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Research Report 2008

Period of Report: 1 October 2007 to 30 September 2008

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 is the cornerstone of the dramatic advances in air, space, and cyber technology that underpin the nation’s ability to meet the international and homeland security challenges of tomorrow. Research is also an integral part of graduate education, providing graduates with in-depth knowledge, critical thinking skills, and problem solving abilities. At the Air Force Institute of Technology (AFIT), our faculty and students engage in research with the goal of sustaining the technological supremacy of the United States Air Force (USAF) and the Department of Defense (DoD).

AFIT maintains active partnerships with our Air Force’s organizations and operational communities as well as the DoD and other federal agencies to maximize the contributions of our research programs to national 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) whenever appropriate.

This Research Report is prepared annually to report on the significant contributions of this institution; 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.

Heidi R. Ries, Ph.D.
Dean for Research
Graduate School of Engineering
and Management
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1. INTRODUCTION

1.1. OVERVIEW

This Research Report presents the FY08 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 CRADAs. Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A or via the AFIT Directory at www.afit.edu/directory.

Additional information on the research programs at AFIT may also be found on the research web home page at http://www.afit.edu/en/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 Dr. Michael J. Caylor, 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 2008-2009 catalog at http://www.afit.edu/en/enr/catalog.cfm, AFIT offers Master’s and Doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). 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, relevant departmental office, or the Office of Research and Sponsored Programs for further information, or visit the Graduate School of Engineering and Management departmental websites at www.afit.edu.

The Department of Aeronautics and Astronautics invites research topic proposals and collaborative suggestions for the Aeronautical, and Astronautical engineering programs. The following list highlights the Department’s research specialties:

- **Aerelasticity and Design Optimization**
- **Aerospace Structures and Materials**
- **Analysis of Computer Turbines**
- **Autonomous Control of UAVs**
- **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**
- **Reentry Dynamics**
- **Rocket & Space Propulsion**
- **Rotocraft Aeromechanics**
- **Satellite Cluster Dynamics, Navigation, & Control**
- **Spacecraft Dynamics & Control**
The **Department of Electrical and Computer Engineering** invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering, and Computer Science programs, as well as the Advanced Navigation Technology Center (ANT) and the Center for Cyberspace Research (CCR). The following list highlights the Department’s research specialties:

- Advanced Security-focused Computing
- Architectures
- Artificial Intelligence
- Automatic Target Recognition
- Communications/Radar
- Computer Communication Networks
- Cyber Operations and Security
- Electromagnetics/Low Observables
- Evolutionary Algorithms
- Guidance, Navigation and Control
- Information Visualization
- Micro and Nanosystems
- Parallel and Distributed Processing
- Signal and Image Processing
- Software Engineering
- Wireless Networks
- Wireless Sensor Networks

The **Department of Engineering Physics** invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Electro-Optics (jointly operated with the Department of Electrical and Computer Engineering), and Materials Science (jointly operated with the Department of Aeronautics and Astronautics) programs, as well as the Center for Directed Energy (CDE) and the Center for MASINT Studies and Research (CMSR). The following list highlights the Department’s research specialties within these programs:

- Combating Weapons of Mass Destruction
- Computational Physics
- Counterproliferation
- Directed Energy Weapons
- Electronic and Photonic Materials
- Lasers and Electro-Optics
- Nuclear Weapons and Effects
- Nuclear Forensics
- Remote Sensing and Signature Analysis
- Space Weather

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

- Acoustic Wave Scattering
- Category Theory
- Optimization
- Design of Experiments
- Electromagnetics
- Gait Recognition
- Information Fusion
- Multiscale Methods
- Functional Analysis
- Numerical Analysis
- Partial Differential Equations
- Wavelets

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

- Applied/Multivariate Statistics
- Capacity and Queue Modeling
- Decision and Risk Analysis
- Information Operations/Information Warfare
- Inventory Management/Theory
- Math Programming and Optimization
- Network Modeling
- Operational Modeling and Simulation
- Operational Problems and Heuristic Modeling
- Sensor/Classifier Fusion
- Space and International Logistics
- Space Logistics Modeling
- Stochastic Systems Analysis
- Supply Chain Management
The Department of Systems and Engineering Management is seeking research topic proposals and collaborative suggestions for the Cost Analysis, Engineering Management, Environmental Engineering and Science, Information Resource Management, Research and Development Management programs, as well as the Center for Systems Engineering (CSE). The following list highlights the Department’s research specialties:

- Applied Environmental Sciences
- Cost Analysis
- Crisis Project Management
- Crisis Engineering Services Management
- Crisis Knowledge Management
- Cyberlaw and Cyberwar
- Defense Product Development
- Ecological Engineering – Constructed Wetlands
- Economics and Finance
- Facility and Infrastructure Management
- Information Assurance and Security
- Knowledge and Strategic Information Management
- Leadership and Management
- Multidisciplinary Distributed Cognition
- Nanotoxicity and Pharmacokinetic Modeling
- Operational Information Integration
- Organizational Change and Theory
- Organizational Control Center Performance
- Sustainable Development
- System Dynamics Analysis
- Systems Engineering
- Technology Development and Application
- Leadership and Management
- Multidisciplinary Distributed Cognition
- Nanotoxicity and Pharmacokinetic Modeling
- Operational Information Integration
- Organizational Change and Theory
- Organizational Control Center Performance
- Sustainable Development
- System Dynamics Analysis
- Systems Engineering
- Technology Development and Application

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 educational or research areas of emphasis appears below. Please contact the Centers directly (see Ch. 6), or contact the Office of Research and Sponsored Programs for further information (937-255-3633, DSN 785-3633).

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

The Center for Directed Energy (CDE) is dedicated to Air Force and DoD research in high energy lasers (HEL), high power microwaves (HPM), 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 Cyberspace Research (CCR) is one of the National Security Agency (NSA) and Department of Homeland Security’s designated Centers of Academic Excellence in Information Assurance Education (CAE/IAE). CCR is also a National Science Foundation Cyber Corp institution. CCR’s objectives are to provide cutting-edge offensive and defensive research solutions for cyberspace and cyber security applications and produce a cadre of technically educated leaders for the DoD and federal Government. In June 2008, the CCR was designated the Air Force’s Cyberspace Technical Center of Excellence.

The Center for MASINT Studies and Research (CMSR) is focused on Air Force and Department of Defense Measurement and Signature Intelligence (MASINT) scientific, technical and operational activities through graduate research programs. CMSR is a national resource for educating a new generation of MASINT professionals.

The Center for Operational Analysis (COA) directs defense relevant research and timely technology transfer in providing approaches and solutions to current and future operational and resource issues while developing critical and forward thinking analysts, managers, and leaders.

The Air Force Center for Systems Engineering (AF CSE) is a directorate within AFIT and is the recognized Center of Excellence for Systems Engineering (SE) within the Air Force (AF) and the US Department of Defense (DoD). The mission of the Center is to shape the future of systems engineering with the goal of improving our ability to deliver war-fighting capabilities. We accomplish this by conceptualizing new processes, practices, tools, and resources through research, education, and consultation.
2. SPECIAL RECOGNITIONS

2.1. FACULTY FELLOWS

Badiru, Adedeji B., Professor and Head Department of Systems and Engineering Management, Fellow of the Institute of Industrial Engineers, Fellow of the Nigerian Academy of Engineering.

Bridgman, Charles J., Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

Elrod, William E., 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.

Hengehold, Robert L., Professor 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, 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.

Palazotto, Anthony N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Institute of Aeronautics and Astronautics, Fellow of the American Academy of Mechanics and the American Society of Civil Engineers.

Perram, Glen P., Professor of Physics, Department of Engineering Physics, Fellow of the Directed Energy Professional Society.

Ruggles-Wrenn, Marina B., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Soni, Som R., Associate Professor of Systems Engineering, Department of Systems and Engineering Management, Fellow of the American Society for Composites, Associate Fellow of AIAA.

Terzuoli, Andrew J., Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Electromagnetics Academy.

Thomas, M. U., Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the American Society of Quality, Fellow of the Institute for Operations Research and Management Sciences.

2.2. PROFESSIONAL CERTIFICATIONS

Badiru, Adedeji B., Leadership Certificate, University of Tennessee Leadership Institute

Badiru, Adedeji B., Professional Engineer, State of Oklahoma

Baldwin, Rusty O., Professional Engineer, State of Ohio

Baldwin, Rusty O., Certified Information Systems Security Professional (CISSP)

Barelka, Alex J., Certified Project Management Professional (PMP)

Carl, Joseph W., Professional Engineer, State of Ohio; Certified Systems Engineering Professional (CSEP) by INCOSE

Coutu, Ronald A., Jr., Professional Engineer, State of California

Cunningham, William A. III, Certified Transportation and Logistics (CTL) by the American Society of Transportation and Logistics (AST&L)

Goltz, Mark N., Hazardous Waste Management Specialty Certification as a Diplomate Environmental Engineer, American Academy of Environmental Engineers

Goltz, Mark N., Professional Engineer, State of Minnesota

Goltz, Mark N., Board Certified Environmental Engineer, American Academy of Environmental Engineers

Greendyke, Robert B., Professional Engineer, State of Texas

Grimaila, Michael R., Certified Information Security Manager (CISM); Information Systems Audit and Control Association (ISACA); Rolling Meadows, IL.

Grimaila, Michael R., Certified Information System Security Professional (CISSP); International Information Systems Security Certification Consortium, Inc. (ISC)2; Vienna, VA.

Houpis, Constantine H., Professional Engineer, State of Ohio

Kunz, Donald L., Professional Engineer, Commonwealth of Virginia

Marciniak, Michael A., Certified Laser Safety Officer, Board of Laser Safety, Orlando, FL

Mattioda, Daniel D., FAA Airframe and Powerplant License

Mattioda, Daniel D., FCC Ground Radio Operators License with Radar Endorsement

Mullins, Barry E., Professional Engineer, State of Colorado

Mullins, Barry E., Security Essential Certification (GSEC) from SysAdmin, Audit, Network, Security Institute’s (SANS) Global Information Assurance Certification (GIAC) Program

Mullins, Barry E., Assessing Wireless Networks (GAWN) certification from the SysAdmin, Audit, Network, Security Institute’s (SANS) Global Information Assurance Certification (GIAC) Program

Palazotto, Anthony N., Professional Engineer, State of Ohio

Perram, Glen P., Professional Engineer, State of Ohio
Quinn, Dennis W., Professional Engineer, State of Ohio

Reeder, Mark F., Professional Engineer, State of Ohio

Slagley, Jeremy, Board Certified Industrial Hygienist, American Academy of Industrial Hygienists

Strouble, Dennis D., Licensed Attorney, State of Texas

Thomas, M. U., Professional Engineer, State of Michigan

Turner, Jason M., Certified Usability Analyst (CUA) - Human Factors International; Certified Enterprise Architect (CEA) - Federal Enterprise Architecture Certification Institute
2.3. RESEARCH AWARDS

2.3.1. FACULTY

CUSUMANO, SALVATORE, J.


DEA, JOHN R., Maj

2008 Warren Randolph Church Award for Excellence in Mathematics, Naval Postgraduate School, Monterey, CA.


FIORINO, STEVEN, T., Lt Col


HOPKINSON, KENNETH M.


MARTIN, RICHARD K.

HKN (Eta Kappa Nu, Delta Xi Chapter) Instructor of the Year, March 2008.

PETERTON, GILBERT L.

