theory, guided wave theory and applications, electromagnetics of complex media, material characterization, low observables, electromagnetic scattering, and antenna theory. He is a member of HKN and Sigma Xi, Senior member of the IEEE, and a Full Member of the International Union of Radio Science-Commission B. Tel. 937-255-3636 x4582, email: Michael.Havrilla@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Material Measurement Laboratory Research.” Sponsor: AFRL/RY. Funding: $264,800.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HODSON, DOUGLAS D.,
Associate Professor of Software Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2011 (AFIT/ENG); BS, Physics, Wright State University, 1985; MS, Electro-Optics, University of Dayton, 1987; MBA, University of Dayton, 1999; PhD, Computer Engineering, Air Force Institute of Technology, 2009. Dr. Hodson’s research interests include real-time distributed simulation architectures for training, test and analysis, networks, design patterns for modeling radar, and infrared effects. His research interests also include the modeling and simulation of Quantum Key Distribution protocols. AFIT research center affiliation(s): ANT, CCR, COA, and CSRA. Tel. 937-255-3636 x4719, email: Douglas.Hodson@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“AFSIM Maturation and Capability Improvements.” Sponsor: AFRL/RQ. Funding: $34,269 – Hodson 50%, Peterson 50%. [ANT/CCR]

REFERRED JOURNAL PUBLICATIONS


REFERRED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS


Associate Editor, Journal of Defense Modeling and Simulation.
HOPKINSON, KENNETH M.,
Interim Department Head, Professor, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG); BSCS, Rensselaer Polytechnic Institute, 1997; MSCS, Cornell University, 2002; PhD, Cornell University, 2004. Dr. Hopkinson research interests include wired and wireless networking, fault tolerant and reliable distributed systems, middleware, operating systems, net-centric warfare, network security, cloud computing, machine learning applied to remote sensing, and the use of networks to enhance critical infrastructures. Dr. Hopkinson is a Senior Member of the IEEE, a Senior Member of the ACM, and a member of the Upsilon Pi Epsilon, and the Eta Kappa Nu honorary societies. AFIT research center affiliation(s): ANT, CCR, CSRA, and CTISR. Tel. 937-255-3636 x4579, email: Kenneth.Hopkinson@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Cognitive and Mobile Networks.” Sponsor: AFRL/RI. Funding: $50,000.

“A Cognitive Recommender System for a Closed Feedback Tasking Loop.” Sponsor: NPS. Funding: $150,000 – Hopkinson 40%, McBee 10%, Oxley 40%, Schubert Kabban 5%. [CTISR]

“Using Cognitive Radios to Enhance Communications Capabilities.” Sponsor: Undisclosed. Funding: $50,000.


“Advancing Software Defined Radios for Use in Space Communications.” Sponsor: AFRL/RV. Funding: $54,000. [CSRA]

SPONSOR FUNDED EDUCATIONAL PROJECTS

“Enhancing Cybersecurity Education with Adversarial Thinking.” Sponsor: NSA. Funding: $100,000. [CCR]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS

HOUPIS, CONSTANTINE H.,
Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 1952 (AFIT/ENG); BS, University of Illinois, 1947; MS, University of Illinois, 1948; PhD,
University of Wyoming, 1971. Dr. Houpis’ research interests include guidance and control of aerospace vehicles,
application of optimal control theory to engineering systems, flight control systems, digital control systems,
computational and numerical methods for control systems design, linear and nonlinear control theory, multivariable
theory, and quantitative feedback theory. Dr. Houpis has published numerous technical articles and textbooks. He is a
registered professional engineer and a Fellow of the IEEE.

HYDE, MILO W. IV, Maj,
Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 2010 (AFIT/ENG); BS, Computer Engineering, Georgia Institute of Technology, 2001; MSEE, Air
Force Institute of Technology, 2006; PhD, Electrical Engineering, Air Force Institute of Technology, 2010. Maj
Hyde’s research interests include electromagnetic material characterization, optical material characterization, guided-
wave theory, scattering, and optics. He is a senior member of IEEE and SPIE, and a member of OSA. AFIT research
center affiliation(s): CDE and CTISR.

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS

Xifeng Xiao, David G. Voelz, Santasri Bose-Pillai, and Milo W. Hyde IV, “Modeling random screens for predefined
electromagnetic Gaussian Schell-model sources,” Optics Express, Vol. 25, No. 4, pp. 3656-3665, Feb 2017, doi:
10.1364/OE.25.003656. JIF: 3.148. [CDE]

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optical sources using phase-only spatial light modulators,” Physical Review Applied, Vol. 6, No. 6, 064030 pp. 12,

Milo W. Hyde IV, Santasri Bose-Pillai, Xifeng Xiao, and David G. Voelz, “A fast and efficient method for producing
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Noah R. Van Zandt, Milo W. Hyde IV, Santasri Bose-Pillai, David G. Voelz, Xifeng Xiao, and Steven T. Fiorino,
“Synthesizing time-evolving partially-coherent Schell-model sources,” Optics Communications, Vol. 387, pp. 377-

Milo W. Hyde IV and Glenn A. Tyler, “Temporal coherence effects on target-based phasing of laser arrays,” Journal
JIF: 1.457. [CDE]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

Milo W. Hyde IV, Glenn A. Tyler, and Carlos Rosado Garcia, “Target-in-the-loop phasing of a fiber laser array fed
10192, pp. 7, Anaheim, CA, Apr 2017. [CDE]

Noah Van Zandt, Milo Hyde, and Santasri Basu, “Simulating time-evolving non-cross-spectrally pure Schell-model
sources,” IEEE Aerospace Conference (AeroConf), pp. 9, Big Sky, MT, Mar 2017. [CDE]

A. Knisely, M. Hyde, M. Havrilla, and P. Collins, “Uniaxial anisotropic material measurement using a single port
waveguide probe,” Antenna Measurement Techniques Association (AMTA) 38th Annual Meeting & Symposium,
pp. 377-382, Austin, TX, Nov 2016.
REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES


JACKSON, JULIE A.,
Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2009 (AFIT/ENG); BS, Electrical Engineering, Wright State University, 2002; MS, Electrical Engineering, The Ohio State University, 2004; PhD, Electrical Engineering, The Ohio State University 2009. Dr. Jackson’s research interests include electromagnetic and statistical modeling, radar imaging algorithms, and radar signal exploitation. She is a member of IEEE, Eta Kappa Nu, and Tau Beta Pi. AFIT research center affiliation(s): CTISR. Tel. 937-255-3636 x4678, email: Julie.Jackson@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Multistatic Receiver Optimization and Target Detection.” Sponsor: AFRL/R. Funding: $60,000 – Jackson 70%, Lievesay 30%.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


LAKE, ROBERT A. Capt,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment date: 2015 (AFIT/ENG); BE, Wentworth Institute of Technology, 1999; BSEE, University of Massachusetts at Lowell, 2008; MSEE, Air Force Institute of Technology, 2010; PhD, Electrical Engineering, Air Force Institute of Technology, 2014. Capt Lake’s research interests include microelectronics, MEMS, microfabrication, MEMS buckled membranes, and bistable compliant mechanisms. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4550, email: Robert.Lake@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Experimental Investigation of Thin Film Spreading Resistance Modeling for Improved Micro-Contact Performance.” Sponsor: AFOSR. Funding: $47,397.


“Germanium on Silicon Phototransistor.” Sponsor: AFRL/RX. Funding: $25,000.


“Germanium on Silicon Phototransistor.” Sponsor: AFRL/RX. Funding: $25,000.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES

LAMONT, GARY B.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1970 (AFIT/ENG); BS, Physics, University of Minnesota, 1961; MSEE, University of Minnesota, 1967; PhD, University of Minnesota, 1970. Dr. Lamont teaches courses in computer science and computer engineering. His research interests include: evolutionary computation, artificial immune systems, intrusion and anomaly detection, information security, parallel and distributed computation, combinatorial optimization problems (single objective and multi-objective), software engineering, digital signal processing, and intelligent and distributed control. He has advised many MS and PhD students in these disciplines. Dr. Lamont has authored several textbooks (Multi-Objective EAs, Computer Control), various book chapters, as well as numerous papers. Dr. Lamont was also an engineering systems analyst for the Honeywell Aerospace Division for six years. He is a member of IEEE (senior member) ACM, ASEE, SIAM, Tau Beta Pi, and Eta Kappa Nu. Tel. 937-255-3636 x4718, email: Gary.Lamont@afit.edu

LAURVICK, TOD V. Maj,
Assistant Professor of Electric Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2016 (AFIT/ENG); BSEE, Michigan Technological University, 1995; MS, Air Force Institute of Technology, 2009; PhD, Electrical Engineering, Air Force Institute of Technology, 2016. Maj Laurvick’s research interests include advancement of micro/nanoscale fabrication techniques and how they apply to sensing and actuation. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4382, email: Tod.Laurvick@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS
“Plasmonic Grating Geometries and Wavelength-Dependent Focus Depth in IR Detectors.” Sponsor: AFRL/RV. Funding: $13,500. [CSRA]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

LEISHMAN, ROBERT C.,
Research Assistant Professor of Autonomy, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2016 (AFIT/ENG); BS, Utah State University, 2006; MS, Brigham Young University, 2009; PhD, Mechanical Engineering, Brigham Young University, 2013. Dr. Leishman’s research interests include guidance, navigation and control of small unmanned aerial vehicles, GPS-denied navigation using vision systems, and autonomous systems and robotics. He is a member of The Institute of Navigation (ION) and The Institute of Electrical and Electronics Engineers (IEEE), including the IEEE Controls Systems Society (CSS) and IEEE Robotics and Automation Society (RAS). AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x4755, email: Robert.Leishman@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS
“Robust Back-end Navigation Techniques.” Sponsor: AFRL/RV. Funding: $25,000. [ANT]
REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


LIEVSAV, JAMES R., Maj.
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering. AFIT Appointment Date: 2017 (AFIT/ENG); BSEE, United States Air Force Academy, 2006; MSEE, Air Force Institute of Technology, 2011; PhD, Electrical Engineering, University of Oklahoma, 2017. Maj Lievsay’s research interests include radar and array signal processing. Tel. 937-255-3636 x3369, email: James.Lievsay@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


LIN, ALAN C. Maj.
Assistant Professor of Computer Science, Department of Electrical and Computer Engineering. AFIT Appointment Date: 2015 (AFIT/ENG); BSCE, Rutgers University, 2004; MSCS, Air Force Institute of Technology, 2008; PhD, Computer Science, Air Force Institute of Technology, 2015. Maj Lin’s research interests include cyber security and education, serious gaming and gamification, data mining, space systems, and software engineering. He is a member of Tau Beta Pi. AFIT research center affiliation(s): CCR. Tel. 937-255-3636 x4757, email: Alan.Lin@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Multi-domain Scenario-based Wargaming.” Sponsor: 711 HPW. Funding: $29,973 – Lin 67%, Peterson 33%. [CCR]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


MARTIN, RICHARD K.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering. AFIT Appointment Date: 2004 (AFIT/ENG); BS, Electrical Engineering and Physics, University of Maryland, 1999; MS, Electrical Engineering, Cornell University, 2001; PhD, Electrical Engineering, Cornell University, 2004. Dr. Martin’s research interests include source localization, navigation, radio tomographic imaging, and 3D laser radar imaging. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-3636 x4625, email: Richard.Martin@afit.edu
SPONSOR FUNDED RESEARCH PROJECTS


“Analytical Support for Hardware Assurance.” Sponsor: AFRL/RY. Funding: $14,302. [CCR]

SPONSOR FUNDED EDUCATIONAL PROJECTS

“Learning about Signals through Tinkering and Game-Playing.” Sponsor: ONR (WWU). Funding: $127,600. [CCR]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MAYBECK, PETER S.,
Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1973 (AFIT/ENG); BS, Massachusetts Institute of Technology, 1968; PhD, Massachusetts Institute of Technology, 1972. Dr. Maybeck’s research interests include optimal estimation and stochastic control Kalman filtering, adaptive estimation, pointing and tracking, optimally aided inertial navigation systems, and multiple model adaptive filtering. He is the author of the widely recognized three-volume reference text, “Stochastic Models, Estimation and Control,” and over 100 technical articles. Dr. Maybeck has received numerous national and local awards including the C. Holmes MacDonald Distinguished Young Electrical Engineering Teach and the ASEE Frederick Emmons Terman Award as the outstanding Electrical Engineering Professor in the US and 1985. He is a fellow of the IEEE. AFIT research center affiliation(s): CCR.

MERKLE, LAURENCE D.,
Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2015 (AFIT/ENG); BS, Computer and Systems Engineering, Rensselaer Polytechnic Institute, 1987; MSCE, Air Force Institute of Technology, 1992; PhD, Computer Engineering, Air Force Institute of Technology, 1996. Dr. Merkle’s research interests include Serious Games, Quantum Information Systems, Computational Science and Engineering, Computing Education, Evolutionary Computation, Secure Computing, Space Situational Awareness. AFIT research center affiliation(s): ANT, CCR, and CSRA. Tel. 937-255-3636 x4526, email: Laurence.Merkle@afit.edu

MILLAR, JEREMY R., Maj,
Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2017 (AFIT/ENG); BS, University of Tennessee, 2000; MS, Air Force Institute of Technology, 2009; PhD, Computer Science, Air Force Institute of Technology, 2017. Maj Millar’s research interests include parallel and distributed systems, modelling and simulation, and software engineering. AFIT research center affiliation(s): CCR.
Tel. 937-255-3636 x3368, email: Jeremy.Millar@afit.edu

MILLS, ROBERT F.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2003 (AFIT/ENG); BS, Electrical Engineering, Montana State University, 1983; MS, Electrical Engineering, AFIT, 1987; PhD, Electrical Engineering, University of Kansas, 1994. Dr. Mills’ research interests include electronic warfare, network security, and cyber resilience in weapon systems. He is a Senior Member of the IEEE and is a member of the Eta Kappa Nu and Tau Beta Pi honor societies. AFIT research center affiliation(s): CCR.
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MULLINS, BARRY E.,
Professor of Computer Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2004 (AFIT/ENG); BS, Computer Engineering, University of Evansville, 1983; MS, Computer Engineering, Air Force Institute of Technology, 1987; PhD, Electrical Engineering, Virginia Polytechnic Institute and State University, 1997. Dr. Mullins’ research interests cyber operations, critical infrastructure protection, cyber physical protection, computer/network/embedded systems security, wired/wireless networking, and reverse engineering.
Tel. 937-255-3636 x7979, email: Barry.Mullins@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS


NYKL, SCOTT L.,
Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2015 (AFIT/ENG); BS, Software Engineering, University of Wisconsin-Platteville, 2006; MS, Computer Science, Ohio University, 2012; PhD, Computer Science, Ohio University, 2013. Dr. Nykl’s research interests include Computer Graphics, Interactive 3D Graphics, Level of Detail, Image-Based Rendering, GPGPU Programming/Parallel Computation, Distributed Real Time Visualizations, Computer Vision, Computational Geometry, Sensor Fusion, Linear Algebra, Numerical Analysis, Synthetic Vision (SVS), Augmented Reality (AR) Parallel/ Concurrent Programming, Multi-Core/Multi-Threading, Algorithms, Big Data, and Networking. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-3636 x4395, email: Scott.Nykl@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Automated Aerial Refueling: Precise Relative Navigation from Stereo Vision, Phase II.” Sponsor: AFRL/RQ. Funding: $120,000 – Nykl 50%, Pecarina 50%. [ANT]

“Reconnaissance Improvement through Secure, Reduced Bandwidth Communication and Cooperative Navigation Using Jetson TX1s (New).” Sponsor: Undisclosed. Funding: $130,789 – Nykl 30%, Graham 30%, Pierce 30%, Carbino 10%. [ANT/CCR]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PACHTER, MEIR,
Professor, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1993 (AFIT/ENG); BS, Israel Institute of Technology, 1967; MS, Israel Institute of Technology, 1969; PhD, Israel Institute of Technology, 1975. Dr. Pachter's fields of expertise include automatic control of aircraft and missiles, adaptive control and system identification, inertial and GPS navigation, autonomous control/neural networks/fuzzy logic control, nonlinear control, and applied mathematics. Dr. Pachter has published papers in these areas and in differential games, robotics, and the theory of computational geometry. Dr. Pachter is interested in the application of mathematics to the solution of engineering and scientific problems. His current areas of interest include military operations optimization, cooperative control, estimation and optimization, statistical signal processing, adaptive optics, inertial navigation, and GPS navigation. For his work on adaptive and reconfigurable flight control, he received the AFRL Air Vehicle’s Directorate Foulous Award for 1994 together with Phil Chandler and Mark Mears. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-3636 x7247, email: Meir.Pachter@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Cooperative Control.” Sponsor: AFRL/RQ. Funding: $40,000. [ANT]

REFEREEED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


PECARINA, JOHN M., Maj,
Computer Science and Engineering Division Chief, Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2013 (AFIT/ENG); BS, Angelo State University, 2001; MS, Air Force Institute of Technology, 2008; PhD, AFIT, 2013. Maj Pecarina’s research interests include cognitive systems, mission centric workflow analysis, and information framework optimization.

PETERSON, GILBERT L.,
Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2002 (AFIT/ENG); BS, Architecture University of Texas at Arlington, 1995; MS, Computer Science, University of Texas at Arlington, 1998; PhD, University of Texas at Arlington, 2001. Dr. Peterson’s research interests include uncertainty in artificial intelligence, robotics, machine learning, and digital forensics. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-6565 x4281, email: Gilbert.Peterson@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS

Peterson, G. and Shenoi, S., Advances in Digital Forensics XII, Springer-Verlag, 2016. [CCR]


PATENT APPLICATIONS

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


PIERCE, SCOTT J., Maj,
Deputy Director of Autonomy and Navigation Technology Center, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2014 (AFIT/ENG); BS, Electrical Engineering, Brigham Young University, 2002; MSEE, Air Force Institute of Technology, 2008; PhD, Air Force Institute of Technology, 2015. Maj Pierce’s research interests include image-aided navigation, autonomous control, cooperative navigation, sensor fusion, and flight path optimization. He is a member of ION and IEEE. AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x3419, email: Scott.Pierce@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Trade Study for Army Training Position/Attitude System.” Sponsor: USA RDEC. Funding: $200,000 – Pierce 80%, Raquet 20%. [ANT]

PYATI, VITTAL P.,
Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1983 (AFIT/ENG); BE, University of Madras, India, 1953; MSE, Marquette University, 1962; PhD, Electrical Engineering, University of Michigan, 1966. Dr. Pyati’s fields of expertise include electromagnetics, radar, low observables, and electronic ware. Dr. Pyati has authored over 40 publications in journals and DOD conferences. He has been a consultant to various Air Force organizations.

RAMSEY, BENJAMIN W. P., Maj,
Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2014 (AFIT/ENG); BS, Electrical Engineering, North Carolina State University, 2004; MS, Space Studies, American Military University, 2009; MS, Electrical Engineering, Air Force Institute of Technology, 2009; PhD, Computer Science, Air Force Institute of Technology, 2014. Maj Ramsey’s interests include wireless computer networks and critical infrastructure protection. He is a member of IEEE, Eta Kappa Nu, and Tau Beta Pi.

RAQUET, JOHN F.,
Director of the Autonomy and Navigation Technology Center, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1998 (AFIT/ENG); BS, US Air Force Academy, 1989; MS, Massachusetts Institute of Technology, 1991; PhD, University of Calgary, Canada, 1998. Dr. Raquet's areas of interest include Global Positioning System (GPS) precise positioning, non-GPS precision navigation, optically-aided navigation, navigation 101 using signals of opportunity, integration of MEMS-based inertial measurement units with other sensors, autonomous vehicle navigation and control, and electromagnetic interference and mitigation techniques affecting GPS performance. AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x4580, email: John.Raquet@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Support for Alternative Navigation Research.” Sponsor: DARPA. Funding: $9,836 – Raquet 80%, Pierce 20%. [ANT]

“Multi-Sensor Navigation Demonstration.” Sponsor: USA CERDEC. Funding: $450,000. [ANT]
“Ultra-High Accuracy Reference System (UHARS) Support.” Sponsor: 746 TS. Funding: $100,000. [ANT]

“Trajectory Determination and Analysis Software (TDAS) Development Planning.” Sponsor: 812 TSS. Funding: $150,000. [ANT]

“PNT Collaboration.” Sponsor: Lockheed Martin. Funding: $100,000 – Raquet 50%, Pierce 10%, Canciani 40%. [ANT]

“ANT Center and Laboratory Support per MOA between AFIT and AFRL.” Sponsor: AFRL/RY. Funding: $200,000 – Raquet 50%, Pierce 50%. [ANT]

“Non-GPS Smartphone Navigation.” Sponsor: AFRL/RI. Funding: $173,000. [ANT]

“MAGPIE Project Support.” Sponsor: AFRL/RW. Funding: $53,523. [ANT]

“Support for PNT Modeling and Simulation.” Sponsor: USA CERDEC. Funding: $75,000 – Raquet 50%, Leishman 25%, Canciani 25%. [ANT]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


J. Raquet, “UAVs vs. Natural Autonomous Vehicles (NAVs)—Are We Closing the Gap?” Proceedings of ION GNSS+ 2016, pp. 1558-1584, Portland, OR, 2016. [ANT]


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


REITH, MARK G., Lt Col,
Director of Center for Cyberspace Research, Assistant Professor of Computer Science, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2016 (AFIT/ENG); BS, Computer Science, University of Portland, 1999. MSCS, Air Force Institute of Technology, 2003; PhD, Computer Science, University of Texas at San Antonio, 2009. Lt Col Reith’s research interests include cyber warfare theory and operation, software engineering, and software security and exploitation. AFIT research center affiliation(s): CCR. Tel. 937-255-3636 x4603, email: Mark.Reith@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

SEAL, MICHAEL D., Maj,
Deputy Department Head, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2013 (AFIT/ENG); BSEE, University of Missouri-Rolla, 2002; MSEE, Air Force Institute of Technology, 2007; PhD, Air Force Institute of Technology, 2013. Maj Seal’s research interests are Plasmonic & Frequency Selective Surfaces, Laser Detection & Ranging (LADAR), and optical metrology. Member of SPIE. Tel. 937-255-3636 x3369, email: Michael.Seal@afit.edu

PATENT APPLICATION

INVENTION DISCLOSURES

STONE, SAMUEL J., Maj,
Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2013 (AFIT/ENG); BS, Computer Engineering, Wright State University, 2003; MS, Electrical Engineering, Air Force Institute of Technology, 2008; PhD, Electrical Engineering, Air Force Institute of Technology, 2013. Maj Stone’s research interests include Radio Frequency Intelligence, VLSI design, anti-tamper semiconductor hardware design, counterfeit device detection, and device design verification.

STRINGER, JEREMY P., Lt Col,
Electrical Engineering Division Chief, Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 2013 (AFIT/ENG); BSEE, United States Air Force Academy, 1998; MSEE, Air Force Institute of Technology, 2000; PhD, Air Force Institute of Technology, 2013. Lt Col Stringer’s research interests are Adaptive Beamforming, HF-Direction Finding, Passive Radar, Cognitive Radar, and Computational Electromagnetics. Member of IEEE, HKN, and TBP.

TEMPLE, MICHAEL A.,
Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT Appointment Date: 1996 (AFIT/ENG); BSE, Southern Illinois University, 1985; MSE, Southern Illinois University, 1986; PhD, Air Force Institute of Technology, 1993. Dr. Temple’s research interests include the exploitation of signal (wired, wireless, intentional, unintentional, etc.) Distinct Native Attribute (DNA) features to improve device hardware and/or operation discrimination. This includes application to Radio Frequency (RF-DNA), Wired Signal (WS-DNA), and Correlation Based (CB-DNA) Fingerprinting methods that exploit inherent physical features to enhance authentication of hardware bit-level identities and the operational state of selected devices. Sponsored research activity, as adopted by and/or transitioned to Air Force, Department of Defense, and national agencies as provided approximately $1M annually in R&D Technology benefit. Senior member of IEEE since Jan 2002. AFIT research center affiliation(s): ANT and CCR. Tel. 937-255-3636 x4279, email: Michael.Temple@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Application of RF-DNA to Enhance Transition of Functional Materials, Devices, and Components.” Sponsor: AFRL/RX. Funding: $15,000. [CCR]
REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


TERZUOLI, ANDREW J., Jr.,
Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, AFIT
Appointment Date: 1982 (AFIT/ENG); BS, Electrical Engineering, Polytechnic Institute of Brooklyn, 1969; MS, Electrical Engineering, Massachusetts Institute of Technology, 1970; PhD, Electrical Engineering, The Ohio State University, 1982. Dr. Terzuoli’s research areas have included Antennas and Electromagnetics; Computer Model Based Studies; Application of Parallel Computation, VLSI Technology, and RISC Architecture to Numerical and Transform Methods; Remote Sensing and Communication; Passive RF Sensing; Wave Scattering, Radar Cross Section, and Stealth (LO/CLO) Technology; Machine Vision and Image Processing; and Automated Object Recognition. He has published numerous reports and articles in journals and conference proceedings in these and related areas. His research is funded by various agencies including AFRL and NASIC. Prior to joining AFIT in 1982, Dr. Terzuoli was a research associate at the ElectroScience laboratory at The Ohio State University and was a member of the technical staff at the Bell Telephone Laboratories in New Jersey. He is an active officer of IEEE and a fellow of the Electromagnetics Academy. AFIT research center affiliation(s): CDE, CSRA, and CTISR. Tel. 937-255-3636 x4717, email: Andrew.Terzuoli@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Nuclear Command, Control, and Communications.” Sponsor: AFRL/RI. Funding: $225,000.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


5.3. DEPARTMENT OF ENGINEERING PHYSICS

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5.3.1. DOCTORAL DISSERTATIONS


BURGI, KENNETH W., Reflection Matrix Method for Controlling Light after Reflection from a Diffuse Scattering Surface. AFIT/ENP/DS/16D-011. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

BURLEY, JARRED L., A Computational Tool for Hyperspectral Propagation of NUDET Effects. AFIT/ENP/DS/17S-021. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFTAC. [CDE]

DAILEY, WHITMAN T., Special Features of the Air-to-Space Neutron Transport Problem. AFIT/ENP/DS/17S-022. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

EMMONS, DANIEL J., Analysis of Ar(1s5) Metastable Populations in High Pressure Argon-Helium Gas Discharges. AFIT/ENP/DS/17S-025. Faculty Advisor: Dr. David E. Weeks. Sponsor: DEJTO. [CDE]


GONZALES, ASHLEY E., Kinetics of Graphite Oxidation in Reacting Flow from Imaging Fourier Transform Spectroscopy. AFIT/ENP/DS/17M-093. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO. [CDE]

HALUSKA, NATHAN D., Cascade and Two-Photon Lasing from Two-Photon Excitation of Cesium 62D. AFIT/ENP/DS/17S-026. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO. [CDE]


KANANEN, BRANT T., Luminescence in Lithium Borates. AFIT/ENP/DS/17S-027. Faculty Advisor: Dr. John W. McClory. Sponsor: DTRA.