Air Force Junior Scientist of the Year, September 2008.

RAINES, RICHARD A.


Inducted into the Association of the Old Crows Hall of Fame for significant contributions towards the advancement of Information Operations, October 2007.

RAQUET, JOHN F.


2.3.2. STUDENTS

GALLUP, HEATHER L.

HELLESEN, DENZIL L.
Secretary James G. Roche Award, March 2008.

JOHNSON, ROBERT J.
Commandant’s Award, 2008.

MURPHY, SEAN D.

PETTUS, EVAN L.
Mervin E. Gross Award, June 2008.

RUSNOCK, CHRISTINA F.
Mervin E. Gross Award, March 2008.

SKARDA, BRYAN E.

SOLIMAN, NEIL S.
MASINT Association Award for Academic Excellence Award, March 2008.

SUSKI, WILLIAM C., II
ATIA Academic Research Excellence Award, Advanced Technical Intelligence Association (ATIA), March 2008.

SWEENEY, DANIEL D.

WICKERT, DOUGLAS P.
Douglas Wickert (Robert Canfield, advisor), Best Presentation Award, Structures, 33rd AIAA Dayton-Cincinnati Aerospace Sciences Symposium, March 4, 2008.
3. RESEARCH STATISTICS

3.1. RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master’s thesis and doctoral dissertation project during FY 2008 to determine the project’s contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 3.1. The data in this table are based on 63 questionnaires returned out of the 286 questionnaires mailed.

Table 3.1: Sponsor Assessment of AFIT Research

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did this research contribute to a current Air Force/DoD project? (Yes answers)</td>
<td>98%</td>
</tr>
<tr>
<td>The thesis work was: High</td>
<td>33%</td>
</tr>
<tr>
<td>Highly significant</td>
<td>56%</td>
</tr>
<tr>
<td>Significant</td>
<td>11%</td>
</tr>
<tr>
<td>Slightly significant</td>
<td>0%</td>
</tr>
<tr>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td>Average man-years of effort saved by the sponsors.</td>
<td>.96</td>
</tr>
<tr>
<td>Average cost avoided per thesis/dissertation by the sponsors.</td>
<td>$165,104</td>
</tr>
<tr>
<td>Total cost avoided for all theses and dissertations sponsored (estimated).</td>
<td>$47 M</td>
</tr>
<tr>
<td>Rank of respondents Colonel (DR IV/GM-15)</td>
<td>22%</td>
</tr>
<tr>
<td>Lt Col (DR-III/GM-14)</td>
<td>39%</td>
</tr>
<tr>
<td>Major (DR-II/GM-13)</td>
<td>39%</td>
</tr>
</tbody>
</table>

Of the 63 questionnaires, 37 respondents did not list Rank/GS levels. These percentages represent only those which responded.
RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author:  Designator:

Faculty Advisor:

Date of Graduation:

Please help us determine the value and contribution of this research to your organization’s mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization?  Y / N

2. Would you have completed this work if AFIT had not done it?  Y / N

3. Regardless of your answers above, how would you rate this work?  Highly significant
   Significant
   Slightly significant
   No significance

4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract.  Man-Years ____  $____________
   Please note that typically an MS thesis requires 0.5MY of the student’s time and one month of the faculty advisor’s time.  For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 Hobson Way, Wright-Patterson AFB OH 45433-7765, or fax it to 937-656-7139 (DSN 986-7139), or just e-mail your answers (only) to 1 to 5 to research@afit.edu

If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

____________________________________  ______________________________
Name of Evaluator      Office Symbol

____________________________________
Grade/Rank of Evaluator
3.2. 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 research projects conducted; the number of consultations performed for Air Force and DoD customers; and finally, the number of student graduate research papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY08, these output measures are shown in Table 3.2.

<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 &amp; Eng Management (ENV)</th>
<th>Aeronautics &amp; Astro (ENY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Faculty (FTE)</td>
<td>134</td>
<td>15</td>
<td>34</td>
<td>20</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Refereed Publications</td>
<td>171</td>
<td>8</td>
<td>48</td>
<td>23</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>Refereed Conferences</td>
<td>247</td>
<td>5</td>
<td>96</td>
<td>19</td>
<td>33</td>
<td>48</td>
</tr>
<tr>
<td>Other Presentations and Publications</td>
<td>276</td>
<td>37</td>
<td>70</td>
<td>57</td>
<td>35</td>
<td>61</td>
</tr>
<tr>
<td>Sponsor Funded Projects</td>
<td>172</td>
<td>4</td>
<td>67</td>
<td>42</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Substantial Consultations</td>
<td>63</td>
<td>3</td>
<td>25</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Books</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chapters of Books</td>
<td>15</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Patents</td>
<td>0</td>
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<td>Doctoral Dissertations Advised</td>
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<tr>
<td>Master’s Theses Advised</td>
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<td>73</td>
<td>21</td>
<td>30</td>
<td>92</td>
</tr>
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<td>Graduate Research Papers Advised</td>
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<td>10</td>
<td>0</td>
<td>24</td>
<td>10</td>
</tr>
</tbody>
</table>

FTE: Full-time equivalent
3.3. 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 88% of technical and 86% of all theses and dissertations listed in Table 3.2 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 Table 3.3 and Figure 3.1.

Figure 3.1: Sponsors of AFIT Theses and Dissertations
Table 3.3: AFIT External Sponsorship by Organization

<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>
<th>Substantial Consultations</th>
</tr>
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<tr>
<td>AIR EDUCATION AND TRAINING COMMAND</td>
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<td></td>
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</tr>
<tr>
<td>AIR COMBAT COMMAND</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>3</td>
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<tr>
<td>8th Air Force</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Air and Space Intelligence Center</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR FORCE MATERIEL COMMAND</td>
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<td></td>
<td>6</td>
<td></td>
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<td>3</td>
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<td>Air Force Office of Scientific Research (AFOSR)</td>
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<tr>
<td>Human Effectiveness Directorate (RH)</td>
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<td>Information Directorate (RI)</td>
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<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Materials &amp; Manufacturing Directorate (RX)</td>
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<td>Munitions Directorate (RW)</td>
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<td>Propulsion Directorate (RZ)</td>
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<td>Sensors Directorate (RY)</td>
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<td>44</td>
<td></td>
<td>21</td>
<td>4</td>
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<tr>
<td>Space Vehicles Directorate (RV)</td>
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<td>AIR MOBILITY COMMAND</td>
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<tr>
<td>US AIR FORCE OPERATING AGENCIES</td>
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</tr>
<tr>
<td>Air Force Center for Environmental Excellence</td>
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<td></td>
<td></td>
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<tr>
<td>Air Force Civil Engineer Support Agency</td>
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<td>Air Force Communications Agency</td>
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<td>Air Force Test Pilot School</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Air Force Technical Application Center</td>
<td>1</td>
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<td></td>
<td></td>
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<tr>
<td>Other Operating Agencies</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Defense Threat Reduction Agency</td>
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<tr>
<td>High Energy Laser Joint Technology Office</td>
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<td></td>
<td>4</td>
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<tr>
<td>US Office of Secretary Defense</td>
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<td>US Central Command</td>
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<td>US Strategic Command</td>
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<td>United States Navy</td>
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<td>National Aeronautics and Space Administration</td>
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<td>National Geospatial Intelligence Agency</td>
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<td>DAYTON AREA GRADUATE STUDIES INSTITUTE</td>
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<td></td>
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</tr>
<tr>
<td>Other Non-Federal Agencies</td>
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<td></td>
<td></td>
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<tr>
<td><strong>TOTALS</strong></td>
<td><strong>29</strong></td>
<td><strong>240</strong></td>
<td><strong>37</strong></td>
<td><strong>154</strong></td>
<td><strong>63</strong></td>
</tr>
</tbody>
</table>

NOTE: Some student publications have multiple sponsors; See App C for Selected Acronym List
3.4. OUTSIDE 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 (sponsored or unsponsored) 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. Tables 3.4 and 3.5, and Figure 3.3, summarize outside funding for FY08, and Figure 3.2 summarizes the past nine fiscal years of outside sponsored funding.

Table 3.4 FY08 Funding to Academic Departments & Research Centers by Type ($ 1,000's)

<table>
<thead>
<tr>
<th>Department</th>
<th>Newly Awarded Research Projects</th>
<th>Newly Awarded Education Projects</th>
<th>Additional Research Expenditures</th>
<th>Total FY08 Sponsored Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics &amp; Statistics (ENC)</td>
<td>4</td>
<td>92</td>
<td>-</td>
<td>4,105</td>
</tr>
<tr>
<td>Electrical &amp; Computer Eng (ENG)</td>
<td>61</td>
<td>2,924</td>
<td>6</td>
<td>8,327</td>
</tr>
<tr>
<td>Engineering Physics (ENP)</td>
<td>38</td>
<td>2,837</td>
<td>4</td>
<td>5,079</td>
</tr>
<tr>
<td>Research &amp; Sponsored Programs (ENR)</td>
<td>1</td>
<td>10</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>Operational Sciences (ENS)</td>
<td>11</td>
<td>1,000</td>
<td>-</td>
<td>1,455</td>
</tr>
<tr>
<td>Systems and Eng Management (ENV)</td>
<td>11</td>
<td>605</td>
<td>1</td>
<td>1,354</td>
</tr>
<tr>
<td>Aeronautical &amp; Astronautical Eng (ENY)</td>
<td>36</td>
<td>958</td>
<td>-</td>
<td>4,182</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>162</strong></td>
<td><strong>8,426</strong></td>
<td><strong>11</strong></td>
<td><strong>20,517</strong></td>
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</table>

Center

<table>
<thead>
<tr>
<th>Center</th>
<th>#</th>
<th>$k</th>
<th>#</th>
<th>$k</th>
<th>#</th>
<th>$k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Navigation Technology (ANT)</td>
<td>18</td>
<td>828</td>
<td>-</td>
<td>-</td>
<td>638</td>
<td>1,466</td>
</tr>
<tr>
<td>Center for Directed Energy (CDE)</td>
<td>19</td>
<td>1,756</td>
<td>1</td>
<td>51</td>
<td>458</td>
<td>2,265</td>
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<tr>
<td>Center for Cyberspace Research (CCR)</td>
<td>15</td>
<td>765</td>
<td>6</td>
<td>1,241</td>
<td>804</td>
<td>2,810</td>
</tr>
<tr>
<td>Center for MASINT Studies and Research (CMSR)</td>
<td>7</td>
<td>493</td>
<td>1</td>
<td>756</td>
<td>264</td>
<td>8</td>
</tr>
<tr>
<td>Center for Operational Analysis (COA)</td>
<td>9</td>
<td>1,047</td>
<td>-</td>
<td>-</td>
<td>326</td>
<td>9</td>
</tr>
<tr>
<td>Center for Systems Engineering (CSE)</td>
<td>7</td>
<td>497</td>
<td>1</td>
<td>60</td>
<td>360</td>
<td>8</td>
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<td><strong>TOTAL</strong></td>
<td><strong>75</strong></td>
<td><strong>5,386</strong></td>
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<td><strong>2,108</strong></td>
<td><strong>2,850</strong></td>
<td><strong>84</strong></td>
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</tbody>
</table>

Notes: DoD regulations limit AFIT’s charges to DoD organizations. These nonchargeable items are reflected as “additional research expenditures”. All Center funds are also included in departmental funding.

Figure 3.2: New Award History FY00-FY08
Figure 3.3 New FY08 Awards by Sponsor

Table 3.5 New FY08 Awards to Academic Departments & Research Centers by Sponsor

<table>
<thead>
<tr>
<th>Dept.</th>
<th>AFRL Dollars</th>
<th>USAF Dollars</th>
<th>Other DoD Dollars</th>
<th>NGA Dollars</th>
<th>NSF Dollars</th>
<th>NSA Dollars</th>
<th>Other Federal Dollars</th>
<th>Non-Federal Dollars</th>
<th>Total Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>ENG</td>
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<td>713,738</td>
<td>409,349</td>
<td>30,000</td>
<td>528,424</td>
<td>447,412</td>
<td>-</td>
<td>-</td>
<td>4,165,539</td>
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<tr>
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<td>548,736</td>
<td>1,134,320</td>
<td>756,000</td>
<td>230,000</td>
<td>-</td>
<td>29,209</td>
<td>44,308</td>
<td>3,727,146</td>
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<td>10,000</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10,000</td>
</tr>
<tr>
<td>ENS</td>
<td>66,500</td>
<td>316,293</td>
<td>596,970</td>
<td>-</td>
<td>20,000</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>7,700</td>
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<td>109,634</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>2,170,093</td>
<td>2,186,024</td>
<td>786,000</td>
<td>758,424</td>
<td>467,412</td>
<td>36,909</td>
<td>83,168</td>
<td>10,617,611</td>
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</table>

<table>
<thead>
<tr>
<th>Research Center</th>
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<th>Dollars</th>
<th>Dollars</th>
<th>Dollars</th>
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<tbody>
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<td>-</td>
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<td>94,530</td>
<td>298,549</td>
<td>-</td>
<td>528,424</td>
<td>447,412</td>
<td>-</td>
<td>-</td>
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<td>761,055</td>
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<td>-</td>
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<td>14,000</td>
<td>756,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>44,308</td>
<td>1,249,044</td>
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<tr>
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<td>279,293</td>
<td>707,770</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,046,563</td>
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<tr>
<td>CSE</td>
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<td>159,552</td>
<td>322,140</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>20,160</td>
<td>556,852</td>
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<tr>
<td>TOTAL</td>
<td>2,310,853</td>
<td>1,023,011</td>
<td>2,103,514</td>
<td>786,000</td>
<td>758,424</td>
<td>447,412</td>
<td>-</td>
<td>64,468</td>
<td>7,493,682</td>
</tr>
</tbody>
</table>

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

4.1. DOCTORAL DISSERTATIONS

4.1.1. HEADQUARTERS UNITED STATES AIR FORCE

RODRIGUEZ, JUNE F.D., Metamodelling Techniques to Aid in the Aggregation Process of Large Hierarchical Simulation Models. AFIT/DS/ENS/08-03. Faculty Advisor: Dr. John O. Miller. Sponsor: HQ USAF.

4.1.2. AIR COMBAT COMMAND

FRIEND, MARK A., Combat Identification with Synthetic Aperture Radar, Out-Of-Library Identification and Non-Declarations. AFIT/DS/ENS/07-04. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR and ACC.

4.1.3. AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY

Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

FORD, THOMAS C., Interoperability Measurement. AFIT/DSE/ENV/08-S01. Faculty Advisor: Dr. John M. Colombi. Sponsor: N/A.


JOHNSON, STEVEN E., Range Precision of LADAR Systems. AFIT/DEE/ENG/08-15. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

PHILLIPS, JAMES D., Joint Image and Pupil Plane Reconstruction Algorithm based on Bayesian Techniques. AFIT/DEE/ENG/08-07. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

PRINS, NICHOLAS J., Distribution Iteration: A Robust Alternative to Source Iteration for Solving the Discrete Ordinates Radiation Transport Equations in Slab and XY-Geometries. AFIT/DS/ENP/08-S04. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

VENEMA, TODD M., Closed-Loop Adaptive Optics Control in Strong Atmospheric Turbulence. AFIT/DEE/ENG/08-21. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

4.1.4. AIR FORCE COMMUNICATIONS AGENCY

AUGERI, CHRISTOPHER J., On Graph Isomorphism and the Page Rank Algorithm. AFIT/DCS/ENG/08-08. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA.

4.1.5. AIR FORCE RESEARCH LABORATORY

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

FRIEND, MARK A., Combat Identification with Synthetic Aperture Radar, Out-Of-Library Identification and Non-Declarations. AFIT/DS/ENS/07-04. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR and ACC.

KEE, PATRICK, Electronic State Distributions of YBa2Cu3O7-x Laser Ablated Plumes. AFIT/DSP/ENP/08-S05. Faculty Advisor: Dr. Glen P. Perram. Sponsor: AFOSR.
LEAP, NATHAN J., A Confidence Paradigm for Classification Systems. AFIT/DS/ENS/08-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR.


McCLUNG, AMBER J.W., Extension of Viscoelasticity Based on Overstress to Capture the Effects of Prior Aging on the Time Dependent Deformation Behavior of a High-Temperature Polymer: Experiments and Modeling. AFIT/DS/ENY/08-D15. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFOSR.

MOORE, ELIZABETH A., Electrical Activation Studies of Silicon Implanted Aluminum Gallium Nitride with High Aluminum Mole Fraction. AFIT/DS/ENP/08-D01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

LARSON, REID A., A Novel Method Characterizing the Impact Response of Functionally Graded Plates. AFIT/DS/ENY/08-06. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RB.

AFRL: DIRECTED ENERGY DIRECTORATE


AFRL: INFORMATION DIRECTORATE


AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

COLE, WALTER P., Atmospheric Turbulence Effects Correction Factors for the Laser Range Equation. AFIT/DS/ENP/08-02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

KADING, GLEN A., Piezo-Electrochemical Transducer Effect Intercalated Graphite Micro-Electromechanical Actuators. AFIT/DEE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RX.

YELESER, TUFAN, Creep Behavior of Oxide/Oxide Composites with Monazite Fiber Coating at 1100°C in Air and in Steam Environments. AFIT/GA/ENY/08-S01. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

AFRL: PROPULSION DIRECTORATE

DOSTER, JASON C., Hypermixer Pylon Fuel Injection for Scramjet Combustors. AFIT/DS/ENY/08-02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

FREEBORN, ANDREW B., Pylon Effects on a Scramjet Cavity Flameholder Flowfield. AFIT/DS/ENY/08-04. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

HOPPER, DAVID R., Direct Initiation of Multiple Tubes by Detonation Branching in a Pulsed Detonation Engine. AFIT/DS/ENY/08-05. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.
REED, SHAD A., Development of Experimental, Analytical, and Numerical Approximations Appropriate for Nonlinear Damping Coatings. AFIT/DS/ENY/08-01. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.

AFRL: SENSORS DIRECTORATE


GIRARD, JASON A., Material Perturbations to Enhance Performance of the Theile Half-Width Leaky Mode Antenna. AFIT/DEE/ENG/08-04. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/RY.

MARSH, DAVID W., Composable Distributed Access Control and Integrity Policies for Query-Based Wireless Sensor Networks. AFIT/DEE/ENG/08-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RY.

TURNER, REGINALD J., A Wide Area Bipolar Cascade Resonant Cavity Light Emitting Diode for a Hybrid Range Intensity. AFIT/DEE/ENG/08-12. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RY.

AFRL: SPACE VEHICLES DIRECTORATE


4.1.6. UNITED STATES CENTRAL COMMAND


4.1.7. UNITED STATES NAVAL ACADEMY

STEVENS, ROBERT E., Optimal Control of Electrodynmamic Tethers. AFIT/DS/ENY/08-13. Faculty Advisor: Dr. William E. Wiesel. Sponsor: USNA.

4.1.8. THE HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE

MASSEY, STEVEN M., Simulated Brillouin Scattering Phase Conjugation in Fiber Optic Waveguides. AFIT/DS/ENP/08-S03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL-JTO.
4.2. MASTER’S THESES

4.2.1. OFFICE OF THE SECRETARY OF THE AIR FORCE


4.2.2. HEADQUARTERS UNITED STATES AIR FORCE


NIELSEN, TYLER K., *Characterization Patterns of MILCON Project Contract Modifications*. AFIT/GEM/ENV/07-D01. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AF/IL.


THOMPSON, IAN F., *Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics*. AFIT/GES/ENV/08-M07. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE/ERD.

4.2.3. AIR COMBAT COMMAND

KRETSER, MICHAEL P., *Modeling Predator MQ-1 Logistics*. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: ACC/432 AMXS.


8th AIR FORCE


WILLIAMSON, DEREK L., *Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems*. AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

NATIONAL AIR AND SPACE INTELLIGENCE CENTER


4.2.4. AIR EDUCATION AND TRAINING COMMAND


AIR FORCE INSTITUTE OF TECHNOLOGY

NOTE: Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current and future USAF, DoD and/or Homeland Security requirements.

BOYER, BARTH H., Creep-Rupture and Fatigue Behavior of a Notched Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature. AFIT/GAE/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

BURRIS, ANDREW B., A Qualitative and Quantitative Assessment of Readiness for Organizational Change Literature. AFIT/GEM/ENV/08-J01. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CARROLL, SEAN C., Mission Impact Analysis Visualization for Enhanced Situational Awareness. AFIT/GCO/ENG/08-01. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: N/A.


CONFER, BRIAN S., An Analysis of Second-Tier Arms Producing Country Offset Policies: Technology Transfer and Defense Industrial Base Establishment. AFIT/GRD/ENV/08-M03. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.


DERBIS, RACHEL M., Modeling GPS Satellite Orbits Using KAM Tori. AFIT/GA/ENY/08-M09. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

DERBIS, RICHARD M., Ultrafast Spectroscopy of Mid-Infrared Semiconductors Using the Signal and Idler Beams of a Synchronous Optical Parametric Oscillator. AFIT/GAP/ENP/08-M02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

EDWARDS, MICHAEL T., Strategies for Minimizing Monetary Loss in the Department of Defense Budget Through Use of Financial Derivatives. AFIT/GIR/ENV/08-M05. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.

GOUGH, DAVID P., A Multiple Case Study Analysis of Digital Preservation Techniques Across Government, Private, and Public Service Organizations. AFIT/GIR/ENV/08-M08. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

GULMUS, MESUT, Determining the Capability Requirements for a Space Based Optical Sensor to Determine the Trajectory of an Incoming Antisatellite Weapon. AFIT/GSS/ENY/08-M03. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

HICKMAN, KRISTA M., A Decision Tool to Evaluate Budgeting Methodologies for Estimating Facility Recapitalization Requirements. AFIT/GEM/ENV/08-M09. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

JOHNSON, MICHAEL D., Dynamic Supersonic Base Store Ejection Simulation Using Begger. AFIT/GAE/ENY/08-D01. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: N/A.

JOHNSON, ROBERT J., Improved Feature Extraction, Feature Selection, and Identification Techniques that Create a Fast Unsupervised Hyperspectral Target Detection Algorithm. AFIT/GOR/ENS/08-07. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: N/A.

KANG, YOUN IN, Combat Identification Using Multiple TUAV Swarm. AFIT/GOR/ENS/08-09. Faculty Advisor: Dr. John O. Miller. Sponsor: N/A.

KAYA, EMRE, Crew Exploration Vehicle (CEV) Skip Entry Trajectory. AFIT/GSS/ENY/08-M06. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.