LOTT, GORDON E., Three-Dimensional Imaging of Cold Atoms in a Magneto-Optical Trap with a Light Field Microscope. AFIT/ENP/DS/17S-029. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RV.


MATTERS, DAVID A., Nuclear Structure of $^{186}$Re. AFIT/ENP/DS/16D-017. Faculty Advisor: Dr. John W. McClory. Sponsor: DNDO.

O'KEEFE, DANIEL S., Oblique Longwave Infrared Atmospheric Compensation. AFIT/ENP/DS/17S-030. Faculty Advisor: Dr. Kevin C. Gross. Sponsor: AFRL/RY. [CTISR]

5.3.2. MASTER'S THESES


CHALAOAPAK, KASIDIT V., Rapid Location and Characterization of Radioactive Sources using an Autonomous Unmanned Aerial Vehicle. AFIT/ENP/MS/17M-090. Faculty Advisor: Dr. Justin A. Clinton. Sponsor: DTRA.


HAWS, DEREK W., Using Principal Component Analysis to Improve Fallout Characterization. AFIT/ENP/MS/17M-096. Faculty Advisor: Dr. John W. McClory. Sponsor: DTRA.

HOEFFNER, ZACHARY W., A Computational Study: The Effect of Hypersonic Plasma Sheaths on Radar Cross Section for Over the Horizon Radar. AFIT/ENP/MS/17M-097. Faculty Advisor: Maj Charlton D. Lewis. Sponsor: NASIC.

LANARI, ANN M., Numerical Wave Optics Investigation of Optical Scatter from Statistically Rough Surface. AFIT/ENP/MS/17M-099. Faculty Advisor: Maj Samuel D. Butler. Sponsor: AFOSR.

LENKER, RONALD C., Characterization of Neutron and Proton Exposure on the Radiation Resistant Bacterium, deinococcus radiodurans. AFIT/ENP/MS/17M-100. Faculty Advisor: LTC Douglas R. Lewis. Sponsor: AFOSR.

LOGAN, JULIE V., Rotating Scatter Mask for Gamma Source Imaging. AFIT/ENP/MS/17M-101. Faculty Advisor: Lt Col Buckley E. O'Day. Sponsor: DTRA.

MOFFETT, KAZ A., Optimization of a Positron Annihilation Lifetime Spectrometer to Measure Negative Point Vacancies in Hydrothermally Grown Single-Crystal Thorium Dioxide. AFIT/ENP/MS/17M-102. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: DNDO.

ROSS, JOHN S., Total Electron Count Variability and Stratospheric Ozone Effects on Solar Backscatter and LWIR Emissions. AFIT/ENP/MS/17M-103. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: N/A. [CDE/CSRA]

SCHULMEISTER, TAYLOR R., Modeling the White Sands Missile Range Fast Burst Reactor using a Discrete Ordinates Code, PENTRAN. AFIT/ENP/MS/17M-104. Faculty Advisor: Lt Col James R. Fee, Jr. Sponsor: AFTAC.

SHELBY, CLINTON A., Tumbler-Snapper Atmospheric Nuclear Test Series Streak Film Analysis. AFIT/ENP/MS/17M-105. Faculty Advisor: Dr. John W. McCloy. Sponsor: NNSA.

THOMAS, SARAHKATIE, Transient Nonlinear Optical Properties of Thin Film Titanium Nitride. AFIT/ENP/MS/17M-106. Faculty Advisor: Maj Manuel R. Ferdinandus. Sponsor: AFOSR.

THORP, ETHAN D., RbHe Potential Energy Surface Sensitivity Study. AFIT/ENP/MS/17M-107. Faculty Advisor: Maj Charlton D. Lewis. Sponsor: MDA.

VIENS, MADILYNN E., Liquid Crystal Performance Limitations due to Thermal Loading and Oblique Incident Angles. AFIT/ENP/MS/17M-108. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.


WURST, NATHAN P., Improved Atmospheric Characterization for Hyperspectral Exploitation. AFIT/ENP/MS/17J-014. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFRL/RX. [CDE]
5.3.3. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliations are listed in [] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BAILEY, WILLIAM F.,
Associate Professor Emeritus of Physics, Department of Engineering Physics, AFIT Appointment Date: 1978 (AFIT/ENP); BS, United States Military Academy, 1964; MS, The Ohio State University, 1966; PhD, Air Force Institute of Technology, 1978. Dr. Bailey’s research interests center on weakly ionized gases and reactive kinetics with special applications to semiconductor processing in gas discharges, shock characterization in ionized flows, and solutions of the inhomogeneous electron kinetic equation. Dr. Bailey has published over 20 papers in refereed conference proceedings and international journals and chaired over 25 theses and dissertations. He is a member of Tau Beta Pi, Sigma Pi Sigma, and Sigma Xi. Tel. 937-255-3636 x4501, email: William.Bailey@afit.edu

BARTLETT, KEVIN S., Lt Col,
Adjunct Professor of Atmospheric Science, Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, University of California, Los Angeles, 1997; MS, Air Force Institute of Technology, 2004; PhD, SUNY-Albany, 2013. Lt Col Bartlett's research covers a wide range of topics in the atmospheric sciences to include problems in numerical weather prediction, dust, turbulence and thunderstorm modeling, as well as lightning, radar and satellite exploitation for space launch, Hypersonic flight, UAV, directed energy and general aviation operations. Before joining AFIT he was Commander, Detachment 1, 18th Weather Squadron, and Staff Weather Officer to the 3rd Infantry and 10th Mountain Divisions in Iraq 2008 and deployed to Afghanistan as the Chief Meteorologist for NATO and US Forces in 2014. He is a member of the American Meteorological Society, the Air Weather Association, and the American Geophysical Union.

BICKLEY, ABIGAIL, A.
Research Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2017 (AFIT/ENP); BA, Dartmouth College, 2000; PhD, University of Maryland, 2004. Dr. Bickley’s expertise is in nuclear forensics and radiation transport. Her current research focuses on the characterization of radiological and nuclear samples for nuclear forensics signature identification and software development of statistical analysis tools for nuclear forensics applications. In addition, Dr. Bickley is examining neutral particle transport in the space environment. Before joining AFIT, she was on the faculty of Michigan State University and worked in nuclear treaty monitoring. Dr. Bickley is a member of the American Physical Society (APS) and American Chemical Society (ACS). Tel. 937-255-3636 x4555, email: Abigail.Bickley@afit.edu

BOSE-PILLAI, SANTASRI R.
Research Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2011 (AFIT/ENP); BE, Electrical Engineering, Jadavpur University (India), 2000; MS, Electrical Engineering, New Mexico State University, 2005; PhD, Electrical Engineering (with emphasis on Optics), New Mexico State University, 2008. Dr. Bose-Pillai’s research interests are in propagation and imaging through the atmosphere, generation of partially coherent sources, telescope pointing and tracking and laser communications through free space. At AFIT, she has been working on remote characterization of atmospheric turbulence using imaging and other optical techniques. She has also been investigating methods for generation of different types of partially coherent sources. Dr. Bose-Pillai has more than fifty journal and conference publications to her credit. Prior to joining AFIT, she was a Visiting Assistant Professor in the Physics and Optical Engineering Department at Rose-Hulman Institute of Technology, Terre Haute, IN. She is a senior member of SPIE and a regular member of OSA and DEPS. AFIT research center affiliation(s): CDE. Tel. 937-255-3636 x4903, email: Santasri.Bosepillai.ctr@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


INVENTION DISCLOSURES

BURGI, KENNETH, W., Maj,
Assistant Professor of Optical Engineering, Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, Michigan Technological University, 2002; MS, Michigan Technological University, 2010; PhD, Air Force Institute of Technology, 2016. Maj Burgi’s research focus is primarily focused on the development of methods to control reflectively scattered light from rough surfaces. These methods could be used to reconstruct images of objects without direct line-of-sight using scattered light. As a former instructor pilot, Maj Burgi has deployed three times in support of Operation Enduring Freedom and Operation Iraqi Freedom. He has flown 1,295 combat flight hours in 363 combat sorties in the C-17 and MC-12 aircraft. He has published two referred journal articles and two conference publications. Maj Burgi is a member of SPIE and the current Deputy Department Head. Tel. 937-255-3636 x4696, email: Kenneth.Burgi@afit.edu

REFEREED JOURNAL PUBLICATIONS

Burgi, Kenneth; Ullom, Jessica; Marciniak, Michael; Oxley, Mark. 2016. “Reflective Inverse Diffusion.” Appl. Sci. 6, No. 12: 370.


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BURGGRAF, LARRY W.,
Professor of Engineering Physics and Chemical Physics, Department of Engineering Physics, AFIT Appointment Date: 1994 (AFIT/ENP); BA, Chemistry, Olivet Nazarene University, 1968; MS, Chemistry, The Ohio State University, 1971; MA, Applied Mathematics, University of West Florida, 1977; PhD, Chemistry, University of Denver, 1981; Post-doctoral Associate, Computational Chemistry, Iowa State University, 1993. Dr. Burggraf conducts experimental and theoretical research in physical chemistry and materials chemistry including radiation biophysics, exotic atom chemistry, positron spectroscopy, surface and cluster spectroscopy, excitonic nanomaterials, atomic force microscopy, gamma spectroscopy and gamma imaging to solve DOD, DHS and DOE problems in WMD non-proliferation. Theoretical research to model surfaces, clusters, nanomaterials and exotic-atom molecules applies quantum mechanics modeling to interpret experimental results. Dr. Burggraf has authored more than 55 refereed archival publications. He holds one patent. He has successfully advised 45 Master’s students, eight PhD students, and is currently advising one MS and one PhD student. Tel. 937-255-3636 x4507, email: Larry.Burggraf@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Efficient Predictions of Excited States for Nanomaterials using ACES 3 & 4; 2017 Bridge; CCM.” Sponsor: USA ERDC. Funding: $150,000 – Burggraf 50%, Lutz 50%.

REFEREED JOURNAL PUBLICATIONS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

“The Closo-Si₁₂C₁₂ Molecule from Cluster to Crystal: Structure and Properties of Closo-Si₁₂C₁₂ Siloxane Polymers,”

“Simulating Defect Spin Qubits using SIMOMM/GAMESS” GAMESS7557SSEMAG Palindromic Birthday Theory Symposium, Kauai, HI Jan 2017, *J.J. Lutz and L.W. Burggraf*

BUTLER, SAMUEL D., Maj,
Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Applied Physics (Computer Science Emphasis), Brigham Young University, 2004; MS, Physics, Air Force Institute of Technology, 2010; PhD, Physics, Air Force Institute of Technology, 2015. Maj Butler’s research is primarily focused on development of optical scatter models for use in remote sensing applications, particularly in the IR. He has also previously been involved in munitions development, quantum mechanical scattering, cryptography, and quantum information. Maj Butler has published two refereed journal articles and eight conference presentations. He has also deployed to Afghanistan as a deputy IG in support of Operation Enduring Freedom in 2011, and to Southwest Asia in 2016. Maj Butler is a member of SPIE and the AFIT chapter co-advisor of SPIE. AFIT research center affiliation(s): CDE and CTISR. Tel. 937-255-3636 x4385, email: Samuel.Butler@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


CAYLOR, MICHAEL, J.,
Associate Director, Center for Technical Intelligence Studies & Research, and Research Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2017 (AFIT/ENP); BS, Aerospace Engineering, University of Notre Dame, 1981; MS, Aerospace Engineering, University of Notre Dame, 1983; MS, Engineering Management, Florida Institute of Technology, 1985; PhD, Aerospace Engineering, University of Notre Dame, 1993.; Dr. Caylor’s current research interests include remote sensing and small satellite engineering. AFIT research center affiliation(s): CTISR. Tel. 937-255-3636 x4565, email: Michael.Caylor@afit.edu

CLINTON, JUSTIN A.,
Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2013 (AFIT/ENP); BS, Nuclear Engineering, 2004; PhD, Nuclear Engineering, Rensselaer Polytechnic Institute, Troy, NY, 2011. Dr. Clinton’s research interests are in the area of radiation detection, both experimental and theoretical modeling, as it applies to nuclear forensics. His expertise includes particle transport, Monte Carlo methods, analog and digital data acquisition and analysis, and detector development. Dr. Clinton is a member of the American Nuclear Society (ANS) as well as the Institute of Electrical and Electronics Engineers (IEEE). AFIT research center affiliation(s): ANT. Tel. 937-255-6565 x4586, email: Justin.Clinton@afit.edu

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


FEE, JAMES R. Jr., Lt Col,
Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Purdue University, 1997; MS, Air Force Institute of Technology, 2002; PhD, Air Force Institute of Technology, 2015. Lt Col Fee’s research is primarily focused on computational simulation of nuclear weapon effects with a focus in electromagnetic pulse. He has also previously managed radiation hardened microelectronics programs for satellite and missile systems. Lt Col Fee has published one refereed journal article and one conference presentation. He also deployed to Iraq as an Intelligence Advisor in support of Operation New Dawn. Lt Col Fee is the faculty advisor and member of the American Nuclear Society and additionally holds a Master of Military Operational Art and Science from Air University (2012). Tel. 937-255-3636 x4438, email: James.Fee@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


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OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


FERDINANDUS, MANUEL R., Maj,
Assistant Professor of Optical Sciences, Department of Engineering Physics, AFIT Appointment Date: 2014 (AFIT/ENP); BS, Seattle University, 1999; MS, Rochester Institute of Technology, 2007; PhD, University of Central Florida, 2014. Maj Ferdinandus performs research into nonlinear optics, optical limiting, infrared laser sources and hyperspectral target detection. Previously he has worked in space operations and satellite system acquisition. He has published two refereed journal articles and seven conference presentations. Maj Ferdinandus is a member of the Optical Society of America. AFIT research center affiliation(s): CDE and CSRA. Tel. 937-255-6565 x4339, email: Manuel.Ferdinandus@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


FIORINO, STEVEN T.,
Director, Center for Directed Energy, and Associate Professor of Atmospheric Physics, Department of Engineering Physics, AFIT Appointment Date: 2003 (AFIT/ENP); BS, Geography (Climatology), The Ohio State University, 1987; BS, Meteorology, Florida State University, 1989; MS, Atmospheric Dynamics, The Ohio State University, 1993; PhD, Physical Meteorology, Florida State University, 2002. Dr. Fiorino’s research interests include retrieving environmental parameters via microwave remote sensing; developing signal processing algorithms to fuse meteorological data collection with non-weather ISR platforms; evaluating uncertainty in high-energy laser engagement due to atmospheric effects; and improving microphysical characterizations for nuclear fallout, transport, and dispersion. He has published broadly in meteorological, directed energy, and military journals. Dr. Fiorino is a member of the American Meteorological Society, American Institute of Aeronautics and Astronautics, the Directed Energy Professional Society, Society of Photo-Instrumentation Engineers (SPIE), and additionally holds a Master of Military Operational Art and Science from Air University (2003). AFIT research center affiliation(s): CDE, CSRA, and CTISR. Tel. 937-255-3636 x4506, email: Steven.Fiorino@afit.edu
**SPONSOR FUNDED RESEARCH PROJECTS**


“Airborne Aero-optics Lab Beam Control Collection and Evaluation.” Sponsor: DEJTO. Funding: $53,080. [CDE]


“Wavefront Measurement through Scintillation with Speckle.” Sponsor: AFRL/RD. Funding: $100,000. [CDE]

“2017 AFIT Center for Directed Energy DOD HPCMP HPC Internship Program (HIP).” Sponsor: HPCMP. Funding: $48,000. [CDE]

“Weather Effects for Integrated HEL / KE Weapons Capabilities Analyses.” Sponsor: AFRL/RD. Funding: $100,000. [CDE]

“CFLOS - 4D Weather Cubes for HyDRA.” Sponsor: AFRL/RD. Funding: $150,000. [CDE]

“2017 AFIT Center for Directed Energy Summer Intern (DESI) Program.” Sponsor: DEJTO. Funding: $60,000. [CDE]

“4D Weather Cubes for Sensors Concept Development.” Sponsor: AFRL/RY. Funding: $75,000. [CDE]

“CY2017 HEL JTO AP TAWG Product Development.” Sponsor: DEJTO. Funding: $400,000. [CDE]

“CY2017 HEL JTO AP TAWG Research and Analysis.” Sponsor: DEJTO. Funding: $375,000. [CDE]

**SPONSOR FUNDED EDUCATIONAL PROJECTS**

“High Energy Laser End to End Operational Simulation (HELEEOS) Short Course.” Sponsor: AFTAC. Funding: $8,543. [CDE]

**REFEREED JOURNAL PUBLICATIONS**


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REFERRED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES


FRANZ, ANTHONY L., Lt Col,
Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, United States Air Force Academy, 1992; MS, Air Force Institute of Technology, 1997; PhD, University of Maryland, 2007. Lt Col Franz's research focuses on lasers and optics. His recent work has focused on developing light weight diffractive optics for use on satellites and novel approaches for imaging and hyperspectral imaging systems. Before joining AFIT, he was a physics faculty member at the Air Force Academy for eight years and deployed to Iraq and Afghanistan. He has also worked in nuclear treaty monitoring and infrared missile engagement modeling and simulation. Lt Col Franz is a member of the American Association of Physics Teachers (AAPT), the American Physical Society (APS), and the International Society for Optics and Photonics (SPIE). AFIT research center affiliation(s): CSRA and CTISR. Tel. 937-255-3636 x4429, email: Anthony.Franz@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Plenoptic Cameras for 3D Video.” Sponsor: Undisclosed. Funding: $7,150. [CTISR/CSRA]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


GILES, NANCY C.,
Professor of Physics and Head, Department of Engineering Physics, AFIT Appointment Date: 2009 (AFIT/ENP); BS, University of North Carolina at Chapel Hill, 1981; PhD, North Carolina State University, 1987. Dr. Giles’ research focuses on solid-state physics: photoluminescence (PL), absorption, Raman, and magnetic resonance (EPR) spectroscopy leading to identification of point defects in semiconducting and optical materials; PL excitation and time-resolved PL spectroscopies; nonlinear optical materials; laser-host materials; and scintillators. She is the author of 182 archival publications in refereed journals. Before joining AFIT, she was a physics faculty member at West Virginia University for 19 years. Her current work includes studies of scintillator materials for improved detection of nuclear radiation, wide band-gap semiconductors for photorefractive applications, and infrared non-linear optical materials for infrared countermeasures. Dr. Giles is a member of the Optical Society of America, American Physical Society, and Materials Research Society. Tel. 937-255-3636 x4601, email: Nancy.Giles@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Characterization of Point Defects in Semiconducting Oxide Crystals.” Sponsor: AFOSR. Funding: $11,220.

“Next Generation Nonlinear Crystals for High Power Lasers Years 2, 3 (Follow-on to Proposal #21016-221).” Sponsor: AFRL/RD. Funding: $25,000.

REFEREED JOURNAL PUBLICATIONS


GROSS, KEVIN C.,
Director, Center for Technical Intelligence Studies & Research, and Associate Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2008 (AFIT/ENP); BS, Wright State University, 1998; MS, Wright State University, 2001; PhD, Air Force Institute of Technology, 2007. Dr. Gross’ main interests are remote sensing, spectroscopy, and radiative transfer, and his research is focused on the remote sensing of chemically evolving systems in the battlespace (detonation fireballs, muzzle flashes, rocket and jet engine plumes, smokestack effluents, etc.) using hyperspectral, radiometric and high-speed imagery techniques. He is developing hyperspectral imaging and spectral retrieval algorithms for quantitative combustion and flow field diagnostics. He is also leading a new effort to develop polarimetric hyperspectral imaging for improved target detection and robust material identification. He has 28 archival publications in peer reviewed journals and has secured over $4M in external funding. He has successfully chaired 10 MS students, four PhD student, and is currently advising two PhD students and two MS students. He is a member of the Optical Society of America (OSA), SPIE, and the Combustion Institute. AFIT research center affiliation(s): CDE, CSRA, and CTISR. Tel. 937-255-3636 x4558, email: Kevin.Gross@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Fieldable Fireball In-situ and Remote Emission Spectroscopy Sensor Suite (F2IRES3).” Sponsor: Spectral Sciences. Funding: $24,469. [CTISR]

“Open Skies IR Target Study.” Sponsor: NASIC. Funding: $118,000 – Gross 5%, Hawks 75%, Marciniak 10%, Steward 5%. [CTISR]

“Developing Physics-Based Machine Learning Algorithms to Exploit Hyperspectral Imagery.” Sponsor: AFRL/RY. Funding: $50,000 – Gross 33%, Merkle 33%, Borghetti 33%. [CTISR]

REFEREED JOURNAL PUBLICATIONS


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OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HAWKS, MICHAEL R.,
Research Assistant Professor of Optical Engineering (through Perduco), Department of Engineering Physics, AFIT Appointment Date: 2008 (AFIT/ENP); BS, Astrophysics, Michigan State University, 1991; MS, Engineering Physics, AFIT, 1993; PhD, Optical Sciences, AFIT, 2006. Dr. Hawks’ main research interests include electro-optic and infrared (EO/IR) remote sensing. Specific application areas include monocular passive ranging and hyperspectral and polarimetric imaging. He previously taught at the United States Air Force Academy and has conducted research in chemical lasers, space object identification, chem/bio agent detection, infrared countermeasures, nuclear detonation detection, and other remote sensing applications at the Air Force Research Laboratory and other assignments. He has received 12 research grants, chaired nine MS committees and published 35 technical papers and reports. He is a member of the Optical Society of America and SPIE and is a retired USAF Lt Col. AFIT research center affiliation(s): CDE, CSRA, and CTISR. Tel. 937-255-3636 x4828, email: Michael.Hawks.ctr@afit.edu

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HENGEHOLD, ROBERT L.,
Professor Emeritus of Physics, Department of Engineering Physics, AFIT Appointment Date: 1961 (AFIT/ENP); AB, Thomas More College, 1956; MS, University of Cincinnati, 1961; PhD, University of Cincinnati, 1965. Dr. Hengehold’s research areas center on experimental solid state physics, semiconductor physics, optical diagnostics, and electron and laser spectroscopy. He is the author of over 100 archival publications and over 215 presentations at technical meetings. He has served as advisor on over 17 doctoral dissertations and 80 master’s theses. He is currently carrying out studies of (1) depth resolved cathodoluminescent spectroscopy of materials suitable for neutron absorbing semiconductor solid state detectors and (2) optical characterization of compound semiconductor materials and superlattice structures for mid-infrared diode lasers and detectors. This work involves collaborative efforts with the Directed Energy and Sensors Directorates at AFRL and DTRA. Dr. Hengehold received the Air University Commander’s Award for Faculty Achievement in 1982, the Gage H. Crocker Outstanding Professor Award in 1996, the Outstanding Professional Achievement Award from the Affiliate Society Council of the Engineering and Science Foundation of Dayton in 1997, and the General Bernard A. Schriever Award in 1999. He was elected a Fellow of the American Physical Society in 2008. Tel. 937-255-3636 x4502, email: Robert.Hengehold@afit.edu

HERR, NICHOLAS, C., Capt,
Assistant Professor of Materials Science, Department of Engineering Physics, AFIT, Appointment Date: 2016 (AFIT/ENP); BS, United States Air Force Academy, 2008; MS, Air Force Institute of Technology, 2010; PhD, Air Force, 2016. Capt Herr’s research focuses on high-power laser damage of carbon composites, remote sensing, and atomic force microscopy.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HOGSED, MICHAEL R., Lt Col,
Assistant Professor of Engineering Physics, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Baylor University, 1997; MS, Oklahoma State University, 1999; PhD, Air Force Institute of Technology, 2005. Lt Col Hogsed’s research focuses on semiconductor device characterization and radiation effects on advanced microelectronic materials and devices. He has published three refereed journal articles. Currently under
investigation are hexagonal boron nitride (h-BN) and germanium tin (Ge\(_{1-x}\)Sn\(_x\)) materials, as well as graphene field effect transistors. Lt Col Hogsed also has 10 years’ experience in the Air Force nuclear enterprise as an analyst and S&T manager for a variety of nuclear matters, to include treaty monitoring, weapon employment planning factors, and counterproliferation intelligence. Tel. 937-255-3636 x4547, email: Michael.Hogsed@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Irradiation of Thin Film Systems.” Sponsor: AFRL/RG. Funding: $15,014 – Hogsed 75%, McClory 25%.