LEON, ELISABETH M., *Molecular Characterization of Wetland Soil Bacterial Communities in Constructed Mesocosms*. AFIT/GES/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.


MATHER, DAVID E., *Discrete Counting of Short Lived Isotopes with Low Background Detectors*. AFIT/GNE/ENP/08-M03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.


NORGAARD, JASON C., *An Examination Into How Group Performance is Influenced by Various Communication Channels*. AFIT/GIR/ENV/08-M16. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.


OWNBY, JOHN F., *The Effect of Elevated Temperature on the Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GA/ENY/08-M04. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.


POGORZELSKI, WILLIAM A., *Software Acquisition Improvement in the Aeronautical Systems Center*. AFIT/GRD/ENV/08-S1. Faculty Advisor: Lt Col Brian Hermann. Sponsor: N/A.


ROHE, WAYNE C., See ROACH, NEAL R.


SOTOROPOLIS, THEODORE J., Selecting the Best Thermal Building Insulation Using a Multi-Attribute Decision Model. AFIT/GEM/ENV/08-M17. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.


TRAMEL, BILLY D., Factors that May Affect Retention of Enlisted Explosive Ordnance Disposal Airmen. AFIT/GEM/ENV/08-J02. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

VAN DYK, STEFANIE L., Forecasting Flying Hour Costs of the B-1, B-2, and B-52 Bomber Aircraft. AFIT/GCA/ENV/08-M02. Faculty Advisor: Lt Col Eric J. Unger. Sponsor: N/A.


WELTY, NATHAN F., See ROACH, NEAL R.

WERLING, JOSEPH B., An Exploratory Examination of Social Website Quality. AFIT/GIR/ENV/08-M23. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: N/A.

WEVER, PAUL S., A System Dynamic Model of Leader Emergence. AFIT/GEM/ENV/08-M22. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

WILLIAMS, DANIEL J., An Analysis of the Factors Affecting Training Transfer within the Work Environment. AFIT/GIR/ENV/08-M25. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.


4.2.5. AIR FORCE MATERIEL COMMAND

BURNWORTH, TODD C., Simulated Multi-Echelon Readiness-Based Inventory Leveling with Lateral Resupply. AFIT/GOR/ENS/08M-23. Faculty Advisor: Dr. John O. Miller. Sponsor: AFMC/A9A.

CHESSMAN, JOHN A., A Delphi Study of HIPAA Compliance to Battlefield Medical Evacuation. AFIT/GIR/ENV/08-M03. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 88 MDSS/SGSN.

GOEHRING, SIDNEY W., An Analysis of Competencies for Managing Science and Technology Programs. AFIT/GRD/ENV/08-M06. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: HQ AFMC/A5S.


KENDALL, KELLY D., AFMC Customer Satisfaction Study at the Air Logistics Centers. AFIT/GLM/ENS/08-5. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AFMC/A4SP.

POINDEXTER, JESSICA L., Nano-Mechanical Properties of Heat Inactivated Bacillus Anthracis and Bacillus Thuringiensis Spores. AFIT/GAP/ENP/08-M07. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFMC/CX.


CARTWRIGHT, ARTHUR D., See BROWN, RICHARD A.


MCCLAIN, BRYON E., See BROWN, RICHARD A.

AIR FORCE RESEARCH LABORATORY [AFRL]


AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH


CAKIROGLU, BORA, *Construction and Testing of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas.* AFIT/GE/ENG/08-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFOSR.


DINES, DAVID M., *A Hybrid Communications Network Simulation-Independent Toolkit.* AFIT/GCS/ENG/08-08. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

DOGRUL, MURAT, *Design and Optimization of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas.* AFIT/GE/ENG/08-08. Faculty Advisor: Dr. Peter J. Collins. Sponsor: AFOSR/EOARD.

EADDIE, MAMITA T., *Dialable Cryptography for Wireless Networks.* AFIT/GCO/ENG/08-02. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.
FONDREN, TERESA J., *Time Resolution of Collapse Events During the Propagation of Ultraviolet Filaments.* AFIT/GAP/ENP/08-M03. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFOSR.

GRUEN, GREGGORY J., *Time Dependent Annealing Study of Silicon Implanted Aluminum Gallium Nitride.* AFIT/GMS/ENP/08-J01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.


JAMES, MOSES C., *Obfuscation Framework Based on Functionally Equivalent Combinatorial Logic Families.* AFIT/GCS/ENG/08-12. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.


WILLIAMSON, DEREK L., *Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems.* AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

**AFRL: AIR VEHICLES DIRECTORATE**


FREDBERG, DANIEL E., *PIV-Based Examination of Deep Stall on an Oscillating Air Foil.* AFIT/GAE/ENY/08-M09. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

GREENE, BARTT G., Characterization and Control of Carbon Dioxide Seed Particle Image Velocimetry. AFIT/GAE/ENY/08-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.


LOUIE, ALAN K., see HARIHARAN, ANIL N.


RIVERA, SCOTT V., see HARIHARAN, ANIL N.

SAKRYD, GREGORY A., Systems Engineering Analysis for the Development of the Fleeting Target. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RY and AFRL/RB.


SHAHADY, DAVID E., Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations. AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/RB and AFRL/RY.

SHELNUTT, PAUL J., Collision Avoidance for UAVs Using Optic Flow Measurement With Line of Sight Rate Equalization and Looming. AFIT/GE/ENG/08-26. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

SVANBERG, CRAIG E., Biomimetic Micro Air Vehicle Testing Development and Small Scale Flapping-Wing Analysis. AFIT/GAE/ENY/08-M27. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.


AFRL: DIRECTED ENERGY DIRECTORATE

BLASY, BRYAN D., Neutron Detection Utilizing Gadolinium Doped Hafnium Oxide Films. AFIT/GNE/ENP/08-M02. Faculty Advisor: LTC David A. LaGraffe. Sponsor: AFRL/RD.


GROB, DARRELL L., Uncorrelated Track Avoidance. AFIT/GA/ENY/08-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: AFRL/RD.
PLOURDE, MICHAEL D., Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence. AFIT/GEO/ENG/08-02. Faculty Advisor: Maj Jason D. Schmidt. Sponsor: AFRL/RD.

RODGERS, LUKE P., Collision Broadening Using Alkali-Filled, Hollow Core Fibers. AFIT/GAP/ENP/07-S01. Faculty Advisor: Maj Timothy H. Russell. Sponsor: AFRL/RD.


AFRL: 711th HUMAN EFFECTIVENESS WING

CLARKE, BRIAN M., In Vitro Toxicity and Inflammation Response Induced by Copper Nanoparticles in Rat Alveolar Macrophages. AFIT/GES/ENV/08-M01. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RH.

DIAS, SANDRA J., Characterization of a Fluorescent Protein Reporter System. AFIT/GRD/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RH.

HANSEN, ANDREW P., Cyber Flag: A Realistic Cyberspace Training Construct. AFIT/GCS/ENG/08-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/RH.


SCHEERES, JAMISON W., Establishing the Human Firewall: Reducing an Individual's Vulnerability to Social Engineering Attacks. AFIT/GIR/ENG/08-04. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.


SKARDA, BRYAN E., Operationalizing Offensive Social Engineering for the Air Force. AFIT/GCO/ENG/08-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.


SPRECHER, AARON J., Microfluidic Power Generation. AFIT/GE/ENG/08-29. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RH.


VERMILLION, RICK E., Comparative Kinetics and Distribution to Target Tissues of Organophosphates Using Physiologically-Based Pharmacokinetic Modeling. AFIT/GEM/ENV/08-M20. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AFRL/RH.
AFRL: INFORMATION DIRECTORATE

AVITIA, SERAFIN, Developing Network Situational Awareness Through Visualization of Fused Intrusion Detection System Alerts. AFIT/GCS/ENG/08-23. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: AFRL/RI.


AFRL: MATERIALS AND MANUFACTURING DIRECTORATE


HANSON, TRAVIS J., See BROWN, JASON L.

RASMUSSEN, JOSHUA D., Image-Based Laser Jam Detection in Infrared Focal Plane Array Detectors. AFIT/GEO/ENP/08-M05. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

AFRL: MUNITIONS DIRECTORATE

CHABAK, KELSON D., Conceptual Study of Rotary-Wing Microbiotics. AFIT/GE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RW.


SEDAT, EBCIN, Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RW.


AFRL: PROPULSION DIRECTORATE


HAUSMAN, ALEXANDER R., *Direct Initiation through Detonation Branching in a Pulsed Detonation Engine*. AFIT/GAE/ENY/08-M17. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.


MASON, JONATHAN R., *Heat Transfer Due to Unsteady Effects as Investigated in a High-Speed, Full-Scale, Fully-Cooled Turbine Vane and Rotor Stage*. AFIT/GAE/ENY/08-J04. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.


PEARSON, LINDELL E., *Vibration Analysis of Commercial Thermal Barrier Coatings*. AFIT/GAE/ENY/08-J05. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.


THURMAN, JAMES T., *Hall Thruster Plume Diagnostics Utilizing Microwave Interferometry*. AFIT/GAE/ENY/08-S03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.


**AFRL: SENSORS DIRECTORATE**


BRADY, JENNIFER L., *Limitations of a True Random Number Generator in a Field Programmable Gate Array*. AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RY.


CROUCH, JAMES W., *Digital Fingerprinting of Field Programmable Gate Arrays*. AFIT/GE/ENG/08-06. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.

DUFFY, JEFFREY P., *Dynamic Behavior Sequencing in a Hybrid Robot Architecture*. AFIT/GCE/ENG/08-03. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RY.

EBCIN, SEDAT, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF*. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RY.


GRUENTHER, ALEXANDER C., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENG/08-M03. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/RY.

HAGG, MICHAEL T., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENP/08-M03. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RY.

HANCEY, BENJAMIN D., *Characterization and Implementation of a Real-World Tracking Algorithm on Field Programmable Gate Arrays with Kalman Filter Test Case*. AFIT/GE/ENG/08-10. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.


MAILLOUX, LOGAN O., See HUMPHREYS, CLAY J.


OZDEMIR, HALIL IBRAHIM, Constellation Design of Geosynchronous Navigation Satellites Which Maximizes Availability and Accuracy Over a Specified Region of the Earth. AFIT/GSS/ENG/08-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/Ry.


SAKRYD, GREGORY A., Systems Engineering Analysis for the Development of the Fleeting Target. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/Ry and AFRL/RB.


SHAHADY, DAVID E., Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations. AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/RB and AFRL/Ry.
SHIRLEY, JASON W., *Hardware Algorithm Implementation for Mission Specific Processing*. AFIT/GE/ENG/08-27. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.


SPEAR, GRANT E., See HUMPHREYS, CLAY J.


**AFRL: SPACE VEHICLES DIRECTORATE**


HOCKENBERRY, EUGENE B., *Hardware, Software and Data Analysis Techniques for SRAM-Based Field Programmable Gate Array Circuits*. AFIT/GE/ENG/08-11. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.


4.2.6.  AIR MOBILITY COMMAND


4.2.7.  AIR FORCE SPACE COMMAND

CHISM, JASON C., Space Doctrine and Supporting Space Situational Awareness Tools.  AFIT/GSS/ENY/08-J01.  Faculty Advisor: Dr. Richard G. Cobb.  Sponsor: AFSPC.

RUSNOCK, CHRISTINA F., Predicting Cost and Schedule Growth for Military and Civil Space Systems.  AFIT/GRD/ENC/08M-01.  Faculty Advisor: Dr. Edward D. White, III.  Sponsor: AFSPC/SMC.