REFEREED JOURNAL PUBLICATIONS


JENNIGES, JANELLE V., Maj.
Assistant Professor of Space Physics, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Meteorology-Climatology, University of Nebraska - Lincoln, 2005; MBA, University of Phoenix, 2009; MS, Applied Physics, Air Force Institute of Technology, 2011; PhD, Physics, Utah State University, 2015. Maj Jenniges’ research covers a wide range of topics in the space physics to include the improved specification of ionospheric space weather models, the structure of the high-latitude electric fields, and the transition of cutting-edge research to operational forecast products. Before her assignment at AFIT, Maj Jenniges served as a forecaster in the 21st Operational Weather Squadron in Germany and as a Staff Weather Officer in 17th Air Force during the standup of Air Forces Africa. She was also the flight commander of the Space Weather Operations Center in Omaha, NE. She is a member of Tau Beta Pi National Honor Society, the Golden Key National Honor Society, and the American Geophysical Union. Tel. 937-255-3636 x4646, email: Janelle.Jenniges@afit.edu

LEWIS, C. DAVID, II, Maj.
Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2014 (AFIT/ENP); BS & BA, Physics & Chemistry, Duke University, 2005; MS, Applied Physics, Air Force Institute of Technology, 2009; PhD, Physics, Air Force Institute of Technology, 2011. Maj Lewis’ primary research interests focus on computationally modeling quantum mechanical, electrodynamical, and aeronautical phenomenon for applications to various classes of lasers, hypersonic/plasma/EM interactions, interaction of microwaves with electronics, chemical/biological agent neutralization and ionospheric prediction. Before joining AFIT, Maj Lewis has served in a number of scientific roles including assignments at AFRL Sensors Directorate and the Defense Threat Reduction Agency (DTRA). At AFRL, he was a lead researcher on electronic attack techniques to disrupt/disable surveillance radars, small UAVs, and IEDs. At DTRA, he was chief scientist for offensive counter-WMD advanced technologies where he brought together directed energy, access denial technologies, and counter-communication techniques to develop highly asymmetrical capabilities to hold at risk chemical and biological production, storage facilities, and the means to employ those weapons. Additionally, Maj Lewis served a deployment tour with the Joint Special Operations Command as an Operations Officer for an Army special operations unit in the Middle East. He is a member of Tau Beta Pi and Sigma Pi Sigma. Tel. 937-255-3636 x4695, email: Charlton.Lewis@afit.edu

REFEREED JOURNAL PUBLICATIONS

C.D. Lewis and D.E. Weeks, Theoretical Cross Sections of the Inelastic Fine Structure Transition M (\(^2\)P\(_{1/2}\)) + Ng <-> M (\(^2\)P\(_{3/2}\)) + Ng for M = K, Rb, and Cs, and Ng = He, Ne, and Ar, *J. Phys. Chem. A*, 121, April 2017, pp 3340-3351.

LEWIS, DOUGLAS R., LTC.
Assistant Professor of Biodefense Science, Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, Biology, USAF Academy 1991; MS, Genetics, Pennsylvania State University 1995; PhD, Biodefense, George Mason University 2012. LTC Lewis’ previous research focused on genetic components of the insect immune system, genetic response to laser induced damage, peptide capture of biological agents, genetic identification of smallpox, and the organizational factors which have influenced the development of the US Biodefense program. Before joining AFIT, he served 16 years in the US Air Force and five years in the US Army to include assignments as an aircraft maintenance officer and as an Assistant Professor of Biology at the Air Force Academy. He
also served in counter-WMD positions with the Defense Intelligence Agency (DIA), Air Staff, as an US/UK exchange scientist and with the Defense Threat Reduction Agency (DTRA). LTC Lewis’ current research is investigating the genetic components of extreme radiation resistance in bacteria. His other interest is investigating the possibility of developing a biological collection network based upon native collection entities. Tel. 937-255-3636 x4569, email: Douglas.Lewis@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Study of Bio-Corrosion of Selected Model Materials using XPS and Other Selected Methods.” Sponsor: AFRL/RX. Funding: $40,000 – Lewis 90%, Felker 10%.

LOPER, ROBERT D.,
Assistant Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 2014 (AFIT/ENP); BS, University of Dayton, 1994; MS, University of Texas at Dallas, 1998; MTS, United Theological Seminary, 2011; PhD, Air Force Institute of Technology, 2013. Dr. Loper’s research interests are in computational physics, centering on noble gas laser systems, and space physics, centering on solar astrophysics, magnetospheric physics, and the near-Earth space environment. Dr. Loper is a member of Tau Beta Pi and Sigma Pi Sigma. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4333, email: Robert.Loper@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MARCINIAK, MICHAEL A.,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1999 (AFIT/ENP); BS, St. Joseph’s College, 1981; BSEE, University of Missouri, 1983; MSEE, Air Force Institute of Technology, 1987; PhD, Air Force Institute of Technology, 1995. Dr. Marciniak’s research interests include various aspects of light-matter interaction, including (1) polarimetric scatterometry of nanostructured materials, such as photonic crystals, plasmonic materials, and optical meta-materials; (2) bidirectional reflectance distributions for optical signatures; and (3) high-energy laser damage assessment. He has published 30 refereed and 73 other publications and chaired 9 PhD and 52 MS thesis committees. He holds one patent. He is a retired Lt Col, USAF, with 22 years of service. AFIT research center affiliation(s): CDE, CSRA, and CTISR. Tel. 937-255-3636 x4529, email: Michael.Marciniak@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Discontinuous Phase Surfaces for Low-Profile Infrared Optics.” Sponsor: AFOSR. Funding: $50,400. [CDE]

“Modeling of a High-Temperature Transient RF Measurement System.” Sponsor: AFRL/RX. Funding: $15,000.

“Scattering Effects of Human Skin and Hair.” Sponsor: 711 HPW. Funding: $50,000. [CTISR]


“Engineering Approach to Turbine-Engine Plume IR Signature.” Sponsor: AFRL/STO. Funding: $13,949. [CTISR]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


MATHEWS, KIRK A.,
Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 1987 (AFIT/ENP); BS, California Institute of Technology, 1971; MS, Air Force Institute of Technology, 1982; PhD, Air Force Institute of Technology, 1983. Dr. Mathews’ research interests center on computational methods for neutral particle radiation transport and modeling and analysis of nuclear phenomena and measurements, including enrichment cascade modeling, high altitude radiation transport, blast and shock, nuclear thermal radiation, deconvolution of radiation spectra, and statistical analysis of nuclear measurements. Dr. Mathews has published 20 papers in refereed journals and 21 conference proceedings and chaired 35 theses and 13 dissertations. He is a member of the American Nuclear Society and Tau Beta Pi.

MCCLORY, JOHN W.,
Associate Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2008 (AFIT/ENP); BS, Physics, Rensselaer Polytechnic Institute, 1984; MS, Physics, Texas A&M University, 1993; PhD, Nuclear Engineering, Air Force Institute of Technology, 2008. Dr. McClory’s expertise is in radiation effects, nuclear physics, and nuclear weapon effects. His research includes determining the effect of space and nuclear weapon radiation on electronic and structural materials. It also includes the interaction of radiation with matter and the use of nuclear reactions to inform nuclear forensics techniques. He has advised 14 PhD students (five current) and 32 MS students (two current), received 17 research grants, and published 81 journal articles during his time on the AFIT faculty. He is a member of the IEEE Nuclear and Plasma Sciences Society, American Nuclear Society, and Materials Research Society. AFIT research center affiliation(s): CSRA and CTISR. Tel. 937-255-3636 x7308, email: John.McClory@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“AFIT/ENP Research in Support of Defense Threat Reduction Agency Nuclear Technologies.” Sponsor: DTRA. Funding: $150,000 – McClory 50%, Petrosky 50%.

“Modification of Boron Carbide for Direct Neutron Detection Applications.” Sponsor: AFRL/RX. Funding: $30,000.

“Support for the US Nuclear Detonation Detection System.” Sponsor: DOE/NNSA. Funding: $50,000 – McClory 50%, Singleton 50%.
REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MCCRAE, JACK E., Jr.,
Research Assistant Professor, Department of Engineering Physics, AFIT Appointment Date: 2013 (AFIT/ENP); BS, Physics, Massachusetts Institute of Technology, 1984; MS, Physics (Optics), Air Force Institute of Technology, 1993; PhD, Physics, Air Force Institute of Technology, 1997. Dr. McCrae’s research interests include optics, lasers, quantum and non-linear optics, quantum computing, laser radar, atmospheric propagation, and imaging. He is a retired USAF Col with 27 years of service. AFIT research center affiliation(s): CDE. Tel. 937-255-3636 x4739, email: Jack.Mccrae@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES


NAUYOKS, STEPHEN E.,
Research Assistant Professor, Department of Engineering Physics, AFIT Appointment Date: 2010 (AFIT/ENP); BS, Applied Mathematics, 2002; MS, Applied Mathematics, New Jersey Institute of Technology, Newark, NJ, 2004; PhD, Physics, Texas Christian University, Fort Worth, TX, 2009. Dr. Nauyoks has been modifying a CASI system to be able to run full polarimetric scatterometry analysis using lasers at variable wavelengths of unique materials with nano and micron sized structures. Dr. Nauyoks is a member of the Society of Photo-Instrumentation Engineers (SPIE). AFIT research center affiliation(s): CDE.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


NAVA, OMAR A., Maj,
Assistant Professor of Atmospheric Science, Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, United States Air Force Academy, 2005; BS, Naval Postgraduate School, 2006; MS, Southern Methodist University, 2010; MS, Air Force Institute of Technology, 2011; PhD, University of California Los Angeles, 2016. Maj Nava’s research interests cover a variety of topics in atmospheric science to include problems in numerical weather prediction, tropical meteorology, mesoscale processes, and space physics. He has advised three MS students during his time on the AFIT faculty. Before joining AFIT, he was the Chief of Weather Operations at the Joint Space Operations Center in Vandenberg AFB, CA. He has seven archival publications and presentations and a member of the American Meteorological Society and American Geophysical Union. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4518, email: Omar.Nava@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Space Weather Impacts on HF Propagation.” Sponsor: AFRL/RV. Funding: $33,750. [CSRA]

O’DAY, BUCKLEY E., LTC,
Assistant Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Civil Engineering, United States Military Academy, 1996; MIM, Master of International Management, University of Maryland University College, 2005; MS, Nuclear Engineering, Air Force Institute of Technology, 2009; PhD, Nuclear Science and Engineering, Massachusetts Institute of Technology, 2015. LTC O’Day’s research interests cover a variety of topics in nuclear physics and nuclear engineering to include nuclear weapon effects, nuclear nonproliferation, nuclear counter proliferation, radiation health physics, and radiation detection. LTC O’Day is a basic branch Infantry Officer and a Nuclear Counter proliferation officer. He has advised one PhD students and four MS student received two research grant, and published two journal articles during his time on the AFIT faculty. He is a member of the American Nuclear Society and a research affiliate with the Department of Nuclear Science and Engineering at the Massachusetts Institute of Technology. Tel. 937-255-3636 x4609, email: Buckley.O’Day@afit.edu

REFEREED JOURNAL PUBLICATIONS


PERRAM, GLEN P.,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1989 (AFIT/ENP); BS, Cornell University, 1980; MS, Air Force Institute of Technology, 1981; PhD, Air Force Institute of Technology, 1986. Dr. Perram’s research interests include high power chemical lasers, optically pumped gas phase lasers, laser-material interactions, hyperspectral imaging, reaction kinetics, atomic and molecular spectroscopy, environmental science, photochemistry, optical diagnostics, and remote sensing. He has advised 36 PhD and 49 MS students, received 48 research grants, and published over 90 journal articles during his 28 years on the AFIT faculty. Dr. Perram is a fellow of the Directed Energy Professional Society and a Registered Professional Engineer in the State of Ohio. AFIT research center affiliation(s): CDE and CTISR. Tel. 937-255-3636 x4504, email: Glen.Perram@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


“Diode Pumped Alkali Lasers: Ionization and Beam Quality.” Sponsor: DEJTO. Funding: $200,000. [CDE]

“Wave Front Sensing for Laser Weapon Applications.” Sponsor: AFRL/RD. Funding: $100,000 – Perram 80%, Rice 20%. [CDE]

REFEREED JOURNAL PUBLICATIONS

Ben Eshel, Joseph A. Cardosa, David E. Weeks and Glen P. Perram, “Role of adiabaticity in controlling alkali-metal fine-structure mixing induced by rare gases,” Physical Review A 95, 042708, April 2017. [CDE]


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


William Bauer, Glen Perram, and Timothy Haugan, “Plume dynamics from UV pulsed ablation of Al and Ti” Proc SPIE 10014, 100140S SPIE Laser Induced Damage in Optical Materials, 2016. [CDE]


BOOKS AND CHAPTERS IN BOOKS


INVENTION DISCLOSURES


PETROSKY, JAMES C.,
Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2000 (AFIT/ENP); BA, Engineering Physics/Computer Science, Millersville University of Pennsylvania, 1984; MS, Engineering Physics, Rensselaer Polytechnic Institute, 1992; PhD, Engineering Physics, Rensselaer Polytechnic Institute, 1995. Dr. Petrosky has expertise in radiation effects on electronic devices, EMP, experimental design, radiation detection, and nuclear weapon effects. His research spans narrow and wide band gap materials using combinations of electrical, optical, and absorption spectroscopy to gain information on the damaging effects of ionizing and non-ionizing radiation. Experimental techniques include I-V(T), C-V(T), photoluminescence spectroscopy, Hall Effect, x-ray and UV photo spectroscopy; applications of measurement techniques in harsh environments/in-situ measurements and obtaining real-time data. Applications include electronic switches and actuators, RF/IR sensors, force transducers, and electronics controls for use in the space and nuclear weapons environment. Dr. Petrosky has successfully chaired eight PhD students, 45 Master’s students, and mentored and supported six post-doctoral researchers. AFIT research center affiliation(s): CSRA. Tel. 937-255-3636 x4562, email: James.Petrosky@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Nuclear Survivability Experimentation, Modeling, and Data Verification.” Sponsor: AFNWC. Funding: $100,000 – Petrosky 35%, McClory 25%, Reeder 25%, Rutledge 15%.


REFEREED JOURNAL PUBLICATIONS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


PHILLIPS, GRADY T.,
Research Assistant Professor of Engineering Physics (through ORISE), Department of Engineering Physics, AFIT Appointment Date: 2014 (AFIT/ENP); BS, Physics, Wofford College, 1990; BA, Mathematics, Wofford College, 1990; MS, Physics, Clemson University, 1993; PhD, Applied Physics, Air Force Institute of Technology, 2006. Dr. Phillips’ research interests include remote sensing encompassing spectral signatures from laser/material interactions, hyperspectral imagery, and environmental monitoring, and experimental research utilizing laser physics, spectroscopy, chemical kinetics, and flow dynamics to advance technologies in high power chemical lasers, gas phase lasers, and optical diagnostics. AFIT research center affiliation(s): CDE. Tel. 937-255-3636 x4643, email: Grady.Phillips.ctr@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOOKS AND CHAPTERS IN BOOKS

RICE, CHRISTOPHER A.,
Research Assistant Professor, Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, Electrical Engineering, Cedarville University, 2004; MS, Electrical Engineering, Air Force Institute of Technology, 2006; PhD, Applied Physics, Air Force Institute of Technology, 2012. Dr. Rice is interested in topic areas related to high energy lasers, remote sensing, and optical diagnostics. His work on specific research topics currently include atmospheric propagation of diode pumped alkali lasers; diode pumped alkali and rare gas laser gain construction; aerosol measurement and validation; modeling, simulation, and validation of directed energy simulations; and remote sensing. AFIT research center affiliation(s): CDE and CTISR. Tel. 937-255-6565 x4375, email: Christopher.Rice@afit.edu

REFEREED JOURNAL PUBLICATIONS


INVENTION DISCLOSURES


RIES, HEIDI R.,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1999 (AFIT/ENP); Dean for Research, Graduate School of Engineering and Management (AFIT/ENR); Interim Dean, Graduate School of Engineering and Management (2013); BS, Physics, The Ohio State University, 1982; MS, Physics, The Ohio State University, 1984; PhD, Applied Physics, Old Dominion University, 1987. Dr. Ries serves as AFIT’s chief research officer, primary liaison to the Air Force Research Laboratory, and served as Interim Dean during FY13. Dr. Ries’ research interests include radiation effects, nonlinear optical materials, electron paramagnetic resonance spectroscopy, and laser processing of materials. Prior to joining the AFIT faculty, Dr. Ries served as Director of the Center for Materials Research at Norfolk State University in Norfolk, Virginia, and Associate Director of the Applied Research Center at the Jefferson Center for Research and Technology Research Park in Newport News, Virginia. Dr. Ries was elected to the ASEE Engineering Research Council Board of Directors in 2008 and served a two-year term as Secretary/Treasurer (2011-2013). She has served on the Engineering and Science Foundation of Dayton Board since 2005 and as its Chair since 2015. Dr. Ries serves as a peer evaluator and team chair for Higher Learning Commission accreditation processes. She was recognized by the Dayton Daily News as one of the region’s 2009 Ten Top Women, and was the Air Force’s civilian winner of the 2011 Department of Defense Women's History Month Foreign Language and Science, Technology, Engineering and Math (STEM) Role Model Award. Tel. 937-255-3636 x4544, email: Heidi.Ries@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


Singleton, Briana J., Lt Col,
Assistant Professor of Nuclear Engineering, Deputy Department Head, Department of Engineering Physics, AFIT Appointment Date: 2014 (AFIT/ENP); BS, University of Miami (FL), 2000; MS, Air Force Institute of Technology, 2008; PhD, Air Force Institute of Technology, 2014. Lt Col Singleton’s current research focuses on active optical materials, in particular rare-earth doped fibers and their response to radiation exposure. Radiation environments studied are those applicable to the Air Force and DOD operational environments. Her previous assignments include testing units with Air Combat Command and the Defense Threat Reduction Agency. Prior to her current AFIT assignment, she was assigned to the Air Force Technical Applications Center as the deputy division chief for atmospheric research.
OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


STENGER, ROBERT A., Lt Col,
Assistant Professor of Atmospheric Science, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Texas A&M University, 1994; MS, Air Force Institute of Technology, 2000; PhD, Naval Postgraduate School, 2013. Lt Col Stenger’s research interests cover a variety of topics in atmospheric science to include problems in numerical weather prediction, tropical meteorology, and satellite radiance correction. Before joining AFIT he was Deputy Director, Office of Mission Engineering, System Engineering Directorate at the National Reconnaissance Office. He has four archival publications and presentations. He is a member of the American Meteorological Society. Tel. 937-255-3636 x4505, email: Robert.Stenger@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


STEWARD, BRYAN J.,
Research Assistant Professor of Optical Engineering, Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Optical Sciences & Engineering, University of Arizona, 2004; MS, Applied Physics, Air Force Institute of Technology, 2006; PhD, Optical Sciences & Engineering, Air Force Institute of Technology, 2011. Dr. Steward’s current research interests include infrared and electro-optical remote sensing, physics-based sensor and scene modeling, and algorithm development primarily for application to technical intelligence problems. Additional interests include characterization of battlespace combustion (e.g. muzzle flash, detonations, and rocket plumes), methods for assessing on-orbit sensor performance, and machine learning. He has 14 archival publications and presentations. Before joining AFIT, he spent over nine years at the National Air and Space Intelligence Center (NASIC) where he most recently led R&D activities as a Principal Intelligence Analyst in the Persistent Infrared Squadron. AFIT research center affiliation(s): CSRA and CTISR. Tel. 937-255-3636 x4639, email: Bryan.Steward@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Persistent Infrared Scientific and Analytical Support.” Sponsor: NASIC. Funding: $200,000 – Steward 90%, Gross 10%. [CTISR]

“Stormy Haystack.” Sponsor: NGA. Funding: $450,000 – Steward 40%, Hawks 50%, Gross 10%. [CTISR]

“National IR Detection and Tracking.” Sponsor: AFRL/RY. Funding: $100,000 – Steward 60%, Hawks 30%, Gross 10%. [CTISR]

“Sensor Data Fusion for Improved Target Detection and Location.” Sponsor: AFRL/RV. Funding: $67,500. [CSRA]

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


TSENG, H. ROSE, Maj,
Assistant Professor of Atmospheric Science, Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, University of California at Los Angeles (UCLA), 2004; MS, Naval Postgraduate School, 2010; PhD, UCLA, 2016. Maj Tseng’s research interests include future climatological changes, the influence of aerosols on precipitation and tropical cyclones, and the Arctic sea ice decline, as these topics pertain to future political, societal and environmental impacts. Prior to her PhD studies, Maj Tseng served as Commander, Detachment 1, 607th Weather Squadron at Camp Red Cloud, Republic of Korea. Maj Tseng has given a number of talks regarding her research on the effects of black carbon on precipitation to include the University of California (Carbon Neutrality Initiative) and the Pardee RAND Graduate School (LA Policy Symposium). Maj Tseng also serves as Board Advisor for Women Veteran Issues for The BREATH Center in San Clemente, CA. Maj Tseng served a deployment tour as USAF Joint Meteorological and Oceanographic Officer- Afghanistan and NATO Headquarters Resolute Support Chief Meteorological Officer from April- October 2017 in Kabul, Afghanistan. Tel. 937-255-3636 x4520, email: Hsien-Liang.Tseng@afit.edu

TUTTLE, RONALD F.,
Associate Professor of Nuclear Engineering, Department of Engineering Physics, AFIT Appointment Date: 2001 (AFIT/ENP); BS, Chemical Engineering, University of Missouri (Columbia), 1968; MS, Nuclear Engineering, University of Missouri (Columbia), 1970; PhD, Nuclear Engineering, University of Missouri (Columbia), 1980. Dr. Tuttle’s research areas include applications of active and passive remote sensing, spectroscopy, diagnostics, and signals processing to problems in intelligence collection and exploitation. Other areas of interest include nuclear weapon effects and space nuclear power systems modeling and mechanics of aerosols. He has published in both unclassified and classified refereed archival journals and conference proceedings. Dr. Tuttle served as Director, Center for Technical Intelligence Studies and Research (CTISR), AFIT, until Aug 2012. Tel. 937-255-3636 x4536, email: Ronald.Tuttle@afit.edu
WEEKS, DAVID E.,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1993 (AFIT/ENP); BA, Physics, Colgate University, 1983; MS, Physics, Georgia Institute of Technology, 1985; PhD, Physics, University of Arkansas, 1989. Dr. Weeks’ research interests include the development of time dependent wave packet methods to model the quantum mechanics of simple chemical reactions and compute associated state to state reactive scattering matrix elements. Of particular interest are new methods that incorporate non-adiabatic coupling between electronic and nuclear degrees of freedom. New research interests include fiber laser modeling and the development of plasma models to improve the operation of noble gas laser systems. AFIT research center affiliation(s): CDE.
Tel. 937-255-3636 x4561, email: David.Weeks@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Theoretical Models of Absorption and Emission in Thulium Doped Fiber Lasers.” Sponsor: AFRL/RD. Funding: $15,000. [CDE]

REFEREED JOURNAL PUBLICATIONS

C.D. Lewis and D.E. Weeks, Theoretical Cross Sections of the Inelastic Fine Structure Transition M (\(^{2}\Pi_{1/2}\)) + Ng <-> M (\(^{2}\Pi_{3/2}\)) + Ng for M = K, Rb, and Cs, and Ng = He, Ne, and Ar, J. Phys. Chem. A, 121, April 2017, pp 3340-3351.


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


WOLF, PAUL J.,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1994 (AFIT/ENP), and Associate Dean for Academic Affairs, Graduate School of Engineering and Management (AFIT/EN); BS, Regis College, 1978; MS, Air Force Institute of Technology, 1979; PhD, Air Force Institute of Technology, 1985. Dr. Wolf serves as the Associate Dean for Academic Affairs responsible for administrative leadership for all academic matters in the Graduate School and serves as AFIT’s accreditation liaison to the Higher Learning Commission and ABET. Dr. Wolf’s current scholarly interests include emergent behaviors of complex systems, foundations of quantum mechanics, and existential threat analyses. Dr. Wolf has made experimental contributions to atomic/molecular spectroscopy, reactive and non-reactive collision kinetics, laser-based thin film deposition processes, ionospheric and atmospheric chemistry, and environmental monitoring. Prior to joining the AFIT faculty in 1994, Dr. Wolf served as Director/Principal Investigator of the Materials Physics Division at the F.J. Seiler Research Laboratory (USAFA, CO), Assistant Professor of Physics in the Physics Department at the U.S. Air Force Academy, and Research Director for Impulse Laser Effects at the Defense Nuclear Agency. He has published over 20 papers. Tel. 937-255-3636 x4560, email: Paul.Wolf@afit.edu

YEO, YUNG KEE,
Professor of Physics, Department of Engineering Physics, AFIT Appointment Date: 1984 (AFIT/ENP); BS, Seoul National University, 1961; PhD, University of Southern California, 1972. Dr. Yeo’s research interests are in the area of solid state physics, especially characterization of the electrical and optical properties of elemental, compound, ternary, and quaternary semiconductors using techniques such as Hall-effect measurement, deep level transient spectroscopy, electroluminescence, and photoluminescence. Dr. Yeo has published around 120 articles in archival journals and several technical reports, presented around 220 papers at professional conferences, and holds one patent. He is a reviewer for the Applied Physics Letters, Journal of Applied Physics, Journal of Electronic Materials, and Air Force Office of Scientific Research (AFOSR) proposal. He is currently funded by the AFOSR to study Si- and Ge-based semiconductors such as GeSn and GeSiSn. This work involves collaborative effort with the Arizona State
University, University of Delaware, Kangwon National University, and Taiwan National University. He has directed the research of seven post-doc fellows, five visiting research faculty members, 16 PhD students and 26 MS students. He received the Ezra Kotcher Award for 1990, the Gage H. Crocker Outstanding Professor Award for 1992, and the General Bernard A. Schriever Award for 1997. Tel. 937-255-3636 x4532, email: Yung.Yeo@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


“Investigation of hydrogen inductively coupled plasma treatment effect for \( \text{Ge}_{0.938}\text{Sn}_{0.062}/\text{Ge/Si} \) film using photoreflectance spectroscopy, Hyun Jun Jo, Jong Su Kim, Mee Yi Ryu, Yung Kee Yeo, and John Kouvetakis. (February 2017).

5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS
5.4.1 MASTER'S THESES 132

5.4.2 FACULTY BIOGRAPHIES & RESEARCH OUTPUT 134

5.4.1 MASTER'S THESES


TRUDELLE, RYAN C., Using Multiple and Logistic Regression to Estimate the Median Will-Cost and Probability of Cost and Schedule Overrun for Program Managers. AFIT/ENC/MS/17M-231. Faculty Advisor: Dr. Edward D. White. Sponsor: AFLCMC.
5.4.2. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliations are listed in [ ] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

AKERS, BENJAMIN F.,
Associate Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2011 (AFIT/ENC); BS, Pennsylvania State University, 2003; MA, University of Wisconsin - Madison, 2005; PhD, University of Wisconsin-Madison, 2008. Dr. Akers’ research interests include nonlinear waves, applied mathematics, fluid mechanics, and numerical analysis. Dr. Akers’ current research considers the stability and existence of traveling water waves as well as the fluid flows induced by high energy lasers. AFIT research center affiliation(s): CDE.
Tel. 937-255-3636 x4522, email: Benjamin.Akers@afit.edu

REFEREED JOURNAL PUBLICATIONS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

Akers, B., “Atmospheric Propagation Sciences for the APSHELs Program,” Air Force Institute of Technology, 1 June 2017. [CDE]


ARMSTRONG, ANDREW M., Capt,
Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2016 (AFIT/ENC); BS, Michigan Technological University, 2008; MS, Air Force Institute of Technology, 2010; MS, University of Texas at San Antonio, 2011; PhD, Air Force Institute of Technology, 2016. Capt Armstrong’s research interests include wavelet analysis, astrostatistics, machine learning, big data, and computational statistics.
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BAKER, WILLIAM P.,
Associate Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1986 (AFIT/ENC); BA, University of California at Irvine, 1969; MA, University of California at Irvine, 1970; PhD, Northwestern University, 1987. Dr. Baker's research interests include asymptotic and perturbation methods, wave propagation and scattering theory, applied mathematics, functional analysis, low observables, and numerical analysis. Dr. Baker's current research is in thermal dynamics of high speed wear, vibrational dynamics of thermally loaded materials, and dynamics and control of satellite structures. Dr. Baker is a Master Navigator with prior military assignments in flight test, satellite communications, cruise missile, and radar analysis. Tel. 937-255-3636 x4517, email: William.Baker@afit.edu

REFEREED JOURNAL PUBLICATIONS

BEMROSE, TRAVIS J., Maj,
Instructor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2016 (AFIT/ENC);
BS, University of Idaho, 2003; MS, University of Texas at San Antonio, 2012. Maj Bemrose’s research interest
include Hilbert space frame theory, compressed sensing, numerical methods, and modeling and simulation. His current
research is on the Paulsen problem and equiangular frames. He has papers on unconditional convergence bounds for
frames, introducing the concept of weaving frames, and cruise missile training simulators. Tel. 937-255-3636 x4619,
email: Travis.Bemrose@afit.edu

BOOKS AND CHAPTERS IN BOOKS

Bemrose, T., Casazza, P. G, Cheng, D., Haas, J., and Van Nguyen, H., “Computing the Distance Between Frames and
Between Subspaces of a Hilbert Space.” Frames and Other Bases in Abstract and Function Spaces. I. Pesenson, Q.

BULUTOGLU, DURSUN A.,
Associate Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004
(AFIT/ENC); BS, University of Maryland at College Park, 1996; PhD, University of California, Berkeley, 2001. Dr.
Bulutoglu’s research interests include design of experiments and combinatorial problems in statistics. His papers are
on finding GMA (generalized minimum aberration) factorial designs by enumerating all non-isomorphic orthogonal
arrays. The tools he uses for enumerating orthogonal arrays are integer programming, constraint programming, and
isomorphism rejection. Tel. 937-255-3636 x4704, email: Dursun.Bulutoglu@afit.edu

FATHEDDIN, PARISA
Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2016
(AFIT/ENC); BS, Belmont University, 2007; PhD, University of Tennessee, Knoxville, 2014. Dr. Fatheddin’s research
interests include stochastic partial differential equations, large deviations and applications of modern probability
theory to wireless networks and problems related to optics. Tel. 937-255-3636 x4729,
email: Parisa.Fatheddin@afit.edu

REFEREED JOURNAL PUBLICATIONS

Fatheddin, P. and Gustafsson, J., “Generation of a sequence of correlated phase screens,” Optics Communications,

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

Fatheddin, P., “Asymptotic Behavior of a Class of SPDEs,” Probability Seminar, Louisiana State University, Baton

Fatheddin, P., “Asymptotic Behavior of a Class of SPDEs,” Combinatorics and Probability Seminar, Ohio State U.,
Columbus, OH, 23 March 2017.

FICKUS, MATTHEW C.,
Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2004 (AFIT/ENC);
BS, University of Maryland, Baltimore County, 1995; MS, University of Maryland, Baltimore County, 1997; PhD,
University of Maryland, College Park, 2001. Dr. Fickus' research interests include applied harmonic analysis, frame
theory, and compressed sensing. Tel. 937-255-3636 x4513, email: Matthew.Fickus@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

fusion frames,” Proceedings of SPIE Optics and Photonics: Wavelets and Sparsity XVII, 103940T, San Diego, CA,
7 August 2017.
OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


GEYER, ANDREW J., Lt Col,
Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2014 (AFIT/ENC); BS, North Dakota State University, 2000; MS, Air Force Institute of Technology, 2009; PhD, Air Force Institute of Technology, 2014. Lt Col Geyer’s research interests include design of experiments, combinatorial optimization problems in statistics, statistical performance metrics, and statistical classification techniques. The tools he uses are integer programming, constraint programming, graph isomorphism rejection, and multivariate statistical analysis. Lt Col Geyer has served as a weather officer in F-16, AH-64, OH-58D, and CH-47 flying units as well in units supporting US Army and Special Operations ground forces. Tel. 937-255-3636 x4584, email: Andrew.Geyer@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


JORDAN, JEREMY D., Lt Col,
Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT, Appointment Date: 2016 (AFIT/ENC); BA, Aurora University, 2001; MS, Air Force Institute of Technology, 2007; PhD, Air Force Institute of Technology, 2012. Lt Col Jordan’s research interests include combinatorial optimization, decision analysis, network theory and big data analysis. Lt Col Jordan has served as an operations research analyst for operational testing and human research as well as an international program manager for the Air Force Office of Scientific Research. Tel. 937-255-3636 x4669, email: Jeremy.Jordan@us.af.mil

KAPPEDAL, RYAN D., Lt Col,
Assistant Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2014 (AFIT/ENC); BS, United States Air Force Academy, 1999; MS, Air Force Institute of Technology, 2008; PhD, University of Washington, 2014. Lt Col Kappedal was a visiting fellow at the University of Chicago’s Data Science for Social Good Fellowship summer of 2015 and a visiting scientist at Lawrence Livermore National Labs summer of 2016. His research interests include Machine Learning, Big Data, Statistical Genetics, Neuroscience (MRI imaging), Compressed Sensing, Seismic Detection, Gravimetric Detection, and Imagery Feature Selection. He has served as an intelligence officer at various levels and deployed twice in support of Operation Iraqi Freedom. Tel. 937-255-3636 x4630, email: Ryan.Kappedal@afit.edu

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

LAIR, ALAN V.,
Professor of Mathematics and Head, Department of Mathematics and Statistics, AFIT Appointment Date: 1982 (AFIT/ENC); BA, North Texas State University, 1970; MS, Texas Tech University, 1972; PhD, Texas Tech University, 1976. Dr. Lair's research interests include parabolic and elliptic partial differential equations, functional analysis, applied mathematics, and nonlinear diffusion. He has published several papers on the properties of solutions of various nonlinear partial differential equations. Tel. 937-255-3636 x4519, email: Alan.Lair@afit.edu

EDITORSHIPS IN PROFESSIONAL JOURNALS

Member of the Editorial Board, International Scholarly Research Notices: Mathematical Analysis.

MAGNUS, AMY L.,
Research Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2017 (AFIT/ENC); BSEE, Rochester Institute of Technology, 1990; MSEE, Air Force Institute of Technology, 1995; PhD, Air Force Institute of Technology, 2003. Dr. Magnus conducts research in distributed intelligence, i.e., the mature work that emerges from human computers teams. Her research combines multiple disciplines including information fusion, near & remote sensing, data analytics, and artificial intelligence. Dr. Magnus works the seam between sensory organization and natural language processing translating signals to symbols and symbols into stories. Her concepts in artificial intelligence research define the computational differences between training and learning; they demonstrate how autonomy can be examined as an oscillating signal. Dr. Magnus has published 16 articles, chaired two MS thesis committees, and is writing a book on human and computer intelligence. She is a retired Major, USAF, with extensive experience in data fusion and information operations. AFIT research center affiliation(s): CCR and CSRA. Tel. 937-255-3636 x4454, email: Amy.Magnus@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Distributed Intelligence and the Nature of Mature Work.” Sponsor: AFOSR. Funding: $149,865 – Magnus 90%, Oxley 10%. [CCR]

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


MIXON, DUSTIN G., Maj,
Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2012 (AFIT/ENC); BS, Central Washington University, 2004; MS, Air Force Institute of Technology, 2006; MA, Princeton University, 2010; PhD, Princeton University, 2012. Maj Mixon's research interests include applied harmonic analysis, frame theory, compressed sensing, signal processing, and mathematical data science. He has served as an Air Force analytical scientist for three years modeling biological responses to radiofrequency radiation.

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


BOOKS AND CHAPTERS IN BOOKS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


OXLEY, MARK E.,
Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1987 (AFIT/ENC);
BS, University of the Cumberland, 1978; MS, Purdue University, 1980; PhD, North Carolina State University, 1987.
Dr. Oxley's research interests include partial differential equations, free and moving boundary value problems, finite-time extinction problems, functional analysis, optimization, artificial neural networks, wavelet analysis, classifier fusion, information fusion and evaluation of fusion techniques, receiver operating characteristic (ROC) curves, and ROC manifolds. AFIT research center affiliation(s): ANT and CTISR. Tel. 937-255-3636 x4515, email: Mark.Oxley@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Fusion in Exploitation of Sensing Technology.” Sponsor: AFOSR. Funding: $64,635 – Oxley 50%, Schubert Kabban 50%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PATENT APPLICATIONS

QUINN, DENNIS W.,
Professor Emeritus of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1974 (AFIT/ENC); BA, Mathematics, University of Delaware, 1969; MS, Applied Mathematics, University of Delaware, 1971; PhD, Applied Mathematics, University of Delaware, 1973. Dr. Quinn's fields of expertise include numerical methods, finite elements, finite differences, integral equation methods, numerical analysis, functional analysis, system identification, and applied mathematics. Dr. Quinn has advised several MS students in modeling toxic chemical exposure. Dr. Quinn has published papers dealing with integral and finite element solutions of acoustic problems, using the telegrapher's equation to model lightning, using the method of characteristics in cancer risk assessment, using the diffusion equation to model diffusion through the skin in pharmacokinetic modeling, and using the boundary element method for moving boundary problems.

REEGER, JONAH A., Maj,
Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2013 (AFIT/ENC); BS, Mathematical Sciences, United States Air Force Academy, 2007; MA, Computational and Applied Mathematics, Rice University, 2009; PhD, Applied Mathematics, The University of Colorado, Boulder, 2013. Maj Reeger’s primary research interests include Taylor series and Padé approximation methods, multi-step methods, optimization and optimal control, radial basis functions, pseudospectral methods, and the Painlevé equations. He has served as an Air Force analytical scientist on the acquisition of an experimental infrared satellite. AFIT research center affiliation(s): CDE. Tel. 937-255-3636 x3320, email: Jonah.Reeger@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

REYNOLDS, DANIEL E.,
Assistant Professor Emeritus of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 1974 (AFIT/ENC); AB, University of Rochester, 1965; MS, Air Force Institute of Technology, 1971; MS, Wright State University, 1983. Dr. Reynolds’ research interests include management cybernetics, learning theory, and exploring ways computer graphics can support statistical and mathematical education. In 1989, Dr. Reynolds received Tau Beta Phi's Outstanding Professor Award.

SCHUBERT KABBAN, CHRISTINE M.,
Associate Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 2010 (AFIT/ENC); BA, University of Dayton, 1992; MBA, Wright State University, 1994; MS, Wright State University, 1995; PhD, Air Force Institute of Technology, 2005. Dr. Schubert Kabban’s research interests include classification techniques, diagnostic testing, ROC curve theory and extensions, human performance, information fusion, modeling and prediction, NDE methods, network analysis, regression and regression extensions, survey design and analysis, and general biostatistics. Dr. Schubert Kabban’s current research is in evaluating the performance of classification systems and information-fused systems via ROC methodology, sequential strategies for classification, structural health monitoring of airframes, as well as epidemiological applications to disease prediction and medical diagnostics. Tel. 937-255-3636 x4549, email: Christine.SchubertKabban@afit.edu
SPONSOR FUNDED RESEARCH PROJECTS

“Sequencing Information for Efficient, Accurate Classification.” Sponsor: AFOSR. Funding: $31,842.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SEYMOUR, RICHARD S., Lt Col,
Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 2015 (AFIT/ENC); BS, US Air Force Academy, 2000; MS, Air Force Institute of Technology, 2009; PhD, Air Force Institute of Technology, 2015. Lt Col Seymour's research interests include stochastic process model acceptance techniques and parameter estimation problems. Lt Col Seymour’s current research considers the adequacy of a semi-Markov process with respect to the observed data used to fit the process. Tel. 937-255-3636 x4398, email: Richard.Seymour@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


SRITHARAN, SIVAGURU S.,
Provost & Vice Chancellor, AFIT Appointment Date: 2015 (AFIT/CL). BSc (Hons.) University of Sri Lanka 1977; MS, University of Washington, 1979; PhD, University of Arizona, 1982. Dr. Sritharan’s research includes control theory, stochastic analysis, functional analysis, and numerical analysis of aerodynamics at all range of Mach numbers and electromagnetics. Dr. Sritharan’s current research focuses on mathematical and computational issues relevant to hypersonics, directed energy weapons and autonomy. AFIT research center affiliation(s): CDE. Tel. 937-255-6565 x3315, email: Sivaguru.Sritharan@afit.edu

REFEREED JOURNAL PUBLICATIONS


EDITORSHIPS IN PROFESSIONAL JOURNALS

Member of the Editorial Board, Communications on Stochastic Analysis

Member of the Editorial Board, International Journal of Analysis
OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


UBER, RICHARD P., Capt,
Assistant Professor of Mathematics, Department of Mathematics and Statistics, AFIT, Appointment Date: 2016 (AFIT/ENC); BGS, University of Nebraska Omaha, 2006; MS, Texas A&M University, 2010; PhD, Air Force Institute of Technology, 2016. Capt Uber’s current research interests are electromagnetic wave scattering, partial differential equations, and computational modeling and machine translation. He has served as an Operations Research Analyst for Headquarters Air Education and Training Command and a Mandarin Language Instructor at the Defense Language Institute Foreign Language Center. Tel. 937-255-3636 x6004, email: Richard.Uber@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


WHITE, EDWARD D., III,
Professor of Statistics, Department of Mathematics and Statistics, AFIT Appointment Date: 1998 (AFIT/ENC); BS, University of Tampa, 1990; MAS, Ohio State University, 1991; PhD, Texas A&M University, 1998. Dr. White’s research interests include design of experiments, categorical data analysis, biostatistics, and model building. Tel. 937-255-3636 x4540, email: Edward.White@afit.edu

REFEREED JOURNAL PUBLICATIONS


WOOD, AIHUA W.,
Professor of Mathematics, Department of Mathematics and Statistics, AFIT Appointment Date: 1994 (AFIT/ENC); BS, Peking University, 1984; MS, University of Connecticut, 1988; PhD, University of Connecticut, 1990. Dr. Wood's research interests include partial differential equations, electromagnetic wave propagation, and Boltzmann equations. Tel. 937-255-3636 x4272, email: Aihua.Wood@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Associate Editor, *Advances in Applied Mathematics and Mechanics*
5.5. DEPARTMENT OF OPERATIONAL SCIENCES

Access Phone: 937-255-2549, DSN 785-2549
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5.5.1. **DOCTORAL DISSERTATIONS**

ATKINSON, ANDREW D., *Wavelet-Based Simulation Model Validation of Functional Data*. AFIT/ENS/DS/17S-034. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD.


ROBINSON, PAUL D., *Duality Behaviors of the Quantile Regression Model Estimation Problem*. AFIT/ENS/DS/17S-043. Faculty Advisor: Dr. James W. Chrissis. Sponsor: ARCYBER.


5.5.2. **MASTER'S THESES**

ALATAWI, NAIF H., *RSAF F-15 Reparable Items Capacity Planning & Execution*. AFIT/ENS/MS/17S-033. Faculty Advisor: Dr. William A. Cunningham. Sponsor: N/A.


BENSON, BENJAMIN, *An Initial Ambient Noise Database Based on National Park Service Data*. AFIT/ENS/MS/17M-114. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: OSD.


BINGOL, GUNDUZ, *Simulation of Aircraft Sortie Generation under an Autonomic Logistics System*. AFIT/ENS/MS/16D-052. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: TuAF.


FERGUSON, MATTHEW D., *A Scenario-Based Parametric Analysis of Stable Marriage Approaches to the Army Officer Assignment Problem*. AFIT/ENS/MS/17M-128. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: AHRC.


HUGHES, KELSLIE L., *Supply Base Reduction Efforts Regarding Laboratory Reagents within Hospital Networks*. AFIT/ENS/MS/17M-134. Faculty Advisor: Dr. Jeffrey A. Ogden. Sponsor: AFMOA.


KLINE, ALEXANDER G., Real-Time Heuristic Algorithms for the Static Weapon-Target Assignment Problem. AFIT/ENS/MS/17M-139. Faculty Advisor: Dr. Darryl K. Ahner. Sponsor: JWAC.


LEIGHTON, JASON M., Common Support Equipment and its Impact on Aircraft Availability. AFIT/ENS/MS/17M-141. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFMC.


MASON, MICHAEL P., Cost Versus Risk: The Policy of Nuclear Weapon Maintenance of Tritium Based Limited Life Components. AFIT/ENS/MS/17M-143. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

MUNIZ, MEGAN L., Analyzing the Critical Supply Chain for Unmanned Aircraft Systems. AFIT/ENS/MS/17M-149. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: JWAC.

NGUYEN, HAI-DANG, Use of Artificial Neural Networks to Classify CB-DNA Fingerprints by Radio of Origin. AFIT/ENS/MS/17M-150. Faculty Advisor: Dr. John O. Miller. Sponsor: AFRL/RV.

O’NEAL, BRENDAN M., Aircraft Availability Metric Refinement Based on a 9-Tiered Sub-metric Indication. AFIT/ENS/MS/17M-151. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: AFMC.


REBOULET, AMANDA M., Organizational Strategic Basing Framework with Infusion of Multi-Dimensional Uncertainty. AFIT/ENS/MS/17S-068. Faculty Advisor: Dr. Bradley C. Boehmke. Sponsor: N/A. [COA]


SCHUH, ERIK B., Examining Regionalization Efforts to Develop Lessons Learned and Consideration for Department of Defense Medical Facilities. AFIT/ENS/MS/17M-156. Faculty Advisor: Dr. Raymond R. Hill. Sponsor: N/A.

SCHULTE, KATLYN A., Resilience Analysis of Distribution Networks In Response to Regional Disruption, as Applied to the USPACOM Area of Responsibility. AFIT/ENS/MS/17M-157. Faculty Advisor: Dr. Brian J. Lunday. Sponsor: USTRANSCOM.

SCHWEMMER, JOSEPH R., Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle. AFIT/ENS/MS/17M-158. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFOSR.


WILLIAMS, RANDI D., _Optimal Location of Integrated Air Defense Radars and Interceptor Batteries within a Game Theoretic Framework._ AFIT/ENS/MS/17J-052. Faculty Advisor: Dr. Brian J. Lunday. Sponsor: JWAC.

WILLIAMS, RUSSELL H., _Predicting Failure Rates for the B-1B Bomber._ AFIT/ENS/MS/17M-163. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: AFGSC. [COA]


5.5.3. GRADUATE RESEARCH PAPERS


DAVIS, JEFFREY C., _Mobility Air Force Aircrew Flight Training Requirements Validation Through the use of Line Oriented Safety Audit Data._ AFIT/ENS/MS/17J-019. Faculty Advisor: Lt Col Matthew A. Douglas. Sponsor: AMC.

DAWSON, JEREMY D., _Deterring the Russian Tactical Nuclear Arsenal._ AFIT/ENS/MS/17J-020. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: N/A. [COA]

DIAZ, CHRISTOPHER J., _Using Social Media to Measure Deterrence._ AFIT/ENS/MS/17J-021. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.


GILLET, BRANDON G., _Cost Comparison of Military versus Commercial Airlift._ AFIT/ENS/MS/17J-028. Faculty Advisor: Dr. William A. Cunningham Sponsor: AMC.


NOLAN, STEVEN T., *An Intrinsic Case Study Analysis of Air Force Company Grade Officers as High-Potential Officers.* AFIT/ENS/MS/17J-039. Faculty Advisor: Lt Col Robert E. Overstreet Sponsor: SAF.


PARISE, NICHOLAS A., *Chutes Over Pope: Air Mobility Support to GRF Airborne Readiness Training.* AFIT/ENS/MS/17J-041. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: 18AF/3D.


5.5.4. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliations are listed in [ ] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

AHNER, DARRYL K.,
Associate Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2010 (AFIT/ENS); Director, Scientific Test and Analysis (STAT) for Test and Evaluation (T&E) Center of Excellence, Appointment Date: 2012; BS, Mechanical Engineering, United States Military Academy, 1990; MS, Applied Mathematics, Rensselaer Polytechnic Institute, 1999; MS, Operations Research & Statistics, Rensselaer Polytechnic Institute, 1999; PhD, Systems Engineering, Boston University, 2005. Dr. Ahner's research interests include dynamic programming applications, queueing applications, mathematical control theory and model predictive control of complex systems, test design, combat modeling algorithm development, and models for supply chain management. Dr. Ahner is a licensed Professional Engineer in the Commonwealth of Virginia. Dr. Ahner is Vice President-Professional Development, Military Operations Research Society. Tel. 937-255-6565 x4708, email: Darryl.Ahner@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Test and Evaluation Center of Excellence.” Sponsor: OSD DASD (DT&E). Funding: $360,520

“Subject Matter Expertise Support to AFRL/RYAA.” Sponsor: AFRL/RY. Funding: $96,000.

“Experimental Design and Analysis Methodology Development.” Sponsor: NASIC. Funding: $270,352 – Ahner 50%, Parson 50%.

“Scientific Test and Analysis Techniques for Automatic Test and Analysis.” Sponsor: NAVSEASYSCMD. Funding: $500,000 – Ahner 50%, Parson 50%.

“F-35 Scientific Test and Analysis Techniques Test Support.” Sponsor: AFLCMC. Funding: $23,000 – Ahner 50%, Parson 50%.

“Department of Homeland Security, Science and Technology Directorate.” Sponsor: DHS. Funding: $515,000 – Ahner 50%, Parson 50%.

SPONSOR FUNDED EDUCATIONAL PROJECTS

“Short Courses Delivery for AFRL/RYAA.” Sponsor: AFRL/RY. Funding: $90,000 – Ahner 60%, Weir 20%, Boehmke 20%.

“COE-S 310: Experimental Design and Analysis I.” Sponsor: NASIC. Funding: $14,000.

REFEREED JOURNAL PUBLICATIONS


REFERENCE CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFERENCE CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


ANDERSON, JASON R., Lt Col,
Assistant Professor of Logistics and Supply Chain Management and Deputy Department Head, Department of Operational Sciences, AFIT Appointment Date: 2016 (AFIT/ENS); Program Manager of Advanced Study of Air Mobility (ASAM) and School for Advanced Nuclear Deterrence Studies (SANDS), 2016; BS, Operations research, United States Air Force Academy, 2000; MS, Masters of Science and Administration, Central Michigan University, 2007; MS, Masters of Logistics and Supply Chain Management, Air Force Institute of Technology, 2013; PhD, Logistics and Supply Chain Management, Air Force Institute of Technology. Lt Col Anderson’s research interests include supply chain management risk and optimization, transportation modes, inventory, forecasting, research methods, leadership, and sourcing. Tel. 937-255-6565 x4533, email: Jason.Anderson@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

Lt Col Jason Anderson, Dr. Jeffrey Ogden, Dr. Benjamin Hazen, Dr. Robert Overstreet, “Driving Legally Fatigued: A Classification Approach to Hours of Service,” Western Decision Science Institute, Vancouver, B.C., Canada, 4-8 Apr 2017.

BAUER, KENNETH W.,
Professor of Operations Research, Department of Operational Sciences; Program Chair, PhD, Operations Research, Department of Operational Sciences, AFIT Appointment Date: 1996 (AFIT/ENS); Director, Sensor Fusion Laboratory; BS, Miami University (Ohio), 1976; MEA, University of Utah, 1980; MS, Air Force Institute of Technology, 1981; PhD, Purdue University, 1987. Dr. Bauer’s research interests include pattern recognition, applied multivariate statistics, and statistical aspects of neural networks; all are usually within the specific application area of automatic target recognition and more recently hyper-spectral imaging processing. AFIT research center affiliation(s): COA and CTISR. Tel. 937-255-6565 x4328, email: Kenneth.Bauer@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOEHMKE, BRADLEY C.,
Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences; AFIT Appointment Date: 2017 (AFIT/ENS); Director, Data Science Lab; Director of Research, Center for Operational Analysis; BS, North Dakota State University, 2003; MS, Air Force Institute of Technology, 2011; PhD, Air Force Institute of Technology, 2015. Dr. Boehmke’s research focuses on developing tools and processes that allow supply chain and operations research analysts in the defense industry to extract more insights from their data. AFIT research center affiliation(s): COA.