24th AIR FORCE (P)


4.2.8.  USAF FIELD OPERATING AGENCIES

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE

CORBIN, REBECCA S., An Analysis of Groundwater Flow Patterns in a Constructed Treatment Wetland Cell.  AFIT/GEM/ENV/08-M04.  Faculty Advisor: Dr. Michael L. Shelley.  Sponsor: AF/A7 and AFCEE.

NYIKOS, DAVID M., Sustainable Design Policy and Leadership in Energy and Environmental Design Certification.  AFIT/GEM/ENV/08-M14.  Faculty Advisor: Dr. Alfred E. Thal, Jr.  Sponsor: AFCEE/TBD.

STUMME, LUKE D., Optimal Adoption of Green Roofs: Hydrology and Public Finance Applications.  AFIT/GEM/ENV/08-M18.  Faculty Advisor: Dr. Alfred E. Thal, Jr.  Sponsor: AFCEE/TBD.


THOMPSON, IAN F., Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics.  AFIT/GES/ENV/08-M07.  Faculty Advisor: Dr. Michael L. Shelley.  Sponsor: AF/A7 and AFCEE/ERD.

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

CRABTREE, DONALD C., Factors Leading to Effectiveness and Satisfaction in Civil Engineer Information Systems.  AFIT/GEM/ENV/08-M05.  Faculty Advisor: Dr. Dennis D. Strouble.  Sponsor: AFCESA.

GRIFFIN, JAMES S., Impacts of Weather Variations on Energy Consumption Efforts at U.S. Air Force Installations.  AFIT/GEM/ENV/08-M08.  Faculty Advisor: Dr. Alfred E. Thal, Jr.  Sponsor: AFCESA.

AIR FORCE INFORMATION OPERATIONS CENTER

ASCHENBRENNER, BRIAN D., Identification of Command and Control Information Requirements for the Cyberspace Domain.  AFIT/GIR/ENG/08-01.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: AFIOC/IO.


GRIFFIN, JANE J., DoD Role for Securing United States Cyberspace. AFIT/GCO/ENG/08-03. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC.

AIR FORCE NUCLEAR WEAPONS AND COUNTERPROLIFERATION AGENCY

HAWKINS, LESLIE S., Micro-Etched Platforms for Thermal Inactivation of Bacillus Anthracis and Bacillus Thuringiensis Spores. AFIT/GWM/ENP/08-M01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AF/A3S and AFINWCA(AT).

AIR FORCE OPERATIONALLY RESPONSIVE SPACE OFFICE

KAHRAMAN, MESUT OZKAN, A Constraint Based Approach for Building Operationally Responsive Satellites. AFIT/GSS/ENY/08-S02. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AF Operationally Responsive Space Office.

AIR FORCE PERSONNEL CENTER


AIR FORCE PETROLEUM AGENCY


AIR FORCE SERVICES AGENCY


AIR FORCE TEST PILOT SCHOOL (AF TPS)


SPEARES, STEVEN W., Handling Qualities Evaluation of a Supersonic Tailless Air Vehicle. AFIT/GAE/ENY/08-M25. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFTPS/ED.

4.2.9. DEPARTMENT OF DEFENSE


DEFENSE ACQUISITION UNIVERSITY

GARDNER, CHRISTOPHER P., Balancing Government Risks with Contractor Incentives in Performance-Based Logistics Contracts. AFIT/GLM/ENS/08-2. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: DAU.


DEFENSE INSTITUTE OF SECURITY ASSISTANCE MANAGEMENT


ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATE PROGRAM

CRAIG, DANIEL A., Development of a Screening Tool to Facilitate Technology of an Innovative Technology to Treat Perchlorate-Contaminated Water. AFIT/GEM/ENV/08-M06. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: ESTCP.

HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE

SPRING, JUSTIN B., Modeling of SBS Phase Conjugation in Multimode Step Index Fibers. AFIT/GAP/ENP/08-M09. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL/JTO.

JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT ORGANIZATION


LONG, ALICE M., See DAWLEY, LYLE M.

MARENTETTE, LENORE A., See DAWLEY, LYLE M.

NATIONAL SECURITY SPACE OFFICE

LUPA, JOSEPH S., Simulation of National Intelligence Process with Fusion. AFIT/GOR/ENS/08-13. Faculty Advisor: Dr. John O. Miller. Sponsor: NSSO.

OFFICE OF THE SECRETARY OF DEFENSE


UNITED STATES STRATEGIC COMMAND

KAPPEDAL, RYAN D., Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness. AFIT/GOR/ENC/08-10. Faculty Advisor: Maj August G. Roesener. Sponsor: USSTRATCOM.

UNITED STATES CENTRAL COMMAND

TANNEHILL, BRYAN R., Forecasting Instability Indicators in the Horn of Africa Region. AFIT/GOR/ENS/08-21. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: USCENTCOM J8-ARB.

UNITED STATES NAVY

BROWNING, DAVID W., Analysis of the EA-6B Power Trim Indicator (PTI) System. AFIT/GAE/ENY/08-D04. Faculty Advisor: Dr. Paul I. King. Sponsor: NAVAIR.

4.2.10. DEPARTMENT OF ENERGY


CHARLES-VICKERS, MARTHA, See ALEXANDER, JEFF A.

SMITH, TALBOT L., See ALEXANDER, JEFF A.

VICKERS, MICHAEL S., See ALEXANDER, JEFF A.

4.2.11. OTHER FEDERAL AGENCIES

DEPARTMENT OF HOMELAND SECURITY

RAKES, KELLY D., Evaluating the Response of Polyvinyl Toluene Scintillators Used in Portal Detectors. AFIT/GNE/ENP/08-M04. Faculty Advisor: Dr. James C. Petrosky. Sponsor: DHS/DNDO.

SMITH, BRIANA J., Near-Time Characterization of a Domestic Nuclear Event Using Gamma Spectroscopy. AFIT/GNE/ENP/08-M06. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DHS/DNDO.

ENVIRONMENTAL PROTECTION AGENCY


4.2.12. NON-FEDERAL SPONSORS

BAHRAIN DEFENSE FORCE


OKLAHOMA STATE UNIVERSITY


**TURKISH AIR FORCE**

ALKANAT, OMER, *Determining the Surface-to-Air Missile Requirement for Western and Southern Part of the Turkish Air Defense System*. AFIT/GOR/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: Turkish Air Force.


**WRIGHT STATE UNIVERSITY**


**MONTGOMERY COUNTY (OH) POLICE DEPARTMENT**

4.3. GRADUATE RESEARCH PAPERS
Note: Students in non-thesis graduate programs at AFIT may write graduate research papers.

4.3.1. OFFICE OF THE SECRETARY OF THE AIR FORCE
DeVoE, DANIEL A., When Precision Becomes Precise: What it Takes to Achieve 10 Meter Accuracy with the Joint Precision Airdrop System. AFIT/IMO/ENS/08-03. Faculty Advisor: Dr. James T. Moore. Sponsor: SAF/AQQ.

4.3.2. HEADQUARTERS UNITED STATES AIR FORCE
EASTLAND, KEVIN M., Has the Expeditionary Mobility Task Force (EMTF) Organization Outlived Its Usefulness? AFIT/IMO/ENS/08-06. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: USAF EC/CC.


MUEHE, TARA J., Developing Future Air Force Cyber Leaders. AFIT/ICW/ENG/08-06. Faculty Advisor: Maj Paul D. Williams. Sponsor: AF/A2F.


4.3.3. AIR COMBAT COMMAND

HAZEL, BRIAN, See ELLER, JOHN W.


ORTH, PAUL, Measuring the Operational Readiness of an Air Force Network Warfare Squadron. AFIT/ICW/ENG/08-09. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315th NWS/CC.

ROONEY, BRENDAN D., See ELLER, JOHN W.

4.3.4. AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY
NOTE: Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

COSNOWSKI, CHARLES, Defeating 802.11 Wireless Networks. AFIT/ICW/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

GRANT, SCOTT D., *Improving the Tanker Employment Model*. AFIT/ILM/ENS/08-02. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

HACKLER, GEORGE C., *Goal Programming Tanker Beddown Decisions*. AFIT/ILM/ENS/08-03. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.


4.3.5. AIR FORCE MATERIEL COMMAND


AERONAUTICAL SYSTEMS CENTER


GLASSCOCK, CHARLES G., see BORNEJKO, TRINA L.

SPRENKLE, DENNIS R., see BORNEJKO, TRINA L.

AIR FORCE RESEARCH LABORATORY


ZALL, JONATHAN E., see O’MALLEY, DAVID R.
4.3.6. AIR MOBILITY COMMAND

BUFORD, TRAVIS P., Contingency Response Groups: How Many Do We Really Need? AFIT/IMO/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: 621 COSG/CD.

CLARK, WILL, Optimal Cargo Compartment Size for the Advanced Joint Combat System. AFIT/IMO/ENS/08-02. Faculty Advisor: Lt Col Pamela S. Donovan. Sponsor: AMC/A8X.


HANSON, JEREMY R., Moving the Force: The Impact of Large Scale Brigade Combat Team Deployments. AFIT/IMO/ENS/08-08. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/A3.

HOWLAND, ERIC J., A Lean Look at the C-17 Home Station Departure Process. AFIT/IMO/ENS/08-09. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: 437 OG/CC.


LACY, JOHN A., Application of AFSO21 Principles to Navigator Training at the C-130 Formal Training Unit. AFIT/IMO/ENS/08-11. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 314 OG/CC.

MITCHELL, LAWRENCE W.S., Fee for Service Air Refueling: A Summary Market Analysis. AFIT/IMO/ENS/08-12. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/CR.


4.3.7. AIR FORCE SPACE COMMAND

REPIK, KEITH, Defeating Adversary Network Intelligence Efforts with Active Cyber Defense Techniques. AFIT/ICW/08-11. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFCYBER.

4.3.8. AIR FORCE RESERVE COMMAND


LITTLE, ADAM W., see BROWN, KYLE D.

MUHA, MATTHEW T., see BROWN, KYLE D.

4.3.9. DEPARTMENT OF DEFENSE


STEELE, RICHARD V., See Pettus, Evan L.
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

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| 5.1.7 | OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES | 56 |
5.1.1. **DOCTORAL DISSERTATIONS**


FREEBORN, ANDREW B., *Pylon Effects on a Scramjet Cavity Flameholder Flowfield*. AFIT/DS/ENY/08-04. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

HOPPER, DAVID R., *Direct Initiation of Multiple Tubes by Detonation Branching in a Pulsed Detonation Engine*. AFIT/DS/ENY/08-05. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.


5.1.2. **MASTER’S THESES**

5.1.2.1. **AERONAUTICAL ENGINEERING (GAE)**


BARTOWITZ, MICHAEL E., *Determination of Static and Dynamic Stability Derivatives*. AFIT/GAE/ENY/08-M02. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFSEO.

BOYER, BARTH H., *Creep-Rupture and Fatigue Behavior of a Notched Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature*. AFIT/GAE/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

BROWNING, DAVID W., *Analysis of the EA-6B Power Trim Indicator (PTI) System*. AFIT/GAE/ENY/08-D04. Faculty Advisor: Dr. Paul I. King. Sponsor: NAVAIR.