SPONSOR FUNDED RESEARCH PROJECTS


“V-22 Data Analytics.” Sponsor: NAVAIR. Funding: $170,000 – Boehmke 50%, Hartman 25%, Weir 25%. [COA]

SPONSOR FUNDED EDUCATIONAL PROJECTS

“Logistics Distance Learning Program.” Sponsor: HAF A4. Funding: $92,000 – Boehmke 50%, Joo 50%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOOKS AND CHAPTERS IN BOOKS

Boehmke, B.C., “Data Wrangling with R,” Robert Gentlemen, Kurt Hornik, and Giovanni Parmigiani, (eds.), Springer International Publishing, Cham, Switzerland, DOI: 10.1007/978-3-319-45599-0.

BREITBACH, TIMOTHY W., Maj.
Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences; Logistics Division Chief, Department of Operational Sciences; AFIT Appointment Date: 2016 (AFIT/ENS); BA, University of Notre Dame, 2005; MS, Air Force Institute of Technology, 2012; PhD, Massachusetts Institute of Technology, 2017. Dr. Breitbach’s research interests include supply chain finance and data analysis, humanitarian logistics and the role of supply chains in international development, inventory management and resource allocation.
Tel. 937-255-3636 x4458, email: Timothy.Breitbach@afit.edu

CHRISISS, JAMES W.,
Associate Professor Emeritus, Department of Operational Sciences, AFIT Appointment Date: 1987 (AFIT/ENS); BS, University of Pittsburgh, 1975; MS, Virginia Polytechnic Institute and State University, 1977; PhD, Virginia Polytechnic Institute and State University, 1980. Dr. Chrissis’s research interests include mathematical programming, optimization, engineering design optimization, simulation-driven optimization, and integer modeling. Dr. Chrissis has been a member of the faculties of Virginia Tech and the University of South Florida. He is a member of the Institute for Operations Research and Management Sciences (INFORMS), the Military Operations Research Society (MORS), The American Institute for Aeronautics and Astronautics (AIAA), and Sigma Xi. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4606, email: James.Chrissis@afit.edu

INVENTION DISCLOSURES


CUNNINGHAM, WILLIAM A.,
Professor of Logistics and Supply Chain Management, Department of Operational Sciences; Program Chair, MS in Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 1994 (AFIT/ENS); BS, Business Administration, Missouri Southern State College, 1976; MS, Economics, Oklahoma State University, 1979; PhD, Economics, University of Arkansas, 1986. Dr. Cunningham’s research interests include strategic mobility, cost/benefit analysis, econometric modeling, costing, privatization and A-76 studies, modal choice, network analysis, location analysis, supply chain management, and RFID. AFIT research center affiliation(s): COA. Tel. 937-255-6365 x4283, email: William.Cunningham@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Editorial Review Board, Journal of Transportation Management

DECKRO, RICHARD F.,
Distinguished Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 1994 (AFIT/ENS); Joint Warfare Analysis Center Chair of Applied Operations Research, and Director, Future Operations Investigation Laboratory, BSIE, State University of New York at Buffalo, 1972; MBA & DBA, Decision Sciences,
Kent State University, 1976. Dr. Deckro’s research, teaching, and consultation interests include the areas of information operations and information assurance, behavioral modeling including social network analysis, counter insurgency and irregular warfare, applied mathematical programming and optimization, scheduling, network models, project and program management, modeling and analysis, space applications, campaign modeling, reconstruction and stabilization, measures of effectiveness and assessment, technology selection and management, advanced manufacturing methods, multi-criteria decision making, and decision analysis. Dr. Deckro is a Fellow of the Military Operations Research Society. AFIT research center affiliation(s): CSRA. Tel. 937-255-6565 x4325, email: Richard.Deckro@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Transitioning the Production of Carbon Nanotubes from Development to Economic Viability.” Sponsor: Undisclosed. Funding: $50,000 – Deckro 33%, Stone 33%, Tucholski 33%.

“JWAC AFIT Interaction.” Sponsor: JWAC. Funding: $150,000 – Deckro 30%, Ahner 23%, Lunday 23%, Swenson 25%. [CSRA]

REFEREED JOURNAL PUBLICATIONS


EDITORSHIPS IN PROFESSIONAL JOURNALS

1st Editor Emeritus, Military Operations Research

DOUGLAS, MATTHEW A., Col,
Dean of Students, Graduate School of Engineering and Management and Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2014 (AFIT/ENS); BS, Mathematics, Angelo State University, 1996; MS, Logistics Management, Air Force Institute of Technology, 2003; PhD, Marketing, University of North Texas, 2009. Col Douglas’s research interests include behavioral aspects of supply chain and safety management, leading transformation, and ethics and decision-making. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4737, email: Matthew.Douglas@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Associate Editor, Journal of Defense Analytics and Logistics

Editorial Advisory Board, International Journal of Logistics Management

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HARTMAN, PAUL L.,
Director, Center for Operational Analysis, Department of Operational Sciences, AFIT Appointment Date: 2015 (AFIT/ENS); BS, Business Administration, University of Maryland, 1990; MS, Logistics Management, Air Force Institute of Technology, 1997; MA, International Affairs, University of Dayton, 1998; PhD, Logistics, Air Force Institute of Technology, 2013. Dr. Hartman’s research interests include multi-domain command and control; data creation, storage, management, and analysis; speed of data, effects-based data collection and analysis; modeling and simulation; and solving complex acquisition, maintenance, operations and supply chain problems. AFIT research center affiliation(s): COA. Tel. 937-255-6565 x4521, email: Paul.Hartman@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Operational Requirements for the Mechanical Equipment & Subsystem Integrity Program (MECSIP).” Sponsor: AFLCMC. Funding: $61,376 – Hartman 50%, Hartman 50%. [COA]

“Modernization of the AFRL Enterprise Business System Program Office (EBS PO) Capabilities.” Sponsor: AFRL/RC. Funding: $130,000. [COA]

“COA Mission Objective Support.” Sponsor: USAF A4C. Funding: $50,000. [COA]

REFEREED JOURNAL PUBLICATIONS


HAZEN, BENJAMIN T., Maj,
Assistant Professor, Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2015 (AFIT/ENS); BS, Business Administration, Colorado Christian University, 2004; MA, Organizational Leadership, Gonzaga University, 2006; MBA, California State University, 2007; PhD, Management, Auburn University, 2012. Maj Hazen’s research interests include closed loop supply chains, sustainability, data science, innovation, and supply chain management/information systems interface. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4337, email: Benjamin.Hazen@afit.edu
REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Editor-in-Chief, Journal of Defense Analytics and Logistics

Senior Associate Editor, International Journal of Physical Distribution & Logistics Management

Associate Editor, Global Journal of Flexible Systems Management

Guest Editor, International Journal of Production Research

Guest Editor, International Journal of Physical Distribution & Logistics Management
OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


**HILL, RAYMOND R.,**
Professor of Operations Research, Department of Operational Sciences; Program Chair, Graduate Test and Evaluation Certificate, Director, Science of Test Research Laboratory, Department of Operational Sciences, AFIT Appointment Dates: 1997 (AFIT/ENS); BS, Mathematics, Eastern Connecticut State University, 1983; MS, Operations Research, Air Force Institute of Technology, 1988; PhD, Industrial and Systems Engineering, The Ohio State University, 1996. Dr. Hill’s research interests include applied statistics and data analytics, in particular the application of design of experiments methodologies to test and evaluation; mathematical optimization, in particular the use of heuristic search methods for addressing particularly hard problems; and applied simulation modeling and analysis with particular interests in the area of agent-based modeling and the validation of such models. Tel. 937-255-6565 x7469, email: Raymond.Hill@afit.edu

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BOOKS AND CHAPTERS IN BOOKS


EDITORSHIPS IN PROFESSIONAL JOURNALS

Associate Editor, Military Operations Research

Associate Editor, Journal of Defense Modeling and Simulation

Associate Editor, Journal of Simulation

Associate Editor, Quality Engineering

Associate Editor, International Journal of Mathematics in Operations Research

Associate Editor, Naval Research Logistics

JOHNSON, ALAN W.,
Professor of Logistics and Supply Chain Management, Department of Operational Sciences; Program Chair, PhD, Logistics, Department of Operational Sciences, AFIT Appointment Date: 2004 (AFIT/ENS); BS, Mechanical Engineering, Montana State University, 1982; MS, Systems Management, Air Force Institute of Technology, 1989; PhD, Industrial and Systems Engineering, Virginia Polytechnic Institute and State University, 1996. Dr. Johnson’s research interests include space logistics, strategic mobility, discrete-event simulation, logistics management, reliability and maintainability, and discrete optimization and heuristics. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4703, email: Alan.Johnson@afit.edu

REFEREED JOURNAL PUBLICATIONS


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**


**EDITORSHIPS IN PROFESSIONAL JOURNALS**


**JOO, SEONG-JONG,**

Associate Professor of Logistics & Supply Chain Management, Department of Operational Sciences; Co-Director, Distance Learning Program, MS, Logistics & Supply Chain Management, Department of Operational Sciences, AFIT

Appointment Date: 2016 (AFIT/ENS); BS, Korea Air Force Academy (Seoul, Korea), 1982; MBA, Saint Louis University, 1992; PhD, Saint Louis University, 1995. Dr. Joo’s research interests include sourcing strategies, inventory control, shipping and transportation management, and performance measurement and benchmarking.

Tel. 937-255-6565 x4761, email: Seong-Jong.Joo@afit.edu

**REFEREED JOURNAL PUBLICATIONS**


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW**


KRETSER, MICHAEL P., Capt,
Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2015 (AFIT/ENS); BS, Computer Science, Limestone College, 2005; MS, Logistics and Supply Chain Management, Air Force Institute of Technology, 2008; PhD, Logistics, Air Force Institute of Technology, 2015. Capt Kretser’s research interests include logistics networks, systems engineering techniques: system-of-systems, design structure matrices and network clustering, social networks, Lean, and business process reengineering. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4728; email: Michael.Kretser@afit.edu

LUNDAY, BRIAN J.,
Associate Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2016 (AFIT/ENS); BS, Mechanical Engineering, U.S. Military Academy, West Point, 1992; MS, Industrial Engineering, University of Arizona, 2001; PhD, Industrial and Systems Engineering, Virginia Polytechnic Institute, 2010. Dr. Lunday’s theoretical research interests include math programming, game theoretic models, and algorithmic design for global optimization, whereas his application research interests include network design, network interdiction, network restoration, facility location, and resource allocation/assignment. Tel. 937-255-3636 x4624, email: Brian.Lunday@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS
“Transportation and Distribution Research.” Sponsor: USTRANSCOM. Funding: $80,000.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS accepted on the basis of FULL PAPER REVIEW

REFEREED CONFERENCE PAPERS accepted on the basis of ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Editorial Board Member, Military Operations Research

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


MILLER, JOHN O.,
Associate Professor of Operations Research, Department of Operational Sciences; Program Chair, AFIT Appointment Date: 2002 (AFIT/ENS); Director, Combat Modeling Laboratory; BS, Biology, United States Air Force Academy, 1980; MBA, University of Missouri at Columbia, 1983; MS, Operations Research, Air Force Institute of Technology, 1987; PhD, Industrial Engineering, The Ohio State University, 1997. Dr. Miller’s research interests include computer simulation, ranking and selection, agent based modeling, combat modeling, network centric warfare, high performance computing, applied statistics, and nonparametric statistics. AFIT research center affiliation(s): COA.
Tel. 937-255-6565 x4326, email: John.Miller@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


OGDEN, JEFFREY A.,
Associate Professor of Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2006 (AFIT/ENS); BS, Accounting, Weber State University, 1998; MBA with emphasis in Supply Chain Management, Arizona State University, 2000; PhD, Business Administration with emphasis in Supply Chain Management, Arizona State University, 2003. Dr. Ogden’s research interests include supply chain management, supply base reduction, ERP implementation, E-marketplaces, RFID, supply chain quality, purchasing strategies, buyer-supplier relationships, supply chain interoperability, supply chain services, and qualitative research methods. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4653, email: Jeffrey.Ogden@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Research, Analysis and Transition Support to the Directorate of Logistics and Sustainment Air Force Sustainment Center.” Sponsor: AFMC/A4P. Funding: $440,000 – Ogden 60%, Johnson 40%. [COA]
OVERSTREET, ROBERT E., Lt Col,
Military Deputy Department Head and Assistant Professor, Department of Operational Sciences; AFIT Appointment Date: 2013 (AFIT/ENS); BBA, General Business, Campbell University, 1998; MS, Logistics, Air Force Institute of Technology, 2002; PhD, Management, Auburn University, 2012. Lt Col Overstreet’s research interests include leadership in the supply chain, organizational innovativeness, transportation, and humanitarian logistics, continuous process improvement, and human capital. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4590, email: Robert.Overstreet@afit.edu

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW
Maywald, J. D., Reiman, A. D., Johnson, A. W., and Overstreet, R. E., “Reducing airlift inefficiency through aircraft selection modeling,” 46th Annual Meeting of Western Decision Sciences Institute, Vancouver, B.C., Canada, 4-8 Apr, 2017.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

EDITORSHIPS IN PROFESSIONAL JOURNALS
Editorial Advisory Board, Pan-Pacific Journal of Supply Chain Management
Editorial Advisory Board, Journal of Defense Analytics and Logistics

PIGNATIELLO, JOSEPH J.,
Professor of Operations Research, Department of Operational Sciences; Head, Department of Operational Sciences, AFIT Appointment Date: 2010 (AFIT/ENV), 2011 (AFIT/ENS); BS, Mathematics, University of Massachusetts; MS, Industrial and Systems Engineering, The Ohio State University, 1979; PhD, Industrial and Systems Engineering, The Ohio State University, 1982. Dr. Pignatiello serves on the editorial review boards of Quality Engineering, IIE Transactions, and the International Journal of Lean Six Sigma. He is a Fellow of both the American Society for Quality and the Institute of Industrial and Systems Engineers. Tel. 937-255-3636 x4311, email: Joseph.Pignatiello@afit.edu

REFEREED JOURNAL PUBLICATIONS


**REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**


**EDITORSHIPS IN PROFESSIONAL JOURNALS**

Editorial Board, Quality Engineering

Editorial Board, IIE Transactions

Editorial Advisory Board, International Journal of Lean Six Sigma

**REIMAN, ADAM D., Col.**

Associate Dean of the Graduate School of Engineering and Management and Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2014 (AFIT/ENS); BS, Astronautical Engineering, US Air Force Academy, 1995; MBA, Military Management, Touro University International, 2006; MS, Logistics Management, Air Force Institute of Technology, 2009; PhD Logistics, Air Force Institute of Technology, 2014. Col Reiman’s research interests include airlift metrics, routing, scheduling, and fuel efficiency; energy efficiency, supply and demand; value-focused thinking, and heuristic search algorithms. Tel. 937-255-3636 x4689, email: Adam.Reiman@afit.edu

**ROBBINS, MATTHEW J., Lt Col.**

Associate Professor of Operations Research, Department of Operational Sciences; Division Chief, Operations Research Division, Department of Operational Sciences, AFIT Appointment Date: 2010 (AFIT/ENS); BS, Computer Systems Engineering, University of Arkansas, 1999; MS, Operations Research, Air Force Institute of Technology, 2005; PhD, Industrial Engineering, University of Illinois at Urbana-Champaign, 2010. Lt Col Robbins’ basic research interests include applied statistics, approximate dynamic programming, game theory, Markov decision processes, and simulation. His applied research interests involve problems related to defense, to include the dispatch of medical evacuation assets, the routing of military inventory, and the control of missile defense systems. Problems related to public health are also of interest, with a particular emphasis on vaccine economics. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4539, email: Matthew.Robbins@afit.edu

**SPONSOR FUNDED RESEARCH PROJECTS**

Robbins. “Strategic Development Planning & Experimentation Support: Roadmap for Multi-Domain Modeling, Simulation, Analysis and Experimentation.” Sponsor: SDPE. Funding: $1,000,000 – Robbins 50%, Weir 50%. [COA]

**REFEREEED JOURNAL PUBLICATIONS**


EDITORSHIPS IN PROFESSIONAL JOURNALS

Editorial Board Member, Military Operations Research Journal

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SCHULTZ, KENNETH L.,
Associate Professor of Logistics and Supply Chain Management, Department of Operational Sciences, AFIT Appointment Date: 2011 (AFIT/ENS); BS, Economics, University of Pennsylvania, 1980; PhD, Operations Management, Cornell University, 1997. Dr. Schultz’s research interests include improving operations management models by including the consideration of behavior issues, including motivation and peer pressure, in production systems and process flows. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4725, email: Kenneth.Schultz@afit.edu

EDITORSHIPS IN PROFESSIONAL JOURNALS

Senior Editor, Production and Operations Management Journal

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SMITH, CHRISTOHER M., LTC,
Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2016 (AFIT/ENS); BS, Systems Engineering, United States Military Academy, 1997; MS, Engineering Management, Missouri University of Science and Technology, 2002; MS Operations Research, University of Texas – Austin, 2007; PhD, Systems Engineering, University of Virginia, 2013. LTC Smith’s research interests include applying decision analysis, and data science to real world problems. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4318, email: Christopher.Smith@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Guest Editor, Decision Analysis Journal

STEENECK, DANIEL W.,
Assistant Professor of Logistics and Supply Chain Management, Department of Operational Sciences; AFIT Appointment Date: 2016 (AFIT/ENS); BS, Virginia Tech, 2008; MS, Virginia Tech, 2009; PhD, Virginia Tech, 2014; Dr. Steeneck’s research areas include mathematical modeling and optimization of supply chain and production systems, statistical modeling and parameter estimation and predictive analytics for machine failure. AFIT research center affiliation(s): COA. Tel. 937-255-6565 x4702, email: Daniel.Steeneck@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Repair Network Optimization.” Sponsor: AFSC. Funding: $220,000. [COA]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


STONE, BRIAN B., Maj,
Assistant Professor of Operations Research, Department of Operational Sciences, AFIT Appointment Date: 2013 (AFIT/ENS); BS, Mathematics, Truman State University, 1999; MS, Operations Research, Air Force Institute of Technology, 2008; PhD, Industrial Engineering, Arizona State University, 2013. Maj Stone’s research interests include design of experiments, response surface methodology, statistical quality control, and regression analysis. He is a member of the Institute for Operations Research and Management Science (INFORMS), the Military Operations Research Society (MORS), and the American Society for Quality (ASQ). AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4510, email: Brian.Stone@afit.edu

TUCHOLSKI, HEIDI M., Maj,
Assistant Professor of Operations Research; Division Chief, Operations Research Division, Department of Operational Sciences, AFIT Appointment Date: 2015 (AFIT/ENS); BS, Operations Research, US Air Force Academy, 2006; MA, Economics, George Mason University, 2008; PhD, Mathematical Behavioral Sciences, University of California, Irvine, 2014. Maj Tucholski’s research interests include decision analysis, incentive theory, statistical data analysis, game theory, behavioral and experimental economics. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4319, email: Heidi.Tucholski@afit.edu

WEIR, JEFFERY D.,
Professor and Associated Department Head, Department of Operational Sciences; Director of Operations, Center for Operational Analysis; AFIT Appointment Dates: 2002 (AFIT/ENS); BS, Electrical Engineering, Georgia Institute of Technology, 1988; MBA, Embry Riddle-Aeronautical University, 1992; MS, Operations Research, Air Force Institute of Technology, 1995; PhD, Industrial & Systems Engineering, Georgia Institute of Technology, 2002. Dr. Weir’s research interests include decision analysis, large-scale optimization, deterministic optimization, applied statistics, and mathematical programming and meta-modeling and meta-learning algorithms. AFIT research center affiliation(s): COA. Tel. 937-255-3636 x4523, email: Jeffery.Weir@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Value-Driven Tradespace Exploration and Analysis for Resilient Systems.” Sponsor: USA ERDC. Funding: $420,000. [COA]

“Air Force Inspection Agency (AFIA) Support for UEI Generator.” Sponsor: AFIA/CCR. Funding: $20,000. [COA]

“Air Force Supply Chain Problem Item Early Detection.” Sponsor: AFRL/RX. Funding: $225,000. [COA]

“Development of Cyber Resiliency Processes and Mitigation Solutions for Legacy Platforms.” Sponsor: AFLCMC. Funding: $700,000 – Weir 50%, Hartman 50%. [COA]

“Development of a Quantitative Framework for Intelligence Mission Data Support Analysis.” Sponsor: AFLCMC. Funding: $75,000. [COA]


“412th Test Wing Sortie Scheduling Modernization Effort.” Sponsor: 412 TW. Funding: $493,936. [COA]

“Design of Experiment (DOE) and Meta-Modelling Support for the ISR Decision Support at the Simulation and Analysis Facility (SIMAF).” Sponsor: AFLCMC. Funding: $197,554. [COA]
“Joint Service Explosive Ordnance Disposal (EOD) Technology Capability Based Value Model (CBVM) Support.” Sponsor: NSWC. Funding: $200,000. [COA]

“B2 LO Maintenance Optimization.” Sponsor: AFLCMC. Funding: $225,000. [COA]


“Air Force Institute of Technology Center for Operational Analysis (AFIT/COA) Support to Acquisition Intelligence Requirements Task Force (AIRTF) for Intelligence Mission Data (IMD) Cost, Capability Analysis (CCA) (Revised).” Sponsor: OSD. Funding: $800,000. [COA]

“Analysis/Modeling Support to War Mobilization Plans Volume 5 (WMP-5) Build.” Sponsor: AF/A3. Funding: $303,000. [COA]

“Sliding Scale Autonomy through Physiological Rhythm Evaluations (SAPHYRE).” Sponsor: OFRN (WSU). Funding: $109,993. [COA]

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


EDITORSHIPS IN PROFESSIONAL JOURNALS

Associate Editor, Military Operations Research Journal

Associate Editor, IIE Transactions on Healthcare Systems Engineering
5.6.  DEPARTMENT OF SYSTEMS ENGINEERING AND MANAGEMENT

Access Phone: 937-255-2998, DSN 785-2998
Fax: 937-656-4699, DSN 986-4699
Homepage: http://www.afit.edu/ENV/

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5.6.1. DOCTORAL DISSERTATIONS


5.6.2. MASTER'S THESES


BLAESS, MICHAEL J., *A Portfolio Decision Analysis Study for Improving Consequence of Facility Failure Indices*. AFIT/ENV/MS/17M-175. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEC.


JENKINS, MATHEW K., See CUHRAN, JOSEPH J. [CSRA]


LISKOWCYZ, MATTHEW M., SpaceX: Breaking the Barrier to the Space Launch Vehicle Industry. AFIT/ENV/MS/16D-045. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: NASIC.


MURPHY, SEAN T., Strength Test and Analysis of Additive Manufactured Gears and Their Applicability for Explosive Ordnance Disposal Robots. AFIT/ENV/MS/17M-204. Faculty Advisor: Lt Col Vhance V. Valencia. Sponsor: AFCEC.


OLIVE, MARY C., An Energy Benchmarking Categorization Scheme and Consumption Data Validation for Air Force Facilities. AFIT/ENV/ MS /17M-207. Faculty Advisor: Lt Col Brent T. Langhals. Sponsor: AFCEC.


RHEA, AARON M., Comparison of Profit Margin Percentages Between Prime Contractors and Subcontractors for Aircraft, Missiles, and Unmanned Aerial Vehicles. AFIT/ENV/MS/17M-215. Faculty Advisor: Lt Col Brandon M. Lucas. Sponsor: AFLCMC.


WATCHEL, STEVEN T., See STERN, JORDAN L. [CSRA]

WALTERS, MICHAEL J., See CUHRAN, JOSEPH J. [CSRA]

5.6.3. FACULTY BIOGRAPHIES & RESEARCH OUTPUT

Notes: Research Center affiliation is listed in [ ] if applicable. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BADIRU, ADEDEJI B.,
Dean, Graduate School of Engineering and Management, AFIT Appointment Date: 2013 (AFIT/EN); BS, Tennessee Technological University, 1979; MS, Tennessee Technological University, 1981; PhD, Industrial Engineering, University of Central Florida, 1984. Dr. Badiru’s research interests include Project Modeling, Analysis, Management and Control, Mathematical Modeling, Computer Simulation, Information Systems, and Economic Analysis. He is the author of several books and technical journals. Tel. 937-255-3636 x4799, email: Adedeji.Badiru@afit.edu

COLOMBI, JOHN M.,
Associate Professor and Program Chair of Systems Engineering, Department of Systems Engineering and Management, AFIT Civilian Appointment Date: 2008 (AFIT/ENV); BSEE, University of Lowell, 1982; MSEE, Air Force Institute of Technology, 1992; PhD, Electrical Engineering, Air Force Institute of Technology, 1996. Dr. Colombi’s research interests within the broad discipline of Systems Engineering include systems architecture and model-based systems engineering techniques, multi-vehicle unmanned/autonomous design, acquisition process modeling, optimal space constellation design, systems of systems analysis, complex adaptive systems and human systems integration. AFIT research center affiliation(s): ANT and CSRA. Tel. 937-255-3636 x3347, email: John.Colombi@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Automation and Autonomy Requirements for Employment of Building Interior Surveillance System (BISS) via Unmanned Aerial Vehicles.” Sponsor: DTRA. Funding: $150,000 – Colombi 40%, Jacques 40%, Cox 15%, Clinton 5%. [ANT]

“Open Systems Acquisition II.” Sponsor: SAF/AQ. Funding: $271,000.