FREDBERG, DANIEL E., *PIV-Based Examination of Deep Stall on an Oscillating Air Foil*. AFIT/GAE/ENY/08-M09. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.


GREENE, BARTT G., *Characterization and Control of Carbon Dioxide Seed Particle Image Velocimetry*. AFIT/GAE/ENY/08-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.


HAUSMAN, ALEXANDER R., *Direct Initiation through Detonation Branching in a Pulsed Detonation Engine*. AFIT/GAE/ENY/08-M17. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

JOHNSON, MICHAEL D. *Dynamic Supersonic Base Store Ejection Simulation Using Begger*. AFIT/GAE/ENY/08-D01. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: N/A.


MASON, JONATHAN R., *Heat Transfer Due to Unsteady Effects as Investigated in a High-Speed, Full-Scale, Fully-Cooled Turbine Vane and Rotor Stage*. AFIT/GAE/ENY/08-J04. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.


PEARSON, LINDELL E., *Vibration Analysis of Commercial Thermal Barrier Coatings*. AFIT/GAE/ENY/08-J05. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.


SHARMA, VIPUL, *Effects of Temperature and Steam Environment on Fatigue Behavior of Three SiC/SiC Ceramic Matrix Composites*. AFIT/GAE/ENY/08-S02. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.


THURMAN, JAMES T., *Hall Thruster Plume Diagnostics Utilizing Microwave Interferometry*. AFIT/GAE/ENY/08-S03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.


5.1.2.2. **ASTRONAUTICAL ENGINEERING (GA)**


OWNBY, JOHN F., *The Effect of Elevated Temperature on the Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GA/ENY/08-M04. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.


YELESER, TUFAN, *Creep Behavior of Oxide/Oxide Composites with Monazite Fiber Coating at 1100°C in Air and in Steam Environments*. AFIT/GA/ENY/08-S01. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

5.1.2.3. **MATERIALS AND SCIENCE ENGINEERING (GMS)**

HARDER, BENJAMIN T., *Evaluation of Nanocomposites as Lightweight Electronic Enclosures for Satellites Applications*. AFIT/GMS/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

5.1.2.4. **SPACE SYSTEMS (GSS)**


GULMUS, MESUT, *Determining the Capability Requirements for a Space Based Optical Sensor to Determine the Trajectory of an Incoming Antisatellite Weapon*. AFIT/GSS/ENV/08-M03. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

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KAHRAMAN, MESUT OZKAN, *A Constraint Based Approach for Building Operationally Responsive Satellites.* AFIT/GSS/ENY/08-S02. Faculty Advisor: Maj Eric D. Swenson. Sponsor: N/A.

KAYA, EMRE, *Crew Exploration Vehicle (CEV) Skip Entry Trajectory.* AFIT/GSS/ENY/08-M06. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

**5.1.2.5. SYSTEMS ENGINEERING (GSE)**


**5.1.3. FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

BLACK, JONATHAN T.

“Hybrid Laser/Video 3D Non-Contact Motion Capture and Analysis.” Sponsor: AFOSR. Funding: $120,000.

BLUE, PAUL A., Maj

“Planning, Guidance, and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/RB. Funding: $35,000. [ANT]

BRANAM, RICHARD D., Lt Col

“AFIT Space and Rocket Propulsion Research.” Sponsor: AFRL/RZ. Funding: $75,000.


“Ultra Compact Combustor Cavity Vane Interactions.” Sponsor: AFOSR. Funding: $42,469.

CANFIELD, ROBERT A.


“Large Scale Optimization via Reduced Sub-Space Multipoint Approximations.” Sponsor: AFOSR. Funding: $26,987.


COBB, RICHARD G.

“Systems Engineering Support for Urgent Needs Efforts.” Sponsor: AFRL/RV. Funding: $35,000. [ANT]

GREENGYKE, ROBERT B.

“Reusable Launch Vehicle Flight Aerodynamics with High Fidelity Hypersonic Flowfield Solvers.” Sponsor: AFRL/RB. Funding: $35,000.

HUFFMAN, RICHARD E., Maj


KING, PAUL I.


KUNZ, DONALD L.

“Dynamics Modeling and Simulation of Automated Aerial Refueling.” Sponsor: AFRL/RB. Funding: $18,000.

“High-Fidelity Aeroelastic Analysis for Flexible-Wing MAV’s.” Sponsor: AFOSR. Funding: $19,125.

“Physics-Based Approach to Helicopter Rotor Smoothing.” Sponsor: US ARMY RDECOM. Funding: $15,000.

MALL, SHANKAR

“Nanocomposites as Lightweight Electronic Enclosures for Satellites’ Applications.” Sponsor: SAF. Funding: $24,000.

MAPLE, RAYMOND C., Lt Col

“Computational Modeling of Store Trajectories.” Sponsor: 746 SK. Funding: $15,000.


PALAZOTTO, ANTHONY N.


“Hypervelocity Impact Gouge Mitigation and Wear Prediction.” Sponsor: AFOSR. Funding: $100,000.

REEDER, MARK F.


RUGGLES-WRENN, MARINA B.

“Effect of Dense Monazite Fiber Coating on Mechanical Behavior of an Oxide-Oxide Ceramic Matrix Composite at Elevated Temperatures in Air and Steam Environment.” Sponsor: AFRL/RZ. Funding: $7,000.
“Effects of Steam Environment on Mechanical Behavior of SiC/SiC Ceramic Matrix Composites at Elevated Temperatures.” Sponsor: AFRL/RX. Funding: $10,000.


“Time (Rate) – Dependent Behavior of a Shape Memory Polymer Matrix Composite at Elevated Temperatures.” Sponsor: AFRL/RX. Funding: $5,000.

SHEARER, CHRISTOPHER M., Lt Col

“Flight Dynamics and Control of High Altitude Long Endurance Aircraft.” Sponsor: AFRL/RB. Funding: $15,000.

5.1.4. REFEREEED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

BLACK, JONATHAN T.


Leifer, Jack; Black, Jonathan T.; Smith, Suzanne Weaver; Ma, Ning; and Janet K. Lumpp, “Measurement of In-Plane Motion of Thin-Film Structures Using Videogrammetry,” Journal of Spacecraft and Rockets, Vol. 44, No. 6, Nov. – Dec. 2007, pp. 1317-1325.

CANFIELD, ROBERT A.


COBB, RICHARD G.


KING, PAUL I.


**KUNZ, DONALD L.**


**LOFTHOUSE, ANDREW J., Maj**


**MALL, SHANKAR**


PALAZOTTO, ANTHONY N.


REEDER, MARK F.


RUGGLES-WRENN, MARINA B.


TORVIK, PETER J.


5.1.5. REFEREED CONFERENCE PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

REEDER MARK F.


RUGGLES-WRENN, MARINA B.


**SHEARER, CHRISTOPHER M., Lt Col**


**CONFERENCE PAPERS ACCEPTED ON THE BASIS OFReviewed ABSTRACT**

**BLACK, JONATHAN T.**


**BRANAM, RICHARD D., Lt Col**

McCall, J. and Branam, R., “Effect of Radial Curvature in Rockets on Film Cooling Adiabatic Effectiveness and Jet Width,” Proceedings of ASME 2008 International Mechanical Engineering Congress and Exposition, October 31-November 6, 2008, Boston, USA.


CANFIELD, ROBERT A.


GREENDYKE, ROBERT B.


KUNZ, DONALD L.


MALL, SHANKAR


Mall, S., Ng, J. L. and Madhi, E., “Fretting Fatigue Behavior of Shot-Peened Ti-6Al-4V and IN100”, Seventh International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics to be held in Tampa, Florida, USA, on November 14-16, 2007.


REEDER, MARK F.


SWENSON, ERIC, D., Lt Col


TORVIK, PETER J.


WIESEL, WILLIAM E.


5.1.6. SUBSTANTIAL CONSULTATIONS

HARMON, FREDERICK G., Lt Col

Harmon, Frederick G, Heavy Fuel Engine testing, AFRL/Center for Rapid Product Development (CRPD), assisted CRPD in fabricating wiring harnesses and a test stand to run initial tests on a D-Star Engineering heavy fuel engine, an undergraduate intern (Ohio Space Grant) helped with the testing in the summer of 2008.

Harmon, Frederick G., Route Surveillance team, AFRL/Center for Rapid Product Development (CRPD), one of the faculty “advisors” for the route surveillance team. The team consists of aeronautical engineering, electrical engineering, and systems engineering students. Helped support the flight tests in May 08 at Camp Atterbury.

HUFFMAN Jr., RICHARD E., Maj


KUNZ, DONALD L.


LIEBST, BRADLEY S.


SHEarer, CHRISTOPHER M., Lt Col


SWENSON, ERIC, D., Lt Col


5.1.7. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BLACK, JONATHAN T.

CANFIELD, ROBERT A.


COBB, RICHARD G.


PALAZOTTO, ANTHONY N.


TORVIK, PETER J.

5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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5.2.1. DOCTORAL DISSERTATIONS

5.2.1.1. COMPUTER ENGINEERING (DCE)


5.2.1.2. COMPUTER SCIENCE (DCS)

AUGERI, CHRISTOPHER J., *On Graph Isomorphism and the Page Rank Algorithm*. AFIT/DCS/ENG/08-08. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA.


5.2.1.3. ELECTRICAL ENGINEERING (DEE)


MARSH, DAVID W., *Composable Distributed Access Control and Integrity Policies for Query-Based Wireless Sensor Networks*. AFIT/DEE/ENG/08-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

PHILLIPS, JAMES D., *Joint Image and Pupil Plane Reconstruction Algorithm based on Bayesian Techniques*. AFIT/DEE/ENG/08-07. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.


5.2.2. MASTER’S THESES

5.2.2.1. AERONAUTICAL ENGINEERING (GAE)


5.2.2.2. COMPUTER ENGINEERING (GCE)

DUFFY, JEFFREY P., *Dynamic Behavior Sequencing in a Hybrid Robot Architecture*. AFIT/GCE/ENG/08-03. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RY.


5.2.2.3. CYBER OPERATIONS (GCO)


EADDIE, MAMITA T., *Dialable Cryptography for Wireless Networks*. AFIT/GCO/ENG/08-02. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

GRIFFIN, JANE J., *DoD Role for Securing United States Cyberspace*. AFIT/GCO/ENG/08-03. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC.


### 5.2.2.4. COMPUTER SCIENCE/COMPUTER SYSTEMS (GCS)


JAMES, MOSES C., *Obfuscation Framework Based on Functionally Equivalent Combinatorial Logic Families*. AFIT/GCS/ENG/08-12. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.


5.2.2.5. ELECTRICAL ENGINEERING (GE)

BRADY, JENNIFER L., *Limitations of a True Random Number Generator in a Field Programmable Gate Array.* AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RY.

CAKIROGLU, BORA, *Construction and Testing of Broadband High Impedance Ground Planes (HIGPS) for Surface Mount Antennas.* AFIT/GE/ENG/08-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFOSR.

CHABAK, KELSON D., *Conceptual Study of Rotary-Wing Microbiotics.* AFIT/GE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RW.


CROUCH, JAMES W., *Digital Fingerprinting of Field Programmable Gate Arrays.* AFIT/GE/ENG/08-06. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.


DOGRUL, MURAT, *Design and Optimization of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas.* AFIT/GE/ENG/08-08. Faculty Advisor: Dr. Peter J. Collins. Sponsor: AFOSR/EOARD.

EBCIN, SEDAT, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF.* AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/MN.