SPONSOR FUNDED EDUCATIONAL PROJECTS

“AFMC Sponsored SE Certificate Program AY17-18.” Sponsor: AFMC/EN. Funding: $400,000 – Colombi 50%, Moran 50%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


**COX, AMY M., Lt Col,**
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT
Appointment Date: 2016 (AFIT/ENV); BS, Mechanical Engineering, University of Cincinnati, 1997; MS, Space Operations, Air Force Institute of Technology, 1999; AA French, Presidio of Monterey, 2005; Brevet, Flight Test Engineering, École du Personnel Navigant d’Essais et de Réception, 2006, PhD, Systems Engineering, George Washington University, 2017. Lt Col Cox’s research interests include flexible design, system architecture, user innovation and open innovation. Tel. 937-255-3636 x4352, email: Amy.Cox@afit.edu

**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW**


**BOOKS AND CHAPTERS IN BOOKS**


**OTHER SIGNIFICANT RESEARCH PRODUCTIVITY**


**ELSHAW, JOHN J.,**
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management; AFIT
Appointment Date: 2013 (AFIT/ENV); BS, Accounting, University of Akron, 1991; MBA, Regis University, 1996, PhD, Krannert School of Management, Purdue University, 2010. Dr. Elshaw’s research interests include organizational behavior, trust, leadership, human resource management, organizational causes of high-consequence errors, technology impact on individual and group behavior, social network analysis, cognition and emotions, organizational climate and culture, psychological influences on foreign audiences, cross-cultural leadership and communication, and hierarchical linear modeling. Tel. 937-255-3636 x4650, email: John.Elshaw@afit.edu
SPONSOR FUNDED RESEARCH PROJECTS

“Learning Curve Analysis in Department of Defense Acquisition Programs.” Sponsor: NPS. Funding: $77,040 – Elshaw 70%, Badiru 30%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


ENINGER, ROBERT M., Lt Col
Assistant Professor of Industrial Hygiene, AFIT Appointment Date: 2015 (AFIT/ENV); BS, Civil and Environmental Engineering, United States Air Force Academy, 1995; MS, Civil Engineering, University of Texas-San Antonio, 2000; MS, Health Science, Purdue University, 2002; PhD, Environmental Health, University of Cincinnati, 2008. Lt Col Eninger’s research interests include aerosol science, exposure assessment, and respiratory protective devices. Tel. 937-255-3636 x4511, email: Robert.Eninger@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


FASS, ROBERT D.,
Assistant Professor of Systems Integration and Cost Analysis, Department of Systems Engineering and Management, AFIT Appointment Date: 2015 (AFIT/ENV); BA Economics, University of New Mexico, 1989; MBA, University of New Mexico, 1993, PhD, Business Administration and Management, New Mexico State University, 2008. Dr. Fass’s research interests include cost analysis, decision analysis, risk analysis, operations research, behavioral economics, organizational behavior, organizational change, and government acquisition policy.
Tel. 937-255-3636 x4388, email: Robert.Fass@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


FELKER, DANIEL L.,
Chemist GS-11, Department of Systems Engineering and Management, Appointment Date: 2006 (AFIT/ENV); PhD, Analytical Chemistry, Kansas State University, 2005, served in the United States Army from Dec 1986 to Aug 1997. Current research interests include: X-ray photoelectron spectroscopy of thin film surfaces with a focus on the surface absorption organophosphates; modeling the absorbent properties of nano-particles for remediation of toxic compounds; the mechanism of thermo deactivation of Bacillus Anthracis Spores; electrochemical biosensors for the detection of organophosphates; and environmental chemistry of wetlands. Tel. 937-255-3636 x7410, email: Daniel.Felker@afit.edu
FORD, THOMAS C.
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management (through Integrity Applications, Inc.), AFIT Appointment Date: 2014 (AFIT/ENV); BS, Electrical Engineering, Brigham Young University, 1994; BA, Chinese, Brigham Young University, 1994; MS, Engineering, Wright State University, 1998; PhD, Systems Engineering, Air Force Institute of Technology, 2008. Lt Col Ford’s research interests include interoperability, resiliency, and system architecting. Tel. 937-255-3636 x4747, email: Thomas.Ford@afit.edu

FREELS, JASON K., Maj.
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT Appointment Date: 2013 (AFIT/ENV); BS, Auburn University, 2000; MS, Air Force Institute of Technology, 2006; PhD, Systems Engineering, Air Force Institute of Technology, 2013. Maj Freels’ research interests include reliability growth testing, accelerated life testing, accelerated degradation testing, and competing risk analysis. Tel. 937-255-3636 x4676, email: Jason.Freels@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


GRIMAILA, MICHAEL R.,
Professor and Head, Department of Systems Engineering and Management, AFIT Appointment Date: 2004 (AFIT/ENV); BS, Texas A&M University, 1993; MS, Texas A&M University, 1995; PhD, Computer Engineering, Texas A&M University, 1999. Dr. Grimaila’s research interests include modeling and simulation, mission assurance, network management and security, quantum cryptography, and systems engineering. He is a member of the ACM, a Senior Member of the IEEE, a Fellow of the ISSA, and serves as an advisor to the Prince of Wales Fellows/Prince Edward Fellows at MIT and Harvard. AFIT research center affiliation(s): CCR and CSRA. Tel. 937-255-3636 x4800, email: Michael.Grimaila@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PATENT APPLICATIONS


HARPER, WILLIE F.,
Professor of Engineering and Environmental Management, Department of Systems Engineering and Management, AFIT Appointment Date: 2012 (AFIT/ENV); BS, Civil Engineering, University of California, Los Angeles, 1992; MS, Civil and Environmental Engineering, Cornell University, 1993; PhD, Civil and Environmental Engineering, University of California, Berkeley, 2002. Dr. Harper's research interests include water quality, with a focus on environmental biotechnology, advanced oxidation, and sensing. Tel. 937-255-3636 x4528, email: Willie.Harper@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Addendum: Sequencing Batch Reactors (SBR) for Fate of Bacillus Spores in Wastewater.” Sponsor: EPA. Funding: $127,953.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HOISINGTON, ANDREW J., Lt Col,
Assistant Professor and Program Chair of Engineering Management, Department of Systems Engineering and Management, AFIT Appointment Date: 2017 (AFIT/ENV); BS, Civil Engineering, University of Michigan Ann Arbor 2001; MS, Environmental Engineering, University of Texas, Austin, 2007; PhD, Environmental Engineering, University of Texas, Austin 2013. Lt Col Hoisington’s research interests include air quality in the built environment, microbiome of the built environment, and air quality or microbiome factors that influence mental health.
Tel. 937-255-3636 x4826, email: Andrew.Hoisington@afit.edu

REFEREED JOURNAL PUBLICATIONS


JACQUES, DAVID R.,
Associate Professor of Aerospace Engineering, Department of Systems Engineering and Management, AFIT Appointment Date: 1999 (AFIT/ENY); BS, Mechanical Engineering, Lehigh University, 1983; MS, Aeronautical Engineering, AFIT, 1989; PhD, Aeronautical Engineering, AFIT, 1995. Dr. Jacques’ research interests include development planning, architecture based evaluation, multi-objective or constrained optimal design, and cooperative
behavior and control of autonomous vehicles. AFIT research center affiliation(s): ANT and CSRA. Tel. 937-255-3636 x3329, email: David.Jacques@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Airfield Damage Inspection and Assessment using Small UAS.” Sponsor: AFCEC. Funding: $100,000 – Jacques 50%, Colombi 20%, Thal 15%, Stoppel 15%. [ANT]


“System Qualities Ontology, Tradespace and Affordability (SQOTA) Project – Phase VI.” Sponsor: OSD. Funding: $24,000.

REFEREED JOURNAL PUBLICATIONS


KEMPISTY, DAVID M., Lt Col,
Assistant Professor of Environmental Engineering and Science, AFIT Appointment Date: 2014 (AFIT/ENV); BS, Environmental Engineering, Michigan Technological University, 1996; MS, Environmental Engineering and Science, Air Force Institute of Technology, 2006; PhD, Civil Engineering, University of Colorado Boulder, 2014. Lt Col Kempisty’s research interests include water quality issues, specifically using advanced and conventional adsorbents and UV-LED photocatalyst technologies. Perfluorinated compounds and their environmental toxicity, fate, and transport are also an active research area. Tel. 937-255-3636 x4711, email: David.Kempisty@afit.edu

REFEREED JOURNAL PUBLICATIONS


Droste, D.J.; Shelley, M.; Gearhart, J.; Kempisty, D.M.; A systems dynamics approach to the efficacy of oxime therapy for mild exposure to sarin gas, Disaster Medicine Journal (doi 10.5055/ajdm.2016.0229)
REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES


KOSCHNICK, CLAY M., Lt Col,
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT
Appointment Date: 2015 (AFIT/ENV); BS, United States Air Force Academy, 1998; MS, Georgia Institute of Technology, 2007; PhD, University of Florida, 2012. Lt Col Koschnick’s research interests include engineering economy, dynamic programming, and econometrics. Tel 937-255-3636 x4638, email: Clay.Koschnick@afit.edu

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


LANGHALS, BRENT T.,
Assistant Professor of Information Resource Management, Department of Systems Engineering and Management, AFIT
Appointment Date: 2016 (AFIT/ENV); BS, United States Air Force Academy, 1995; MS, Air Force Institute of Technology, 2001; PhD, University of Arizona, 2011. Dr. Langhals’ research interests include Data Analytics, “Big Data,” Human-Computer Interfaces, Systems Engineering, Vigilance, and Psychophysiological Cue Detection. Tel 937-255-3636 x7402, email: Brent.Langhals@afit.edu

PATENTS AWARDED

LONG, DAVID S.,
Assistant Professor of Systems Engineering (through SRISY), Department of Systems Engineering and Management, AFIT Appointment Date: 2016 (AFIT/ENV); BS, Industrial Engineering & Management, North Dakota State University, 1988; MS, Engineering, California State University Northridge; PhD, Engineering Systems, Massachusetts Institute of Technology, 2012. Dr. Long research interests include systems of systems, open systems architecture, model based systems engineering, wicked problems, human machine interfaces, automation and autonomy. Tel. 937-255-3636 x4390, email: David.Long.ctr@afit.edu

LUCAS, BRANDON M., Lt Col,
Assistant Professor of Cost Analysis, Department of Systems Engineering and Management, AFIT Appointment Date: 2015 (AFIT/ENV); BA, University of Texas at Austin, 1998; ME & MA, University of Oklahoma, 2002; MS, Air Force Institute of Technology, 2004; PhD, Economics, George Mason University, 2011. Lt Col Lucas’ research interests include incentive structures, profit motives, coordination issues, and the economics of public choice & the law. Tel. 937-255-3636 x4441, email: Brandon.Lucas@afit.edu

REFEREEED JOURNAL PUBLICATIONS


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

MAILLOUX, LOGAN O., Maj,
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT Appointment Date: 2015 (AFIT/ENV); BS, Computer Engineering, Lawrence Technological University, 2002; MS, Systems Engineering, Air Force Institute of Technology, 2008; PhD, Systems Engineering, Air Force Institute of Technology, 2015. He is commissioned as Major in the United States Air Force (USAF) and serves as a computer developmental engineer. Maj Mailloux is a Certified Information System Security Professional (CISSP), Certified Systems Engineering Professional (CSEP), and holds department of defense certifications in cyberspace operations, systems engineering science and technology management, test & evaluation, and program management. He is a member of IEEE, ACM, INCOSE, and ITEA professional societies, as well as, HKN and TBP honor societies. Maj Mailloux has served the USAF as a cyberspace operations expert responsible for planning and executing network defense exercises, documenting and training computer security best practices, performing test and evaluation of enterprise resource planning solutions, and maintaining distributed simulation infrastructure. Maj Mailloux's research interests include system security engineering, complex information systems, and quantum key distribution. AFIT research center affiliation(s): CCR. Tel. 937-255-3636 x3348, email: Logan.Mailloux@afit.edu

REFEREEED JOURNAL PUBLICATIONS


MBONIMPA, ERIC G.,
Assistant Professor of Engineering and Environmental Management, Department of Systems Engineering and Management, AFIT Appointment Date: 2014 (AFIT/ENV); BS, Civil Engineering, Kigali Institute of Science and Technology, 2004; MS, Environmental Engineering, University of Missouri-Columbia, 2007; PhD, Environmental Engineering, Purdue University, 2010. Dr. Mbonimpa's research interests include environmental sustainability, life cycle assessment, and water quality. Tel. 937-255-3636 x7405, email: Eric.Mbonimpa@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MILLER, MICHAEL E.,
Associate Professor of Systems Integration, Department of Systems Engineering and Management, AFIT Appointment Date: 2010 (AFIT/ENV); BS, Ohio University, 1987; MS, Ohio University, 1989; PhD, Industrial and Systems Engineering, Virginia Tech., 1993. Dr. Miller’s research interests include Human Systems Integration, Human-Automated Agent Interaction, and Application of Human Vision to Display, and Lighting Design. AFIT research center affiliation(s): ANT. Tel. 937-255-3636 x4651, email: Michael.Miller@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Computational Agent Capable of Adapting Roles within a Human-Machine Team.” Sponsor: AFOSR. Funding: $173,715 – Miller 30%, Bindewald 30%, Peterson 30%, Langhals 10%. [ANT]

“Test and Evaluation of Autonomous Systems.” Sponsor: OFRN (WSU). Funding: $30,000. [ANT]

“Investigating Lighting-Display Configurations for Improved ISR.” Sponsor: USAFSAM. Funding: $45,400.

“Design Metrics for Near to Eye Display Symbology.” Sponsor: 711 HPW. Funding: $22,145 – Miller 50%, Jackson 50%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PATENTS AWARDED


PATENT APPLICATIONS


MORAN, KENNETH O., Assistant Professor of Engineering and Environmental Management, Department of Systems Engineering and Management. AFIT Appointment Date: 2015 (AFIT/ENV); PhD, Aeronautical Engineering, AFIT, 1994. Research interests include systems engineering, unmanned systems, and/or space systems, early concept refinement, policy
analytics, optimal designs, design trade space, modeling and simulation, and flight test. Tel. 937-255-3636 x4310, email: Kenneth.Moran@afit.edu

PARR, JEFFREY C., Lt Col,
Assistant Professor of Engineering and Environmental Management, Department of Systems Engineering and Management. AFIT Appointment Date: 2014 (AFIT/ENV); BS, Civil Engineering, US Air Force Academy, 1998; MS, Environmental Engineering, AFIT 2002; PhD, Systems Engineering, AFIT, 2014. Research interests include human systems, injury criteria, and ejection system requirements. Tel. 937-255-3636 x4709, email: Jeffrey.Parr@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Neck Injury Criteria Development.” Sponsor: 711 HPW. Funding: $38,475 – Parr 80%, Miller 20%.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


PRIGGE, DIEDRICH V.,
Assistant Professor of Engineering Management, Department of Systems Engineering and Management. AFIT Appointment Date: 2016 (AFIT/ENV); BS, Arizona State University, 2002; MS, Arizona State University, 2010; PhD, Arizona State University, 2013. Dr. Prigge’s research interests include leadership, management, construction, volunteerism, productivity, and cross-cultural global integration. Tel. 937-255-3636 x4648, email: Diedrich.Prigge@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Global Photovoltaic Power Potential Assessment.” Sponsor: NGB. Funding: $12,500 – Prigge 60%, Thal 40%.

RITSCHEL, JONATHAN D., Lt Col,
Assistant Professor of Cost Analysis, Department of Systems Engineering and Management, AFIT Appointment Date: 2011 (AFIT/ENV); BBA, Accountancy, University of Notre Dame, 1997; MS, Cost Analysis, Air Force Institute of Technology, Wright-Patterson AFB, OH, 2003; PhD, Economics, George Mason University, VA, 2011. Lt Col Ritschel’s research interests include public choice, the effects of acquisition reforms on cost growth in DOD weapon systems, research and development cost estimation, and economic institutional analysis. Tel. 937-255-3636 x4484, email: Jonathan.Ritschel@afit.edu

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


RUSNOCK, CHRISTINA, F., Maj.
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT Appointment Date: 2013 (AFIT/ENV); BA, Economics-Government, Claremont McKenna College, 2004; MS, Research and Development Management, Air Force Institute of Technology, 2008; MS, Industrial Engineering-Systems Engineering, University of Central Florida, 2011; PhD, Industrial Engineering-Human Factors, University of Central Florida, 2013. Maj Rusnock’s research interests include cognitive workload modeling, human performance modeling, human-systems integration, and discrete event simulation.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SLAGLEY, JEREMY M.,
Assistant Professor of Industrial Hygiene and Environmental Science, Department of Systems Engineering and Management, AFIT Appointment Date: 2016 (AFIT/ENV); BS, United States Military Academy, 1993; MS, University of Iowa, 2000; PhD, West Virginia University, 2006. Dr. Slagley’s research interests include occupational stressor assessment and control, specifically for hazardous noise, aerosols, and exposure assessment. He also models deployed waste-to-energy systems for sustainability. Tel. 937-255-3636 x4632, email: Jeremy.Slagley@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Computer Model Technoeconomic Analysis of Deployable Waste to Energy Gasification System.” Sponsor: AFCEC. Funding: $96,000 – Slagley 50%, Grimaila 20%, Fass 30%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


STOPPEL, CHRISTOPHER M., Lt Col,
Assistant Professor of Engineering Management, Department of Systems Engineering and Management ,AFIT Appointment Date: 2015 (AFIT/ENV); BS, United States Air Force Academy, 1996; MS, Air Force Institute of Technology, 2001; PhD, University of Texas at Austin, 2013. Lt Col Stoppel’s research interests include sustainability, building energy performance, and project delivery evaluation. Tel. 937-255-3636 x4645, email: Christopher.Stoppel@afit.edu
THAL, ALFRED E., Jr.,
Assistant Professor of Engineering Management, Department of Systems Engineering and Management, AFIT
Appointment Date: 1998 (AFIT/ENV); BS, Civil Engineering, Texas Tech University, 1981; MS, Engineering
Management, AFIT, 1985; PhD, Environmental Engineering, University of Oklahoma, 1999. Dr. Thal’s research
interests include engineering and environmental management, groundwater flow and remediation technologies, facility
and infrastructure management, product development, sustainability, and project management.
Tel. 937-255-3636 x7401, email: Al.Thal@afit.edu

SPONSOR FUNDED RESEARCH PROJECTS

“Value-Driven Human Systems Integration.” Sponsor: 711 HPW. Funding: $30,385 – Thal 75%, Parr 25%.

REFEREED JOURNAL PUBLICATIONS

Emery, I., E. Mbonimpa, and A.E. Thal, Jr., “Climate-based Policies May Increase Life-cycle Social Costs of Vehicle

VALENCE, VHANCE V., Lt Col,
Assistant Professor of Engineering Management, Department of Systems Engineering and Management, AFIT
Appointment Date: 2013 (AFIT/ENV); BS, Mechanical Engineering, San Diego State University, 2001; MS,
Engineering Management, Air Force Institute of Technology, 2007; PhD, Systems Engineering, Air Force Institute of
Technology, 2013. Lt Col Valencia’s primary interest is in infrastructure asset management and systems engineering
as applied to infrastructure. Research topics include civil engineering applications for additive manufacturing
technologies, autonomous systems for assessing infrastructure, and infrastructure applications for geographic
information systems.

WAGNER, TORREY J., Lt Col,
Assistant Professor of Systems Engineering, Department of Systems Engineering and Management, AFIT
Appointment Date: 2017 (AFIT/ENV); BS, Electrical Engineering, University of Minnesota, 2000; MS, Aerospace
Lt Col Wagner’s primary interest is in renewable energy and water systems engineering, with research topics including
solar energy, UV water treatment and small-grid energy systems. Tel. 937-255-3636 x4611,
email: Torrey.Wagner@afit.edu
6. RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION

The contents of this section are duplicated data, grouped by center. The information is previously listed within each project’s specific academic department.
6.1. AUTONOMY AND NAVIGATION TECHNOLOGY CENTER

Autonomy and Navigation Technology (ANT) Center
Director 255-3636 x4580
Executive Administrator 255-3636 x4583
Laboratory Manager 255-3636 x4911
Homepage: http://www.afit.edu/ANT

6.1.1. DOCTORAL DISSERTATIONS


LOPEZ, JR., JUAN, *Enhanced Industrial Control System (ICS) and Supervisory Control and Data Acquisition (SCADA) Security for ISA99 Level-0 using Field Device Wired Signal Distinct Native Attributes (WS-DNA) Fingerprints*. AFIT/ENG/DS/16D-008. Faculty Advisor: Dr. Michael A. Temple. Sponsor: DHS.

6.1.2. MASTER'S THESES


COOPER, MATTHEW A., *Converting a 2D Scanning LiDAR to a 3D System for use on Quad-Rotor UAVs in Autonomous Navigation*. AFIT/ENG/MS/17M-019. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RW.


GUERRERO, JUSTIN, *GNSS Receiver Front-End Component Characterization for High Fidelity Signal Deformation Monitoring Applications*. AFIT/ENG/MS/17M-033. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: N/A.


WEATHERS, DAVID L., *Sound Based Positioning*. AFIT/ENG/MS/17M-081. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RY.

WIREMAN, MARK J., *Signal Deformation Analysis of the GLONASS Constellation using Chip Shape Processing*. AFIT/ENG/MS/17M-082. Faculty Advisor: Dr. Sanjeev Gunawardena. Sponsor: AFRL/RY.
6.1.3. FACULTY RESEARCH OUTPUT

Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BETANCES, JOAN A., Maj, Department of Electrical and Computer Engineering

BINDEWALD, JASON M., Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BORGHETTI, BRETT J., Department of Electrical and Computer Engineering

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


CANCIANI, AARON J., Capt, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


“Cooperative Navigation and Magnetic/Vision Navigation Approaches.” Sponsor: AFRL/RW. Funding: $100,000 – Canciani 80%, Raquet 20%.
REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


CARBINO, TIMOTHY J., Maj, Department of Electrical and Computer Engineering

CLINTON, JUSTIN A., Department of Engineering Physics

COBB, RICHARD G., Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Optimization for Tactical Off-Board Sensing and Persistent Intelligence, Surveillance, and Reconnaissance.” Sponsor: AFRL/RQ. Funding: $35,000 – Cobb 50%, Kunz 50%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


COLLINS, PETER J., Department of Electrical and Computer Engineering

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


COLOMBI, JOHN M., Department of Systems Engineering and Management

SPONSOR FUNDED RESEARCH PROJECTS

“Automation and Autonomy Requirements for Employment of Building Interior Surveillance System (BISS) via Unmanned Aerial Vehicles.” Sponsor: DTRA. Funding: $150,000 – Colombi 40%, Jacques 40%, Cox 15%, Clinton 5%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


CORBELL, PHILLIP M., Lt Col, Department of Electrical and Computer Engineering,

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


GUNAWARDENA, SANJEEV, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“GPS Waveform Prototyping Platform (GWPP).” Sponsor: AFRL/RV. Funding: $300,000 – Gunawardena 90%, Raquet 10%.

“GNSS Testbed Development.” Sponsor: AFRL/RY. Funding: $454,000.

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HODSON, DOUGLAS D., Department of Electrical and Computer Engineering,

SPONSOR FUNDED RESEARCH PROJECTS

“AFSIM Maturation and Capability Improvements.” Sponsor: AFRL/RQ. Funding: $34,269 – Hodson 50%, Peterson 50%.

REFEREEED JOURNAL PUBLICATIONS


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


HOPKINSON, KENNETH M., Department of Electrical and Computer Engineering

JACQUES, DAVID R., Department of Systems Engineering and Management

SPONSOR FUNDED RESEARCH PROJECTS

“Airfield Damage Inspection and Assessment using Small UAS.” Sponsor: AFEC. Funding: $100,000 – Jacques 50%, Colombi 20%, Thal 15%, Stoppel 15%.

REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


LEISHMAN, ROBERT C., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MARTIN, RICHARD K., Department of Electrical and Computer Engineering

REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

Merkle, Laurence D., Department of Electrical and Computer Engineering

Referenced Conference Paper Accepted on the Basis of Full Paper Review


Miller, Michael E., Department of Systems Engineering and Management

Sponsor Funded Research Projects

“Computational Agent Capable of Adapting Roles within a Human-Machine Team.” Sponsor: AFOSR. Funding: $173,715 – Miller 30%, Binewald 30%, Peterson 30%, Langhals 10%.


Referenced Journal Publications


Referenced Conference Papers Accepted on the Basis of Full Paper Review


Referenced Conference Papers Accepted on the Basis of Abstract Review


Patents Awarded

NYKL, SCOTT L., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Automated Aerial Refueling: Precise Relative Navigation from Stereo Vision, Phase II.” Sponsor: AFRL/RQ. Funding: $120,000 – Nykl 50%, Pecarina 50%.

“Reconnaissance Improvement through Secure, Reduced Bandwidth Communication and Cooperative Navigation Using Jetson TX1s (New).” Sponsor: Undisclosed. Funding: $130,789 – Nykl 30%, Graham 30%, Pierce 30%, Carbino 10%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OXLEY, MARK E., Department of Mathematics and Statistics

PATENT APPLICATIONS


PACHTER, MEIR, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Cooperative Control.” Sponsor: AFRL/RQ. Funding: $40,000.
REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


PETE RSON, GILBERT L., Department of Electrical and Computer Engineering

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS


PIERCE, SCOTT J., Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


“Trade Study for Army Training Position/Attitude System.” Sponsor: USA RDEC. Funding: $200,000 – Pierce 80%, Raquet 20%.
RAQUET, JOHN F., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


“Star Trackers for Non-GPS Navigation.” Sponsor: Draper Laboratories. Funding: $20,000 – Raquet 20%, Pierce 80%.

“Support for Alternative Navigation Research.” Sponsor: DARPA. Funding: $9,836 – Raquet 80%, Pierce 20%.


“Trajectory Determination and Analysis Software (TDAS) Development Planning.” Sponsor: 812 TSS. Funding: $150,000.

“PNT Collaboration.” Sponsor: Lockheed Martin. Funding: $100,000 – Raquet 50%, Pierce 10%, Canciani 40%.

“ANT Center and Laboratory Support per MOA between AFIT and AFRL.” Sponsor: AFRL/RW. Funding: $200,000 – Raquet 50%, Pierce 50%.


“Support for PNT Modeling and Simulation.” Sponsor: USA CERDEC. Funding: $75,000 – Raquet 50%, Leishman 25%, Canciani 25%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW**


**TEMPLE, MICHAEL A., Department of Electrical and Computer Engineering**
6.2. CENTER FOR CYBERSPACE RESEARCH

Center for Cyberspace Research (CCR)
Directory 255-6565 x4690
Executive Program Coordinator 255-3636 x4602
Homepage: http://www.afit.edu/CCR

6.2.1. DOCTORAL DISSERTATIONS


LEWIS, TYRONE A.L., Biologically Inspired Network (BiONet) Authentication using Logical and Pathological RF-DNA Credential Pairs. AFIT/ENG/DS/17S-012. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI.


LOPEZ, JR., JUAN, Enhanced Industrial Control System (ICS) and Supervisory Control and Data Acquisition (SCADA) Security for ISA99 Level-0 using Field Device Wired Signal Distinct Native Attributes (WS-DNA) Fingerprints. AFIT/ENG/DS/16D-008. Faculty Advisor: Dr. Michael A. Temple. Sponsor: DHS.

MILLAR, JEREMY R., A Stochastic Model of Plausibility in Live-Virtual-Constructive Environments. AFIT/ENG/DS/17S-015. Faculty Advisor: Dr. Douglas D. Hodson. Sponsor: N/A.

RICE, JOHN C., RF-DNA Aided Ambiguity Resolution in a Dual Process Electronic Warfare Receiver. AFIT/ENG/DS/16D-001. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RY.

6.2.2. MASTER'S THESES

AUST, MATTHEW E., Proactive Host Mutation in Software-Defined Networking. AFIT/ENG/MS/17M-003. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.


CABERTO, EDDIE K., Securing Controller Area Networks in Vehicles via Packet Switched Network Segregation. AFIT/ENG/MS/17M-009. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A.

CHAPPELL, RICHARD E., A Game Theory Model for Allocating Scarce Resources in Critical Infrastructure Protection. AFIT/ENG/MS/17M-012. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI.

COON, CAMERON W., Comparative Analysis of RF Emission Based Fingerprinting Techniques for ZigBee Device Classification. AFIT/ENG/MS/17M-017. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFRL/RI.

COOPER, KEVIN S., Process Categorization using Tree Edit Distance. AFIT/ENG/MS/17M-018. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: N/A.

DAOUD, JOSEPH K., Multi-PLC Exercise Environments for Training ICS First Responders. AFIT/ENG/MS/17M-020. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS.

DAZZIO, ELAINE L., Statistically Modeling Fuel Consumption with Heteroscedastic Data. AFIT/ENG/MS/17J-075. Faculty Advisor: Dr. Scott R. Graham. Sponsor: N/A.

GALLENSTEIN, JUSTIN K., Integration of the Network and Application Layers of Automatically Configured Programmable Logic Controller Honeypots. AFIT/ENG/MS/17M-029. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS.


GOODGION, JONATHON S., Active Response using Host-Based Intrusion Detection System and Software-Defined Networking. AFIT/ENG/MS/17M-032. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: N/A.


LUGO, DANIEL, A Sandbox in Which to Learn and Develop Soar Agents. AFIT/ENG/MS/17M-047. Faculty Advisor: Dr. Douglas D. Hodson. Sponsor: N/A.

MAYS, CALEB E., Constructing Honeypots to Defend Building Automation Systems. AFIT/ENG/MS/17M-049. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS.

MCCARGAR, ELWYN J., Synchronization Algorithms for Programmable Logic Controller Emulation. AFIT/ENG/MS/17M-050. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS.


PLUMLEY, EVAN G., A Framework for Categorization of Industrial Control System Cyber Training Environments. AFIT/ENG/MS/17M-059. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: DHS.


6.2.3. FACULTY RESEARCH OUTPUT
Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BINDEWALD, JASON M., Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Cyber Operations and Behavior Modeling in AFSIM.” Sponsor: AF/A9. Funding: $59,000 – Binewald 34%, Hodson 33%, Peterson 33%.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BORGHETTI, BRETT J., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


CARBINO, TIMOTHY J., Maj, Department of Electrical and Computer Engineering

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


CASEY, DANIEL J., Maj, Department of Electrical and Computer Engineering

COLLINS, PETER J., Department of Electrical and Computer Engineering

CORBELL, PHILLIP M., Lt Col, Department of Electrical and Computer Engineering

DEVER, MATTHEW C., Department of Electrical and Computer Engineering

GRAHAM, SCOTT R., Department of Electrical and Computer Engineering

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


GRIMAILA, MICHAEL R., Department of Systems Engineering and Management

PATENT APPLICATIONS


GUNAWARDENA, SANJEEV, Department of Electrical and Computer Engineering

HODSON, DOUGLAS D., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“AFSIM Maturation and Capability Improvements.” Sponsor: AFRL/RQ. Funding: $34,269 – Hodson 50%, Peterson 50%.

HOPKINSON, KENNETH M., Department of Electrical and Computer Engineering

SPONSOR FUNDED EDUCATIONAL PROJECTS

“Enhancing Cybersecurity Education with Adversarial Thinking.” Sponsor: NSA. Funding: $100,000.

LIN, ALAN C. Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Multi-domain Scenario-based Wargaming.” Sponsor: 711 HPW. Funding: $29,973 – Lin 67%, Peterson 33%.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


MAGNUS, AMY L., Department of Mathematics and Statistics

SPONSOR FUNDED RESEARCH PROJECTS

“Distributed Intelligence and the Nature of Mature Work.” Sponsor: AFOSR. Funding: $149,865 – Magnus 90%, Oxley 10%.
MAILLOUX, LOGAN O., Maj, Department of Systems Engineering and Management

MARTIN, RICHARD K., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Analytical Support for Hardware Assurance.” Sponsor: AFRL/RY. Funding: $14,302

SPONSOR FUNDED EDUCATIONAL PROJECTS


MERKLE, LAURENCE D., Department of Electrical and Computer Engineering

MILLAR, JEREMY R., Maj, Department of Electrical and Computer Engineering

MILLS, ROBERT F., Department of Electrical and Computer Engineering

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS


PATENT APPLICATIONS


MULLINS, BARRY E., Department of Electrical and Computer Engineering,

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS


NYKL, SCOTT L., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Reconnaissance Improvement through Secure, Reduced Bandwidth Communication and Cooperative Navigation Using Jetson TX1s (New).” Sponsor: Undisclosed. Funding: $130,789 – Nykl 30%, Graham 30%, Pierce 30%, Carbino 10%.

PACHTER, MEIR, Department of Electrical and Computer Engineering

PETERSON, GILBERT L., Department of Electrical and Computer Engineering

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


BOOKS AND CHAPTERS IN BOOKS

Peterson, G. and Shenoi, S., Advances in Digital Forensics XII, Springer-Verlag, 2016.

PATENT APPLICATIONS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


REITH, MARK G., Lt Col, Department of Electrical and Computer Engineering
TEMPLE, MICHAEL A., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


“Application of RF-DNA to Enhance Transition of Functional Materials, Devices, and Components.” Sponsor: AFRL/RX. Funding: $15,000.
6.3. CENTER FOR DIRECTED ENERGY

Center for Directed Energy (CDE)
Director 255-3636 x4506
Executive Administrator 255-3636 x4551
Homepage: http://www.afit.edu/CDE

6.3.1. DOCTORAL DISSERTATION


BURLEY, JARRED L., A Computational Tool for Hyperspectral Propagation of NUDET Effects. AFIT/ENP/DS/17S-021. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFTAC.

EMMONS, DANIEL J., Analysis of Ar(1s5) Metastable Populations in High Pressure Argon-Helium Gas Discharges. AFIT/ENP/DS/17S-025. Faculty Advisor: Dr. David E. Weeks. Sponsor: DEJTO.


GONZALES, ASHLEY E., Kinetics of Graphite Oxidation in Reacting Flow from Imaging Fourier Transform Spectroscopy. AFIT/ENP/DS/17M-093. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO.

HALUSKA, NATHAN D., Cascade and Two-Photon Lasing from Two-Photon Excitation of Cesium 62D. AFIT/ENP/DS/17S-026. Faculty Advisor: Dr. Glen P. Perram. Sponsor: DEJTO.

6.3.2. MASTER’S THESES

HALLADA, FRANCIS D., The Fresnel Zone Light Field Spectral Imager. AFIT/ENP/MS/17M-095. Faculty Advisor: Lt Col Anthony L. Franz. Sponsor: N/A.

ROSS, JOHN S., Total Electron Count Variability and Stratospheric Ozone Effects on Solar Backscatter and LWIR Emissions. AFIT/ENP/MS/17M-103. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: N/A.

WURST, NATHAN P., Improved Atmospheric Characterization for Hyperspectral Exploitation. AFIT/ENP/MS/17J-014. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: AFRL/RY.

6.3.3. FACULTY RESEARCH OUTPUT

Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

AKERS, BENJAMIN F., Department of Mathematics and Statistics

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

**BOSE-PILLAI, SANTASRI R.** Department of Engineering Physics

**REFEREED JOURNAL PUBLICATIONS**


**REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW**


INVENTION DISCLOSURES


BUTLER, SAMUEL D., Maj, Department of Engineering Physics

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


COBB, RICHARD G., Department of Aeronautics and Astronautics

FERDINANDUS, MANUEL R., Maj, Department of Engineering Physics

FIORINO, STEVEN T., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


“Wavefront Measurement through Scintillation with Speckle.” Sponsor: AFRL/RD. Funding: $100,000.

“2017 AFIT Center for Directed Energy DOD HPCMP HPC Internship Program (HIP).” Sponsor: HPCMP. Funding: $48,000.


“CFLOS - 4D Weather Cubes for HyDRA.” Sponsor: AFRL/RD. Funding: $150,000.

“2017 AFIT Center for Directed Energy Summer Intern (DESI) Program.” Sponsor: DEJTO. Funding: $60,000.

“4D Weather Cubes for Sensors Concept Development.” Sponsor: AFRL/RY. Funding: $75,000.

“CY2017 HEL JTO AP TAWG Product Development.” Sponsor: DEJTO. Funding: $400,000.

“CY2017 HEL JTO AP TAWG Research and Analysis.” Sponsor: DEJTO. Funding: $375,000.
SPONSOR FUNDED EDUCATIONAL PROJECTS

“High Energy Laser End to End Operational Simulation (HELEEOS) Short Course.” Sponsor: AFTAC. Funding: $8,543.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES

GROSS, KEVIN C., Department of Engineering Physics

HAWKS, MICHAEL R., Department of Engineering Physics

HYDE, MILO W. IV, Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


INVENTION DISCLOSURES


MARCINIAK, MICHAEL A., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS

“Discontinuous Phase Surfaces for Low-Profile Infrared Optics.” Sponsor: AFOSR. Funding: $50,400.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


MCCRAE, JACK E., Jr., Department of Engineering Physics

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


INVENTION DISCLOSURES


NAUYOKS, STEPHEN E., Department of Engineering Physics,

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


PERRAM, GLEN P., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


“Wave Front Sensing for Laser Weapon Applications.” Sponsor: AFRL/RD. Funding: $100,000 – Perram 80%, Rice 20%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOOKS AND CHAPTERS IN BOOKS


PHILLIPS, GRADY T., Department of Engineering Physics

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


BOOKS AND CHAPTERS IN BOOKS


REEGER, JONAH A., Maj, Department of Mathematics and Statistics

RICE, CHRISTOPHER A., Department of Engineering Physics

REFEREED JOURNAL PUBLICATIONS


INVENTION DISCLOSURES


SRITHARAN, SIVAGURU S., Department of Mathematics and Statistics

TERZUOLI, ANDREW J., Jr., Department of Electrical and Computer Engineering

WEEKS, DAVID E., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS

6.4. CENTER FOR OPERATIONAL ANALYSIS

Center for Operational Analysis (COA)
Director 255-3636 x4251
Deputy Director 255-3636 x4523
Homepage: http://www.afit.edu/COA

6.4.1. DOCTORAL DISSERTATIONS

HANKS, ROBERT W., Robust Goal Programming and Risk Assessment using Cardinality-Constrained and Strict Robustness via Alternative Uncertainty Sets. AFIT/ENS/DS/17S-035. Faculty Advisor: Dr. Jeffery D. Weir. Sponsor: USTRANSCOM.

WHITE, ANTHONELLI, Determinants of Individual-level Demand Forecasting Performance. AFIT/ENS/DS/17S-045. Faculty Advisor: Lt Col Matthew A. Douglas. Sponsor: AFSC.

6.4.2. MASTER'S THESES

ATKINSON, JOHN D., Diffusion of Autonomous Vehicles as an Organizational Innovation. AFIT/ENS/MS/17M-112. Faculty Advisor: Maj Benjamin T. Hazen. Sponsor: N/A.


CREAN, RYAN C., Benchmarking DOD use of Additive Manufacturing and Quantifying Costs. AFIT/ENS/MS/17M-121. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFMC.


HOYT, GREG E., An Investigation Into the Indicators of a Successful Total Force Association. AFIT/ENS/MS/17M-133. Faculty Advisor: Maj Benjamin T. Hazen. Sponsor: N/A.


REBOULET, AMANDA M., Organizational Strategic Basing Framework with Infusion of Multi-Dimensional Uncertainty. AFIT/ENS/MS/17S-068. Faculty Advisor: Dr. Bradley C. Boehmke. Sponsor: N/A.


WILLIAMS, RUSSELL H., Predicting Failure Rates for the B-1B Bomber. AFIT/ENS/MS/17M-163. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: AFGSC.

6.4.3. GRADUATE RESEARCH PAPERS


DAWSON, JEREMY D., Deterring the Russian Tactical Nuclear Arsenal. AFIT/ENS/MS/17J-020. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: N/A.


RIDLEY, MICHAEL E., Cascadia Subduction Zone Earthquake Basing and Supply Delivery Strategy Based on Current Planning and Historical Event Analysis. AFIT/ENS/MS/17J-045. Faculty Advisor: Dr. Paul L. Hartman. Sponsor: FEMA.


6.4.4. FACULTY RESEARCH OUTPUT
Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BAUER, KENNETH W., Department of Operational Sciences

BOEHMKE, BRADLEY C., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS


“IMSC Analytic Support.” Sponsor: AFISMC. Funding: $235,000 – Boehmke 50%, Hartman 25%, Weir 25%.

“V-22 Data Analytics.” Sponsor: NAVAIR. Funding: $170,000 – Boehmke 50%, Hartman 25%, Weir 25%.

CHRISSIS, JAMES W., Department of Operational Sciences

CUNNINGHAM, WILLIAM A., Department of Operational Sciences

DOUGLAS, MATTHEW A., Col, Department of Operational Sciences
HARTMAN, PAUL L., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

“Operational Requirements for the Mechanical Equipment & Subsystem Integrity Program (MECSIP).” Sponsor: AFLCMC. Funding: $61,376 – Hartman 50%, Hartman 50%.

“Modernization of the AFRL Enterprise Business System Program Office (EBS PO) Capabilities.” Sponsor: AFRL/RC. Funding: $130,000.


REFEREED JOURNAL PUBLICATIONS


HAZEN, BENJAMIN T., Maj, Department of Operational Sciences

HODSON, DOUGLAS D., Department of Electrical and Computer Engineering

JOHNSON, ALAN W., Department of Operational Sciences

KRETSER, MICHAEL P., Capt, Department of Operational Sciences

MILLER, JOHN O., Department of Operational Sciences

OGDEN, JEFFREY A., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

“Research, Analysis and Transition Support to the Directorate of Logistics and Sustainment Air Force Sustainment Center.” Sponsor: AFMC/A4P. Funding: $440,000 – Ogden 60%, Johnson 40%.

OVERSTREET, ROBERT E., Lt Col, Department of Operational Sciences

ROBBINS, MATTHEW J., Lt Col, Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

Robbins. “Strategic Development Planning & Experimentation Support: Roadmap for Multi-Domain Modeling, Simulation, Analysis and Experimentation.” Sponsor: SDPE. Funding: $1,000,000 – Robbins 50%, Weir 50%.

SCHULTZ, KENNETH L., Department of Operational Sciences
SMITH, CHRISTOHER M., LTC, Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS


STEENECK, DANIEL W., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

“Repair Network Optimization.” Sponsor: AFSC. Funding: $220,000.

STONE, BRIAN B., Maj, Department of Operational Sciences

TUCHOLSKI, HEIDI M., Maj, Department of Operational Sciences

WEIR, JEFFERY D., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

“Value-Driven Tradespace Exploration and Analysis for Resilient Systems.” Sponsor: USA ERDC. Funding: $420,000.


“Development of Cyber Resiliency Processes and Mitigation Solutions for Legacy Platforms.” Sponsor: AFLCMC. Funding: $700,000 – Weir 50%, Hartman 50%.


“412th Test Wing Sortie Scheduling Modernization Effort.” Sponsor: 412 TW. Funding: $493,936.

“Design of Experiment (DOE) and Meta-Modelling Support for the ISR Decision Support at the Simulation and Analysis Facility (SIMAF).” Sponsor: AFLCMC. Funding: $197,554.


“Air Force Institute of Technology Center for Operational Analysis (AFIT/COA) Support to Acquisition Intelligence Requirements Task Force (AIRTF) for Intelligence Mission Data (IMD) Cost, Capability Analysis (CCA) (Revised).” Sponsor: OSD. Funding: $800,000.

“Sliding Scale Autonomy through Physiological Rhythm Evaluations (SAPHYRE).” Sponsor: OFRN (WSU).
Funding: $109,993.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


6.5. CENTER FOR SPACE RESEARCH AND ASSURANCE

Center for Space Research and Assurance (CSRA)
Director 255-3636 x4578
Deputy Director 255-3636 x4542
Director of Research 255-3636 x4901
Homepage: http://www.afit.edu/CSRA

6.5.1. DOCTORAL DISSERTATIONS

SATTLER, JAMES, Engineered Surfaces to Control Secondary Electron Yield for Multipactor Suppression. AFIT/ENG/DS/17S-018. Faculty Advisor: Capt Robert A. Lake. Sponsor: N/A.


6.5.2. MASTER THESES

ALF, CHRISTIAN N., Image Processing for Space Situational Awareness using Commercial-off-the-Shelf Imagery. AFIT/ENY/MS/17M-238. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.

ANDERSON, RYAN J., Using a Plenoptic Camera for Real-Time Depth Estimation. AFIT/ENY/MS/17M-002. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: N/A.


BROCH, LAURA H., Constellation Architecture Design for Persistent Space Situational Awareness of Direct Ascent to Geosynchronous Orbit. AFIT/ENY/MS/17M-247. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: NASIC.


CUNNINGHAM, CAMERON R., Evaluation of Networked Satellite Command & Control via Internet Conduit. AFIT/ENY/MS/17M-254. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.

DOWNEY, JACOB J., Structural Analysis of a 3D Printed Composite Truss. AFIT/ENY/MS/17M-256. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: AFRL/RV.


DUNKEL, PATRICK N., Application of RF-DNA Fingerprinting Techniques to ICOM Radio Satellite Communication. AFIT/ENY/MS/17M-258. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.


JENKINS, MATHEW K., See CUHRAN, JOSEPH J.

KACZMAREK, JEREMY J., Analysis of Image Processing and Data Reduction for Space Situational Awareness Applications in CubeSats. AFIT/ENY/MS/17M-268. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.

KIRK, JORDAN T., Multi-Hypothesis Test Detection for Star Tracking Systems. AFIT/ENG/MS/17M-041. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

LANZO, DANIEL T., Additively Manufactured Spacecraft Thermal Control System. AFIT/ENY/MS/17M-271. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: N/A.


MCMURRY, RICHARD R., Improving Space Object Detection for Ground Telescopes with Poisson Distribution Statistics. AFIT/ENG/MS/17M-052. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

OLIVER, RACHEL, Model Fidelity Analysis for Production of Accurate Theoretical Light Curves. AFIT/ENY/MS/17M-279. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV.


REABE, MARISSA C., Formation Flight of Earth Satellites on Kamtorus using Classical Orbital Elements. AFIT/ENY/MS/17M-285. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.


ROBINSON, CHRISTINE, Evaluating the Viability of Planar Laser-Induced Fluorescence to Determine the Constituents of AF-M315E Exhaust Plume. AFIT/ENY/MS/17M-287. Faculty Advisor: Dr. Carl R. Hartsfield. Sponsor: AFRL/RQ.

ROSS, JOHN S., Total Electron Count Variability and Stratospheric Ozone Effects on Solar Backscatter and LWIR Emissions. AFIT/ENP/MS/17M-103. Faculty Advisor: Dr. Steven T. Fiorino. Sponsor: N/A.

ROTH, KRISTA, Analysis of an Experimental Space Debris Removal Mission. AFIT/ENY/MS/17J-071. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.

SADOWSKI, JUSTIN A., Dynamic Logical Mission Modeling Tool. AFIT/ENY/MS/17M-290. Faculty Advisor: Dr. Eric D. Swenson. Sponsor: N/A.


STUART, KENNETH J., *KAM Tori from Two-Line Element Sets: A Comparison to SGP4.* AFIT/ENY/MS/17M-293. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.


WALTERS, MICHAEL J., See CUHRAN, JOSEPH J.

WATCHEL, STEVEN T., See STERN, JORDAN L.

6.5.3. FACULTY RESEARCH OUTPUT

Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

AYRES, BRADLEY J., Department of Aeronautics and Astronautics

BETANCES, JOAN A., Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


BETTINGER, ROBERT A., Maj, Department of Aeronautics and Astronautics

CARBINO, TIMOTHY J., Maj, Department of Electrical and Computer Engineering

COBB, RICHARD G., Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Optimization and Computer Vision for Proximity Operations.” Sponsor: Undisclosed. Funding: $40,000 – Cobb 50%, Swenson 50%.

“Optimization and Decision Support for TMAP.” Sponsor: NASIC. Funding: $35,000.

REFEREED JOURNAL PUBLICATIONS


DECKRO, RICHARD F., Department of Operational Sciences

SPONSOR FUNDED RESEARCH PROJECTS

“JWAC AFIT Interaction.” Sponsor: JWAC. Funding: $150,000 – Deckro 30%, Ahner 23%, Lunday 23%, Swenson 25%.

FERDINANDUS, MANUEL R., Maj, Department of Engineering Physics

FIORINO, STEVEN T., Department of Engineering Physics

FRANZ, ANTHONY L., Lt Col, Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


FULLER, DANE F., Col, Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Actinide Radiation Detector Payload.” Sponsor: Undisclosed. Funding: $367,850 – Fuller 40%, Petrosky 20%, Hogsed 30%, Cobb 5%.

“Long Wave Polarimetric Imaging Research.” Sponsor: Undisclosed. Funding: $150,000 – Fuller 20%, Gross 40%, Cobb 40%.


“Radiation Testing Jeston TX1 and TX2.” Sponsor: Undisclosed. Funding: $24,300 – Fuller 10%, Hogsed 80%, Cobb 10%.

GEISEL, CHRISTOPHER D., Lt Col, Department of Aeronautics and Astronautics

GRIMAILA, MICHAEL R., Department of Systems Engineering and Management

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


GROSS, KEVIN C., Department of Engineering Physics

GUNAWARDENA, SANJEEV, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS


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HARTSFIELD, CARL R., Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS


“Additively Manufactured Metallic Phase Change Thermal Management Systems.” Sponsor: Undisclosed. Funding: $95,850 – Hartsfield 34%, Swenson 33%, O’Hara 33%.


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HAWKS, MICHAEL R., Department of Engineering Physics

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HESS, JOSHUAH, A., Capt, Department of Aeronautics and Astronautics

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


HODSON, DOUGLAS D., Department of Electrical and Computer Engineering

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

HOGSED, MICHAEL R., Lt Col, Department of Engineering Physics

HOPKINSON, KENNETH M., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Advancing Software Defined Radios for Use in Space Communications.” Sponsor: AFRL/RV. Funding: $54,000.

JACQUES, DAVID R., Department of Systems Engineering and Management

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


JOHNSON, KIRK, W., Lt Col, Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS


LAKE, ROBERT A. Capt, Department of Electrical and Computer Engineering

LAURVICK, TOD V. Maj, Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“Plasmonic Grating Geometries and Wavelength-Dependent Focus Depth in IR Detectors.” Sponsor: AFRL/RV. Funding: $13,500.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


LINGENFELTER, ANDREW J., Capt, Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“REBEL Satellite Simulator Automated Mass Balance System.” Sponsor: AFRL/RV. Funding: $47,000 – Lingenfelter 90%, Swenson 10%.

LOPER, ROBERT D., Department of Engineering Physics

MAGNUS, AMY L., Department of Mathematics and Statistics

MARCINIAK, MICHAEL A., Department of Engineering Physics

MCCLORY, JOHN W., Department of Engineering Physics

MERKLE, LAURENCE D., Department of Electrical and Computer Engineering
NAVA, OMAR A., Maj, Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


O’HARA, RYAN P., Maj, Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Optimized, Integrated, and Additively Manufactured CubeSat Structural Bus.” Sponsor: Undisclosed. Funding: $110,700 – O’Hara 34%, Hartsfield 33%, Swenson 33%.