HANCEY, BENJAMIN D., *Characterization and Implementation of a Real-World Tracking Algorithm on Field Programmable Gate Arrays with Kalman Filter Test Case.* AFIT/GE/ENG/08-10. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RW.

HOCKENBERRY, EUGENE B., *Hardware, Software and Data Analysis Techniques for SRAM-Based Field Programmable Gate Array Circuits.* AFIT/GE/ENG/08-11. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.


SCHENK, CHRISTOPHER M., Effects of Multipath and Oversampling on Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity. AFIT/GE/ENG/08-25. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RY.

SEDAT, EBCIN, Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RW.

SHELNUTT, PAUL J., Collision Avoidance for UAVs Using Optic Flow Measurement With Line of Sight Rate Equalization and Looming. AFIT/GE/ENG/08-26. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

SHIRLEY, JASON W., Hardware Algorithm Implementation for Mission Specific Processing. AFIT/GE/ENG/08-27. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.


SPRECHER, AARON J., Microfluidic Power Generation. AFIT/GE/ENG/08-29. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RH.

STONE, SAMUEL J., Anti-Tamper Method for Field Programmable Gate Arrays Through Dynamic Reconfiguration and Decoy Circuits. AFIT/GE/ENG/08-30. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RY.


TOWNSEND, JAMES D., *Improvement of ECM Techniques through Implementation of a Genetic Algorithm.*  
AFIT/GE/ENG/08-34.  Faculty Advisor: Maj Michael A. Saville.  Sponsor: AFRL/RY.

VITAYAUDOM, KEVIN P., *Analysis of Non-Uniform Gain for Control of a Deformable Mirror in an Adaptive-Optics System.*  
AFIT/GE/ENG/08-35.  Faculty Advisor: Maj Jason D. Schmidt.  Sponsor: AFRL/RD.

5.2.2.6. **ELECTRO OPTICS (GEO)**

GRUENTHER, ALEXANDER C., *An Image Based Bidirectional Reflectivity Distribution Function Experiment.*  
AFIT/GEO/ENG/08-M03.  Faculty Advisor: Dr. Barry E. Mullins.  Sponsor: AFRL/RY.

PLOURDE, MICHAEL D., *Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence.*  
AFIT/GEO/ENG/08-02.  Faculty Advisor: Maj Jason D. Schmidt.  Sponsor: AFRL/RD.

5.2.2.7. **SPACE SYSTEMS (GSS)**

OZDEMIR, HALIL IBRAHIM, *Constellation Design of Geosynchronous Navigation Satellites Which Maximizes Availability and Accuracy Over a Specified Region of the Earth.*  
AFIT/GSS/ENG/08-01.  Faculty Advisor: Dr. John F. Raquet.  Sponsor: AFRL/RY.

5.2.3. **GRADUATE RESEARCH PAPERS**

5.2.3.1. **INFORMATION WARFARE (ICW)**

COSNOWSKI, CHARLES, *Defeating 802.11 Wireless Networks.*  
AFIT/ICW/ENG/08-01.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: N/A.

GOOD, MICHAEL J., *Chinese National Strategy of Total War.*  
AFIT/ICW/ENG/08-02.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: N/A.

AFIT/ICW/ENG/08-03.  Faculty Advisor: Lt Col J. Todd McDonald.  Sponsor: AFRL/RI.

AFIT/ICW/ENG/08-06.  Faculty Advisor: Maj Paul D. Williams.  Sponsor: AF/A2F.

AFIT/ICW/ENG/08-07.  Faculty Advisor: Dr. Richard A. Raines.  Sponsor: HQ/8AF.

AFIT/ICW/ENG/08-08.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: N/A.

AFIT/ICW/ENG/08-09.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: 315th NWS/CC.

RAUCH, DANIEL E., *Electronic Warfare for Cyber Warriors.*  
AFIT/ICW/ENG/08-10.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: N/A.

REPIK, KEITH, *Defeating Adversary Network Intelligence Efforts with Active Cyber Defense Techniques.*  
AFIT/ICW/08-11.  Faculty Advisor: Maj Paul D. Williams.  Sponsor: AFCYBER.

AFIT/ICW/ENG/08-12.  Faculty Advisor: Dr. Robert F. Mills.  Sponsor: N/A.
5.2.4. FUNDED RESEARCH PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

Baldwin, Rusty O.

“Emerging Technologies (IA).” Sponsor: NSA. Funding: $87,084. [CCR]

Cain, Stephen C.


Collins, Peter J.


“Field Emission Technology Investigations.” Sponsor: SAF. Funding: $85,000.

“Low Frequency Synthesis through Wavelet Optimization.” Sponsor: AFMC/A5JF. Funding: $25,000.

“RCS Methodology.” Sponsor: 746 TS. Funding: $60,500.

Gustafson, Steven C.


Havrilla, Michael J.


“Low Frequency High Temperature Material Characterization System.” Sponsor: AFMC/A5JF. Funding: $50,000.

Hopkinson, Kenneth M.

“A Context-Aware Middleware Architecture to Enable Large-Scale Networking.” Sponsor: SAF. Funding: $107,666.


“HPC Summer Intern Support.” Sponsor: AFOSR. Funding: $42,448.

Kim, Yong C.

“Anti-Tamper Methodology for Field Programmable Gate Arrays.” Sponsor: AFRL/RY. Funding: $75,000.

Kurkowski, Stuart H., Lt Col


“Toolkit for Visualizing Situation Scope.” Sponsor: AFRL/RI. Funding: $76,738. [CCR]
MARTIN, RICHARD K.


McDONALD, J. TODD, Lt Col


MENDENHALL, MICHAEL J., Maj

“3D Shape Recognition Using QUEST Processing of LIDAR.” Sponsor: AFRL/R. Funding: $71,936.

“Hyperspectral Exploitation and HypeX Program Support.” Sponsor: AFRL/R. Funding: $30,000.


MILLS, ROBERT F.

“Technical Support, Information/Cyber Operations.” Sponsor: AFIOC. Funding: $25,010. [CCR]

MULLINS, BARRY E.

“Air Force Communications Systems Modeling.” Sponsor: AFCA. Funding: $19,520. [CCR]

“Ground Mobility Objective Gateways.” Sponsor: AFRL/RW. Funding: $25,000. [CCR]

“Technical Support: Cyber Operations.” Sponsor: AFRL/RI. Funding: $20,000. [CCR]

PACHTER, MEIR

“Cooperative Control.” Sponsor: AFRL/RB. Funding: $10,000.

“Cooperative Control and Estimation.” Sponsor: AFOSR. Funding: $45,448.

“Feasibility Study of In-Situ Plant Dynamics Identification for a Satellite Payload.” Sponsor: SAF. Funding: $45,000.

“New Navigation Techniques.” Sponsor: AFRL/RV. Funding: $15,000. [ANT]

PETEISON, GILBERT L.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $110,800. [COA]

“CANIS-Related Navigation Research Projects for the ANT Laboratory.” Sponsor: AFRL/R. Funding: $100,000. [ANT]

RAINES, RICHARD A.

“Target Discovery, Sensor Fusion, and Mitigation Analysis.” Sponsor: AFRL/RY. Funding: $60,000. [CCR]

RAQUET, JOHN F.

“ANT Center and Laboratory Support per ANT Center Appendix of MOA.” Sponsor: AFRL/RY. Funding: $196,000. [ANT]

“Development of High Accuracy TSPI Systems.” Sponsor: 746 TS. Funding: $45,900. [ANT]

“Image-Aided Aerial Refueling.” Sponsor: AFRL/RY. Funding: $35,000. [ANT]


SCHMIDT, JASON D., Maj

“Advanced Wavefront Control.” Sponsor: AFRL/RD. Funding: $30,000. [CDE]

STARMAN, LAVERNE A., Maj


TEMPLE, MICHAEL A.

“EME Characterization and Exploitation.” Sponsor: Naval Surface Warfare Center (NSWC). Funding: $73,549. [CCR]


TERZUOLI, ANDREW J., Jr.

“ECM Against Passive Radar.” Sponsor: AFRL/RY. Funding: $20,000.

“Persistent Sensor Enhancement.” Sponsor: AFRL/RY. Funding: $10,000.

“Remote Sensing and Communication for MASINT.” Sponsor: NASIC. Funding: $150,000. [CMSR]

“Structural Antenna Electromagnetics.” Sponsor: AFRL/RB. Funding: $10,000.

THOMAS, RYAN W., Capt


VETH, MICHAEL J., Lt Col

“Autonomous Indoor Micro Air Vehicle.” Sponsor: AFRL/RW. Funding: $125,000. [ANT]

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: $30,000. [ANT]
WILLIAMS, PAUL D., Maj

“AFIT Support for AFRL Cybercraft Project.” Sponsor: AFOSR. Funding: $50,000. [CCR]

“Support to JCTD Vulnerability Assessment.” Sponsor: JIOWC. Funding: $25,000. [CCR]

5.2.5. FUNDED EDUCATIONAL PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

RAINES, RICHARD A.

“AFIT Transformation Chair.” Sponsor: DoD/OSD. Funding: $200,000. [CCR]

“Anti-Tamper Software Protection Initiative Education, Outreach and Research.” Sponsor: AFRL/RY. Funding: $200,000. [CCR]


“IASP Tuition and Resource Support for the AFIT Center for Cyberspace Research.” Sponsor: NSA. Funding: $312,848. [CCR]

5.2.6. REFEREED JOURNAL PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

ANDEL, TODD R., Maj


BALDWIN, RUSTY O.


CAIN, STEPHEN C.


**COLLINS, PETER J.**


**GUSTAFSON, STEVEN C.**


**HAVRILLA, MICHAEL J.**


**HOPKINSON, KENNETH M.**


**KIM, YONG C.**


**KURKOWSKI, STUART H., Lt Col**


MARTIN, RICHARD K.

Sambora, M. D., and Martin, R. K., “Exploiting Correlations in Projection-Based Image Registration,”

McDONALD, J. TODD., Lt Col

McDonald, J. T., Kim, Y. C., and Yasinsac, A., “Software Issues in Digital Forensics,” ACM SIGOPS OS Review,
Special Issue on Forensics, Vol. 42, No. 3, April 2008. [CCR]

MENDENHALL, MICHAEL, J., Maj

Transactions on Neural Networks, Volume 19, Issue 4, Pg 658-672, April 2008.

Suski, W., Temple, M. A., Mendenhall, M. J., and Mills, R. F., “Radio Frequency Fingerprinting Commercial
Communication Devices to Enhance Electronic Security,” International Journal of Electronic Security and

MILLS, ROBERT F.

Suski, W., Temple, M. A., Mendenhall, M. J., and Mills, R. F., “Radio Frequency Fingerprinting Commercial


Okolica, J. S., Peterson, G. L., and Mills, R. F., “Using PLSI-U to Detect Insider Threats by Datamining Email,”
114-121, 2008. [CCR]

MULLINS, BARRY E.

Jordt, G. J., Baldwin, R. O., Raquet, J. F., and Mullins, B. E., “Energy Cost and Error Performance of Range-Aware,

Resources in Sensor Networks with Time-constrained Queries,” Mobile Computing and Communications Review,
Vol. 12, No. 2, pp. 31-39, April 2008. [CCR]

Dube, T. E., Birrer, B. D., Raines, R. A., Baldwin, R. O., Mullins, B. E., Bennington, R. F., and Reuter, C. E.,
“Hindering Reverse Engineering: Thinking Outside the Box,” IEEE Security and Privacy, Vol. 6, No. 2, pp. 58-65,
March/April 2008. [CCR]

Isomorphism Using Lexicographic Sorting and the Matrix Inverse,” Congressus Numerantium, Utilitas Mathematica
PACHTER, MEIR


PETRSON, GILBERT L.