PETROSKY, JAMES C., Department of Engineering Physics

RUTLEDGE, JAMES L., Maj, Department of Aeronautics and Astronautics

STEWARD, BRYAN J., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SWENSON, ERIC D., Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS


“Hybrid Flex Circuit Testing.” Sponsor: AFRL/RX. Funding: $15,000 – Swenson 50%, Hartsfield 50%.


TERZUOLI, ANDREW J., Jr., Department of Electrical and Computer Engineering

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


WIESEL, WILLIAM E., Jr., Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Precision Onboard Orbit Determination.” Sponsor: Undisclosed. Funding: $120,000.

REFEREEED JOURNAL PUBLICATIONS


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


6.6. CENTER FOR TECHNICAL INTELLIGENCE STUDIES AND RESEARCH

Center for Technical Intelligence Studies and Research (CTISR)
Director                  255-3636 x4558
Homepage: http://www.afit.edu/CTISR

6.6.1. DOCTORAL DISSERTATIONS

O’KEEFE, DANIEL S., Oblique Longwave Infrared Atmospheric Compensation. AFIT/ENP/DS/17S-030. Faculty Advisor: Dr. Kevin C. Gross. Sponsor: AFRL/RY.


6.6.2. MASTER’S THESES

HALLADA, FRANCIS D., The Fresnel Zone Light Field Spectral Imager. AFIT/ENP/MS/17M-095. Faculty Advisor: Lt Col Anthony L. Franz. Sponsor: N/A.

6.6.3. FACULTY RESEARCH OUTPUT

Notes: Faculty Bios can be found under their respective department listings. Shared credit for funding awards is indicated by the percentages shown for each faculty member associated with the project.

BAUER, KENNETH W., Department of Operational Sciences

BUTLER, SAMUEL D., Maj, Department of Engineering Physics

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


CAYLOR, MICHAEL, J., Department of Engineering Physics

COBB, RICHARD G., Department of Aeronautics and Astronautics

FIORINO, STEVEN T., Department of Engineering Physics

FRANZ, ANTHONY L., Lt Col, Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

FULLER, DANE F., Col, Department of Aeronautics and Astronautics

SPONSOR FUNDED RESEARCH PROJECTS

“Long Wave Polarimetric Imaging Research.” Sponsor: Undisclosed. Funding: $150,000 – Fuller 20%, Gross 40%, Cobb 40%.

GROSS, KEVIN C., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS


“Open Skies IR Target Study.” Sponsor: NASIC. Funding: $118,000 – Gross 5%, Hawks 75%, Marciniak 10%, Steward 5%.

“Developing Physics-Based Machine Learning Algorithms to Exploit Hyperspectral Imagery.” Sponsor: AFRL/RY. Funding: $50,000 – Gross 33%, Merkle 33%, Borghetti 33%.

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HAWKS, MICHAEL R., Department of Engineering Physics

REFEREED JOURNAL PUBLICATIONS


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


HOPKINSON, KENNETH M., Department of Electrical and Computer Engineering

SPONSOR FUNDED RESEARCH PROJECTS

“A Cognitive Recommender System for a Closed Feedback Tasking Loop.” Sponsor: NPS. Funding: $150,000 – Hopkinson 40%, McBee 10%, Oxley 40%, Schubert Kabban 5%.

HYDE, MILO W. IV, Maj, Department of Electrical and Computer Engineering

JACKSON, JULIE A., Department of Electrical and Computer Engineering

MARCIANIAK, MICHAEL A., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS

“Scattering Effects of Human Skin and Hair.” Sponsor: 711 HPW. Funding: $50,000.


REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


MCCLORY, JOHN W., Department of Engineering Physics
OXLEY, MARK E., Department of Mathematics and Statistics
PERRAM, GLEN P., Department of Engineering Physics

REFEREEED JOURNAL PUBLICATIONS


RICE, CHRISTOPHER A., Department of Engineering Physics
STEWARD, BRYAN J., Department of Engineering Physics

SPONSOR FUNDED RESEARCH PROJECTS

“Persistent Infrared Scientific and Analytical Support.” Sponsor: NASIC. Funding: $200,000 – Steward 90%, Gross 10%.

“Stormy Haystack.” Sponsor: NGA. Funding: $450,000 – Steward 40%, Hawks 50%, Gross 10%.

“National IR Detection and Tracking.” Sponsor: AFRL/RY. Funding: $100,000 – Steward 60%, Hawks 30%, Gross 10%.

REFEREEED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


SWENSON, ERIC D., Department of Aeronautics and Astronautics

TERZUOLI, ANDREW J., Jr., Department of Electrical and Computer Engineering
7. TECHNOLOGY TRANSFER

7.1. COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENTS

“UAV Positioning Experimentation Project (UPEP),” USAF CRADA No. 16-AFIT-22, Collaborator: ENSCO, Inc., Faculty Investigator: Dr. John F. Raquet, Effective Date: 11 October 2016, Term: 24 months.

“Sliding Scale Autonomy through Physiological Rhythm Evaluations (SAPHYRE),” USAF CRADA No. 17-AFIT-02, Collaborator: Wright State University, Faculty Investigator: Dr. Jeffery D. Weir, Effective Date: 26 June 2017, Term: 15 months.

“Intelligent Channel Sensing Based Secure Cross Layer Cognitive Networking for Resilient Space Communication,” USAF CRADA No. 17-AFIT-04, Collaborator: Wright State University, Faculty Investigator: Dr. Robert F. Mills, Effective Date: 24 August 2017, Term: 12 months.

“NDA - Video Gaming and Automated Agents,” USAF CRADA No. 17-AFIT-05, Collaborator: The Ohio State University, Faculty Investigator: Maj Christina F. Rusnock, Effective Date: 22 February 2017, Term: 12 months.


“NDA - Intelligent Space and Aero Communication Systems,” USAF CRADA No. 17-AFIT-08, Collaborator: Blue Cranium, LLC dba Comsat Architects, Faculty Investigator: Dr. Robert F. Mills, Effective Date: 18 August 2017, Term: 12 months.

“Test and Evaluation of Autonomous Systems (TEAS),” USAF CRADA No. 17-AFIT-09, Collaborator: Wright State University, Faculty Investigator: Dr. Michael E. Miller, Effective Date: 24 August 2017, Term: 2 months.

“NDA - Review of Interactive Visualization of Computer Security Data (FY18),” USAF CRADA No. 17-AFIT-10, Collaborator: Vambrace, Inc., Faculty Investigator: Dr. Gilbert L. Peterson, Effective Date: 8 September 2017, Term: 12 months.

“Advanced Turbine Cooling,” USAF CRADA No. 17-AFIT-11, Collaborator: The Ohio State University, Faculty Investigator: Dr. Marc D. Polanka, Effective Date: 28 September 2017, Term: 12 months.


7.2. EDUCATIONAL PARTNERSHIP AGREEMENTS

“EPA - Perfluorinated Compound Water Contamination,” AFIT EPA 2017-01, Collaborator: University of Nebraska Medical Center, Faculty Investigator: Lt Col David Kempisty, Effective Date: 19 December 2016, Term: 36 months.

“EPA - Human Machine Teaming,” AFIT EPA 2017-02, Collaborator: Wright State University, Faculty Investigator: Dr. Michael E. Miller, Effective Date: 6 November 2016, Term: 36 months.

“EPA - Nanosatellites,” AFIT EPA 2017-03, Collaborator: Michigan Technological University, Faculty Investigator: Col Dane Fuller, Effective Date: 16 November 2016, Term: 48 months.
7.3. PATENTS

PATENT APPLICATIONS


PATENTS AWARDED


INVENTION DISCLOSURES


APPENDICES

APPENDIX A: POST-DOCTORAL AND OTHER RESEARCH ASSOCIATES’ CREDENTIALS

ARCHIBALD, AARON J.,
Research Engineer, Department of Engineering Physics, Appointment Date: 2016 (AFIT/ENP); BS, Engineering Physics, Wright State University, 2010; MS, Nanotechnology, Chuang Yuen Christian University, 2012. Mr. Archibald’s research supports the efforts of the Airborne Aero-Optics Laboratory through design, fabrication and operation of experimental laser tracking system. Tel. 937-255-3636 x4758, email: Aaron.Archibald@afit.edu

BRECKLING, SEAN R.
Post-Doctoral Research Associate (through ORISE), Department of Mathematics and Statistics, AFIT Appointment Date: 2017 (AFIT/ENC); BS, University of Wisconsin-Milwaukee, 2010; PhD, University of Nevada, Las Vegas, 2017. Dr. Breckling’s research interests include the numerical analysis of partial differential equations. His current research includes finite element analysis of perturbation models of the Navier Stokes equations, specifically in their ability to accurately resolve incompressible multi-physics flows at high Reynolds numbers. Tel. 937-255-6565 x4722, email: Sean.Breckling.ctr@afit.edu

CAHILL, ADAM D.,
AFNWC Post-doctoral Researcher (through ORISE), Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, Electrical and Computer Engineering, University of Louisville, 2008; MEng, Electrical and Computer Engineering, University of Louisville, 2009; MS, Plasma Physics, Cornell University, 2014; PhD, Plasma Physics, Cornell University, 2016; Dr. Cahill’s research is focused on the development of experimental and computational techniques to understand the response of aircraft skin to a thermal flash. Tel. 937-255-3636 x4698, email: Adam.Cahill.ctr@afit.edu

CAZALAS, EDWARD.,
Post-doctoral Researcher (through ORISE), Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, Astrophysics, BA Philosophy, Pennsylvania State University, 2007; MS, Nuclear Engineering, Oregon State University, 2009; PhD, Nuclear Engineering, Pennsylvania State University, 2015. Dr. Cazalas’ research focuses on the application of nuclear and radiation physics and computational methods, specifically to the areas of radiation detection, dosimetry, electrical properties of 2D and thin film materials, and radiation damage/effects.

REFEREED CONFERENCE PAPERS


REFEREED JOURNAL ARTICLES


DOBOSZCZAK, STEFAN
Post-Doctoral Research Associate (through ORISE), Department of Mathematics and Statistics, AFIT Appointment Date: 2016 (AFIT/ENC); BS, Rensselaer Polytechnic Institute, 2010; PhD, University of Maryland - College Park, 2016. Dr. Doboszczak's research interests include partial differential equations, compressible fluids, multiphase flows, and problems on moving domains. His current research is on applications of control theory for compressible fluids. Tel. 937-255-6565 x4414, email: Stefan.Doboszczak.ctr@afit.edu

ELMORE, BRANNON, J.
Lead Software Developer (through Applied Research Solutions), Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, Wright State University, 2014. His research efforts are focused on the continuous improvement of LEEDR and HELEEOS, the core applications of the AFIT Directed Energy and Atmospheric Models (ADAM) software package.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY

ESHEL, BEN
Post-Doctoral Research Associate (through SOCHE), AFIT Appointment Date: 2017 (AFIT/ENP); BA, Physics, Cornell University, 2011; MS, Applied Physics, Air Force Institute of Technology, 2013; PhD, Applied Physics, Air Force Institute of Technology, 2017. Dr. Eshel’s work consists of modeling, developing and characterizing high-pressure, large-volume rare gas plasma discharges as gain media for potential near-infrared and mid-infrared laser systems with high-energy laser capability. Tel. 937-255-3636 x4743, email: Ben.Eshel.ctr@afit.edu

REFEREED JOURNAL PUBLICATIONS

HAMMEN, NATHANIEL T.
Post-Doctoral Research Associate (through ORISE), Department of Mathematics and Statistics, AFIT Appointment Date: 2016 (AFIT/ENC); BS, University of Houston, 2009; MS, University of Houston, 2012; PhD, University of Houston, 2015. Dr. Hammen’s research interests include applied harmonic analysis, frame theory, and compressed sensing.

KABRE, JULIENNE
Post-Doctoral Research Associate (through ORISE), Department of Mathematics and Statistics, AFIT Appointment Date: 2017 (AFIT/ENC); BS, University of Ouagadougou, 1995; MS, Chicago State University, 2012; PhD, Illinois Institute of Technology, 2017. Dr. Kabre’s research interests include numerical analysis of partial differential equations, mathematical modeling and statistical analysis. Her current research is on radial basis function analysis with application to high energy lasers. Tel. 937-255-6565 x4516, email: Julienne.Kabre.ctr@afit.edu

KANEL, SUSHIL R.,
Research Grants Engineer, 2015-2016 (AFIT/ENR); BE, Civil Engineering, Tribhuvan University (Nepal), 1992; MS, Environmental Science and Engineering, Gwangju Institute of Science and Technology (GIST) (South Korea), 2001; PhD, Environmental Science and Engineering, GIST (South Korea), 2006. Since August 2015, in addition to his RGE duties, Dr. Kanel has assisted AFIT faculty and students in the field of environmental and material research (physical chemical treatment, fate and transport of nanomaterials in the subsurface, as well as the application of nanomaterials for various purposes including water remediation). Tel. 937-255-3636 x4545, email: Sushil.Kanel@afit.edu.

REFEREED JOURNAL PUBLICATIONS

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

KEEFER, KEVIN J.,
Research Physicist (through Applied Research Solutions), Department of Engineering Physics, AFIT Appointment Date: 2012 (AFIT/ENP); BS, Atmospheric Physics, United States Air Force Academy, 1981; MS, Systems Management, University of Southern California, 1983; MS Engineering Physics, Air Force Institute of Technology, 1985; PhD Solid State Physics, Air Force Institute of Technology, 1990; Measurement and Signature Intelligence Certificate, Air Force Institute of Technology, 2004. Dr. Keefer’s research interests include atmospheric sciences with special emphasis on atmospheric radiative transfer effects for remote sensing and directed energy applications; microphysical and radiative effects associated with atmospheric molecular and aerosol constituents; and military/geo-political history and implications for development of current and future national security strategy.
REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


LUTZ, JESSE J.,
Research Assistant Professor of Chemistry (through ORISE), Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Chemistry, Grand Valley State University, 2006; PhD, Physical Chemistry, Michigan State University, 2011. Dr. Lutz’s research involves the development of new modeling methods for photovoltaic and excitonic materials with applications in renewable energy technologies and quantum information systems. Recent research has been concerned with characterization of the structure and spectral signatures of solid-state defects and nanoclusters, modeling relativistic and finite-nucleus effects in molecules containing heavy atoms, and development of ab initio many-body electronic structure methods for the accurate prediction of energies, geometries, and properties of molecular systems. Tel: 937-255-3636 x4241, email: Jesse.Lutz.ctr@afit.edu.

REFEREED JOURNAL PUBLICATIONS


RHoby, Michael R.,
Post-Doctoral Research Associate (through ISSI), Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, Physics, Michigan State University, 2010; MS, Optical Engineering, Air Force Institute of
Technology, PhD, Optical Engineering, Air Force Institute of Technology, 2016. Dr. Rhoby’s work is focused on the developing mid-infrared (1-5 µm) hyperspectral imaging for combustion diagnostics and flow field analysis.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


SCHMIDT, JACLYN E.,
Research Meteorologist, LEEDR POC (through Applied Research Solutions), Department of Engineering Physics, AFIT Appointment Date: 2015 (AFIT/ENP); BS, Meteorology, University of South Alabama, 2010. Ms. Schmidt’s research involves modeling and simulation, the enhancement of atmospheric characterization to support mission and sensor analyses, and Weather Cubes or 4D visualizations of atmospheric and radiative effects. Tel. 601-616-6531; email: Jaclyn.Schmidt.ctr@afit.edu.

REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW


REFEREED CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW


OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


THANKAMANI MOHAN, MANIL
National Research Council Post-Doctoral Fellow (through ORISE), Department of Mathematics and Statistics, AFIT Appointment Date: 2015 (AFIT/ENC); BSc, University of Kerala, 2006; MSc, University of Kerala, 2008; PhD, Indian Institute of Science Education and Research, 2014. Dr. Mohan’s research interests include partial differential equations, functional analysis, control theory, mathematical fluid dynamics (compressible and incompressible flow), stochastic analysis, and stochastic differential equations. His current research includes control and stochastic analysis of compressible fluid flow, and quasilinear evolutions of hyperbolic type. Tel. 937-255-3636 x4729, email: Manil.Thankamanimohan.ctr@afit.edu
REFEREED JOURNAL PUBLICATIONS

Mohan, M. T. and Sritharan, S. S., “Ergodic Control of Stochastic Navier-Stokes equation with Levy noise,”

Mohan, M. T. and Sritharan, S. S., “Stochastic Quasilinear Evolution Equations in UMD Banach Spaces,”


VARSHNEY, GAIVEN,
Post-Doctoral Research Associate (through ORISE), Department of Engineering Physics, AFIT Appointment Date: 2016 (AFIT/ENP); BS, Chemistry, Aligarh Muslim University, INDIA, 2001; MS, Analytical Chemistry, Aligarh Muslim University, INDIA, 2003; MPhil, Applied Chemistry, Z.H. College of Engineering and Technology, A.M.U, INDIA, 2004; PhD, Applied Chemistry, ZH, College of Engineering and Technology, AMU, INDIA, 2008. Dr. Varshney’s research focuses on investigation of nuclear weapon accident debris for nuclear forensics and structure-property relationships of several actinide oxides with applications to UO₂ semiconductors and detectors using several characterization techniques such as scanning electron microscopy (SEM), energy-dispersive x-ray spectroscopy (EDS), atomic force microscopy (AFM), digital autoradiography, and γ-spectrometry. Tel. 937-255-3636 x4574, email: Gaiven.Varshney@afit.edu

OTHER SIGNIFICANT RESEARCH PRODUCTIVITY


XING, YUN,
Post-Doctoral Fellow, Department of Systems Engineering and Management, AFIT Appointment Date: 2015 (AFIT/ENV); BS, Biochemical Engineering, Tianjin University (China), 1998; PhD, Bioengineering, Georgia Institute of Technology, 2005. Dr. Xing’s work is focused on characterization of biological processes and microbial species. Tel. 937-255-3636, email: Yun.Xing.ctr@afit.edu
### APPENDIX B: SELECTED ACRONYM LIST

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations.

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>711 HPW/RH</td>
<td>71st Human Performance Wing Human Effectiveness Directorate</td>
</tr>
<tr>
<td>ACC</td>
<td>Air Combat Command</td>
</tr>
<tr>
<td>AETC</td>
<td>Air Education and Training Command</td>
</tr>
<tr>
<td>AFCAA</td>
<td>Air Force Cost Analysis Agency</td>
</tr>
<tr>
<td>AFCEC</td>
<td>Air Force Civil Engineering Center</td>
</tr>
<tr>
<td>AFGSC</td>
<td>Air Force Global Strike Command</td>
</tr>
<tr>
<td>AFIA</td>
<td>Air Force Inspection Agency</td>
</tr>
<tr>
<td>AFIMSC</td>
<td>Air Force Installation and Mission Support Center</td>
</tr>
<tr>
<td>AFIT</td>
<td>Air Force Institute of Technology</td>
</tr>
<tr>
<td>AFLCMC</td>
<td>Air Force Life Cycle Management Center</td>
</tr>
<tr>
<td>AFMC</td>
<td>Air Force Materiel Command</td>
</tr>
<tr>
<td>AFMOA</td>
<td>Air Force Medical Operations Agency</td>
</tr>
<tr>
<td>AFMSA</td>
<td>Air Force Medical Support Agency</td>
</tr>
<tr>
<td>AFNWC</td>
<td>Air Force Nuclear Weapons Center</td>
</tr>
<tr>
<td>AFRCO</td>
<td>Air Force Rapid Capability Office</td>
</tr>
<tr>
<td>AFRL</td>
<td>Air Force Research Laboratory</td>
</tr>
<tr>
<td>AFRL/AFOSR</td>
<td>AFRL/Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFRL/AFOSR</td>
<td>AFRL/Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFRL/AFOSR</td>
<td>AFRL/Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFRL/AFOSR</td>
<td>AFRL/Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFRL/RD</td>
<td>AFRL/Directed Energy Directorate</td>
</tr>
<tr>
<td>AFRL/RI</td>
<td>AFRL/Information Directorate</td>
</tr>
<tr>
<td>AFRL/RQ</td>
<td>AFRL/Aerospace Systems Directorate</td>
</tr>
<tr>
<td>AFRL/RV</td>
<td>AFRL/Space Vehicles Directorate</td>
</tr>
<tr>
<td>AFRL/RW</td>
<td>AFRL/Munitions Directorate</td>
</tr>
<tr>
<td>AFRL/RX</td>
<td>AFRL/Materials and Manufacturing Directorate</td>
</tr>
<tr>
<td>AFRL/RY</td>
<td>AFRL/Sensors Directorate</td>
</tr>
<tr>
<td>AF PACE</td>
<td>Air Force Profession of Arms Center of Excellence</td>
</tr>
<tr>
<td>AFSC</td>
<td>Air Force Sustainment Center</td>
</tr>
<tr>
<td>AFSPC</td>
<td>Air Force Space Command</td>
</tr>
<tr>
<td>AFTAC</td>
<td>Air Force Technical Applications Center</td>
</tr>
<tr>
<td>AFTPS</td>
<td>Air Force Test Pilot School</td>
</tr>
<tr>
<td>AFWA</td>
<td>Air Force Weather Agency</td>
</tr>
<tr>
<td>AIAA</td>
<td>American Institute of Aeronautics and Astronautics</td>
</tr>
<tr>
<td>AMC</td>
<td>Air Mobility Command</td>
</tr>
<tr>
<td>AMEDD</td>
<td>United States Army Medical Department</td>
</tr>
<tr>
<td>AMRDEC</td>
<td>Aviation and Missile Research Development and Engineering Center</td>
</tr>
<tr>
<td>ASEE</td>
<td>American Society for Engineering Education</td>
</tr>
<tr>
<td>ATEC</td>
<td>United States Army Test and Evaluation Command</td>
</tr>
<tr>
<td>CAA</td>
<td>Center for Army Analysis</td>
</tr>
<tr>
<td>CPM</td>
<td>College of Performance Management</td>
</tr>
<tr>
<td>CSDL</td>
<td>The Charles Stark Draper Laboratory, Inc</td>
</tr>
<tr>
<td>CyTCoE</td>
<td>Cyberspace Technical Center of Excellence</td>
</tr>
<tr>
<td>DAGSI</td>
<td>Dayton Area Graduate Studies Institute</td>
</tr>
<tr>
<td>DARPA</td>
<td>Defense Advanced Research Projects Agency</td>
</tr>
<tr>
<td>DASD</td>
<td>Deputy Assistant Secretary of Defense</td>
</tr>
<tr>
<td>DAU</td>
<td>Defense Acquisition University</td>
</tr>
<tr>
<td>DEJTO</td>
<td>Directed Energy Joint Technology Office</td>
</tr>
<tr>
<td>DHS</td>
<td>Department of Homeland Security</td>
</tr>
<tr>
<td>DISA</td>
<td>Defense Information Systems Agency</td>
</tr>
<tr>
<td>DOD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>DTRA</td>
<td>Defense Threat Reduction Agency</td>
</tr>
<tr>
<td>EPA</td>
<td>Environment Protection Agency</td>
</tr>
</tbody>
</table>
ERDC  Engineer Research and Development Center
EUCOM  United States European Command
FEMA  Federal Emergency Management Agency
FORSCOM  United States Army Forces Command
IEEE  Institute of Electrical and Electronics Engineers
INCOSE  International Council on Systems Engineering
JASPO  Joint Aircraft Survivability Program Office
JTWC  Joint Typhoon Warning Center
JWAC  Joint Warfare Analysis Center
LANL  Los Alamos National Laboratory
LLNL  Lawrence Livermore National Laboratory
LTS  Laboratory for Telecommunications Sciences
MDA  Missile Defense Agency
MIT  Massachusetts Institute of Technology
MORS  Military Operations Research Society
NAMRU-D  Naval Medical Research Unit - Dayton
NASA  National Aeronautics and Space Administration
NASCIC  National Air and Space Intelligence Center
NAVSEA  Naval Sea Systems Command
NGA  National Geospatial-Intelligence Agency
NHSRC  National Homeland Security Research Center
NNSA  National Nuclear Security Administration
NPS  Naval Postgraduate School
NSA  National Security Agency
NSF  National Science Foundation
ODASD  Office of the Deputy Assistant Secretary of Defense
ORISE  Oak Ridge Institute for Science and Education
ORNL  Oak Ridge National Laboratory
OSD  Office of the Secretary of Defense
PACAF  United States Pacific Command
SAF  Office of the Secretary of the Air Force
SCOW  635 Supply Chain Operations Wing
SERDP  Strategic Environmental Research and Development Program
SMC  Space and Missiles Systems Center
SPIE  The International Society for Optical Engineering
TuAF  Turkish Air Force
USAACE  United States Army Aviation Center of Excellence
USAF  United States Air Force
USAFA  United States Air Force Academy
USSOCOM  United States Special Operations Command
USSTRATCOM  United States Strategic Command
USTRANSCOM  United States Transportation Command
WPAFB  Wright-Patterson Air Force Base
APPENDIX C: INFORMATION FOR OBTAINING A COPY OF A THESIS

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Website: [http://www.dtic.mil/](http://www.dtic.mil/)

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Springfield, VA 22161
Phone: 1-800-553-6847
Website: [http://www.ntis.gov](http://www.ntis.gov)

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1) author, 2) title, 3) publication date, and 4) reference to the document as an Air Force Institute of Technology thesis.

General inquiries concerning faculty and student research at the Air Force Institute of Technology may be addressed to:

Office of Research and Sponsored Programs (AFIT/ENR)
Air Force Institute of Technology
2950 Hobson Way
Wright-Patterson AFB, OH 45433-7765
Phone: 937-255-3633 (DSN 785-3633)
Website: [http://www.afit.edu](http://www.afit.edu)
Email: research@afit.edu
This report summarizes the research activities of the Air Force Institute of Technology’s Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting the school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems Engineering and Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.