RAINES, RICHARD A.


RAQUET, JOHN F.


SCHMIDT, JASON D., Maj


TERZUOLI, ANDREW J., Jr.


5.2.7. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

ANDEL, TODD R., Maj


Baldwin, Rusty O.


CAIN, STEPHEN C.


Havrilla, Michael J.


**HOPKINSON, KENNETH M.**


**KIM, YONG C.**


**LAMONT, GARY B.**


MARTIN, RICHARD K.


MILLS, ROBERT F.


MULLINS, BARRY E.


PACHER, MEIR


RAINES, RICHARD A.


RAQUET, JOHN F.


STARMAN, LAVERN A., Maj


TEMPLE, MICHAEL A.


TERZUOLI, ANDREW J., JR.


TRIAS, ERIC D., Maj

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

CAIN, STEPHEN C.


KIM, YONG C.


LAMONT, GARY B.


MILLS, ROBERT F.


RAINES, RICHARD A.


RAQUET, JOHN F.


**TEMPLE, MICHAEL A.**


**VETH, MICHAEL J., Lt Col**


**5.2.8. SUBSTANTIAL CONSULTATIONS**

Note: Research Center affiliations are listed in [ ] if applicable.

**Baldwin, Rusty O.**

Baldwin, Rusty O., “Data Analyst for Wound Treatment Study,” Wright-Patterson Medical Center (SGCQW), February-March 2008.

**Collins, Peter J.**


Collins, Peter J., “Classified Test Infrastructure Development (Proposal evaluator and Technical Advisor),” Air Force Research Laboratory, 6 May, 16-17 September 2008.
HOPKINSON, KENNETH M.


KIM, YONG C.


LAMONT, GARY B.


Lamont, Gary B., Parallel Simulation of UAVs, Mike Foster, Air Force Research Laboratory, Sensors Directorate.


MILLS, ROBERT F.


PACHTER, MEIR

Pachter, Meir, Consulting with AFRL/RBCA on a regular basis: Cooperative Control of UAVs.


RAINES, RICHARD A.


Raines, Richard A., DoD Force Transformation Chair.


TERZUOLI, ANDREW J., Jr.

Terzuoli, Andrew J., “Wright-Patterson MASINT Development Consortium (WPMDC)” with NASIC/DEM, January 2005 -Present.


Terzuoli, Andrew J., “Wright-Patterson Over the Horizon Radar (OTHR) Working Group” with NASIC/AD & DE, June 2007 - Present.
Terzuoli, Andrew J., “Harnessing Remote Sensed Data” with NASIC/SCX June 2007- Present.


THOMAS, RYAN W., Capt


TOUSSAINT, GREGORY J., Lt Col


5.2.9. BOOKS AND CHAPTERS IN BOOKS

BALDWIN, RUSTY O.


LAMONT, GARY B.


MARTIN, RICHARD K.


MULLINS, BARRY E.


PACHTER, MEIR


PETTERSON, GILBERT L.


RAINES, RICHARD A.


THOMAS, RYAN W., Capt


VETH, MICHAEL J., Lt Col


5.2.10. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

Note: Research Center affiliations are listed in [ ] if applicable.

PUBLICATIONS AND PRESENTATIONS

COLLINS, PETER J.


**HOPKINSON, KENNETH M.**


Hopkinson, K., “Context-Awareness Everywhere: From the Airwaves to the Power Grid,” *Utah State University, Department of Computer Science, Department Colloquium*, Logan, Utah, 8 November 2007.


**KURKOWSKI, STUART H., Lt Col**


MARTIN, RICHARD K.


MENDENHALL, MICHAEL J., Maj


McDONALD, J. TODD, Lt Col


MILLS, ROBERT F.


PACHTER, MEIR


PETerson, GILBERT L.


**Raines, Richard A.**


**Saville, Michael A., Maj**


SCHMIDT, JASON D., Maj


TERZUOLI, ANDREW J., JR.


THOMAS, RYAN W., Capt


TRIAS, ERIC D., Maj


PROFESSIONAL ACTIVITIES

COLLINS, PETER J.

Chair: AFIT/ENG Low Observables Curriculum Committee.
Reviewer: *IEEE Transactions on Antennas and Propagation*.


KIM, YONG C.

Review Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS).

LAMONT, GARY B.


Institute of Electrical and Electronics Engineers (IEEE): Technical Co-Chair, IEEE National Aerospace and Electronics Conference (NAECON), Dayton, OH, July, 2008; program committee: IEEE Congress on Evolutionary Computation (CEC) (on-going); reviewer: IEEE Transactions on Evolutionary Computing.

Member, program committee for Conference on Evolutionary Multi-Criterion Optimization (EMO); program committee for ICARIS.

Reviewer, MIT Journal on Evolutionary Computation; Conference on Evolutionary Multi-Criterion Optimization; Parallel Processing Systems in Nature Conference (PPSN).

Chair: AFIT/ENG Computer Science/Engineering Theory/Math Committee, 1980 to present.

Chair: AFIT/ENG Computer Architecture & Parallel Computation, 1990 to present.

Member: AI, Computer Engineering Committees, 1990 to present.

Member: AFIT Tau Beta Pi Executive Committee, 1992 to present.

MULLINS, BARRY E.

2008–present; Member, Technical Program Committee for the 4th International Conference on Information Warfare and Security (ICIW 2009).


2008; Air Force representative to the Naval Postgraduate School’s curriculum working group for the 595 Information Warfare Masters Degree in Systems Engineering program.

2007-present; Member, Advisory Board for the Global Information Assurance Certification for the SANS Institute.
2007 – present; Member, Advisory Board for the Department of Electrical Engineering and Computer Science, University of Evansville.

PACHTER, MEIR

Faculty Research Council.

DAGSI Program Coordinating Committee (Control and Signal Processing).

Associate Editor of the Journal of Optimization Theory and Applications.


Member of the following professional societies: IEEE, AIAA and ION; member of the IEEE committee “Engineers at Risk”.


AFIT liaison to AFRL/RB.

Member of AFOSR Review Panel.

Consultant to AFRL/RBCA, AFRL/RY.

Member of AFRL/RBCA AFOSR Star Team.

AFIT NRC Postdoctoral Advisor.

Associate Fellow of the AIAA.

SAVILLE, MICHAEL A., Maj


TERZUOLI, ANDREW J., JR.

Chair: Local Chapter, Joint IEEE Societies Antennas and Propagation Society (APS), Microwave Theory and Techniques (MTT), Geoscience and Remote Sensing (GRS).


Dayton Development Coalition (DDC) Sensors Task Force.

Steering Committee: WPAFB MASINT Development Consortium.

VETH, MICHAEL J., Lt Col

5.3. DEPARTMENT OF ENGINEERING PHYSICS

Access Phone 937-255-2012, DSN 785-2012
Fax: 937-656-6000, DSN 786-6000
Homepage: http://www.afit.edu/en/enp/

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5.3.1. DOCTORAL DISSERTATIONS

5.3.1.1. ELECTRO-OPTICS (DS)

COLE, WALTER P., Atmospheric Turbulence Effects Correction Factors for the Laser Range Equation. AFIT/DS/ENP/08-02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

MASSEY, STEVEN M., Simulated Brillouin Scattering Phase Conjugation in Fiber Optic Waveguides. AFIT/DS/ENP/08-S03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL-JTO.

5.3.1.2. NUCLEAR ENGINEERING (DS)


MOORE, ELIZABETH A., Electrical Activation Studies of Silicon Implanted Aluminum Gallium Nitride with High Aluminum Mole Fraction. AFIT/DS/ENP/08-D01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

PRINS, NICHOLAS J., Distribution Iteration: A Robust Alternative to Source Iteration for Solving the Discrete Ordinates Radiation Transport Equations in Slab and XY-Geometries. AFIT/DS/ENP/08-S04. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

5.3.1.3. APPLIED PHYSICS (DSP)

KEE, PATRICK, Electronic State Distributions of Y Ba2Cu3O7-x Laser Ablated Plumes. AFIT/DSP/ENP/08-S05. Faculty Advisor: Dr. Glen P. Perram. Sponsor: AFOSR.

5.3.2. MASTER'S THESES

5.3.2.1. APPLIED PHYSICS (GAP)

ARMBRUSTER, DAVID R., Production and Characterization of Femtosecond-Laser-Induced Air Plasma. AFIT/GAP/ENP/08-M01. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFOSR.

DERBIS, RICHARD M., Ultrafast Spectroscopy of Mid-Infrared Semiconductors Using the Signal and Idler Beams of a Synchronous Optical Parametric Oscillator. AFIT/GAP/ENP/08-M02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

FONDREN, TERESA J., Time Resolution of Collapse Events During the Propagation of Ultraviolet Filaments. AFIT/GAP/ENP/08-M03. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFOSR.

GIVENS, RYAN N., Demonstration of a Strategy to Perform Two-Dimensional Diode Laser Tomography. AFIT/GAP/ENP/08-M04. Faculty Advisor: Dr. William F. Bailey. Sponsor: AFRL/RZ.


5.3.2.2. **ELECTRICAL ENGINEERING (GE)**


5.3.2.3. **ELECTRO-OPTICS (GEO)**


HAGG, MICHAEL T., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENP/08-M03. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RY.


RASMUSSEN, JOSHUA D., *Image-Based Laser Jam Detection in Infrared Focal Plane Array Detectors*. AFIT/GEO/ENP/08-M05. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

5.3.2.4. **NUCLEAR ENGINEERING (GNE)**


MATHER, DAVID E., *Discrete Counting of Short Lived Isotopes with Low Background Detectors*. AFIT/GNE/ENP/08-M03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.


5.3.2.5. **MATERIALS SCIENCES (GMS)**

5.3.2.6. **COMBATING WEAPONS OF MASS DESTRUCTION (GWM)**


5.3.3. **FUNDED RESEARCH PROJECTS**

Note: Research Center affiliations are listed in [ ] if applicable.

**BAILEY, WILLIAM F.**

“Single Surface Multipactor.” Sponsor: AFRL/RD. Funding: $30,000. [CDE]

**BOHN, MATTHEW J., Lt Col**


**BUNKER, DAVID J.**

“ONIR Ground Truth.” Sponsor: NASIC. Funding: $140,160. [CMSR]

**BURGGRAF, LARRY W.**

“Role of Water in Heat Inactivation of Bacillus Anthracis Spores and Spores of Related Organisms.” Sponsor: AFNWCA. Funding: $155,000.

**CUSUMANO, SALVATORE J.**

“Airborned Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: $200,760. [CDE]

“HELJTO Model & Simulation.” Sponsor: HELJTO. Funding: $400,000. [CDE]


**GROSS, KEVIN C.**

“Novel Use of Advanced Sensors for Battlespace Characterizations.” Sponsor: SAF. Funding: $49,000. [CMSR]

**LAGRAFFE, DAVID A., LTC**

“DTRA-AFIT Nuclear Partnership.” Sponsor: DTRA. Funding: $50,000.

**MARCINIAK, MICHAEL A.**

“BRDF Measurement Research.” Sponsor: AFRL/RY. Funding: $80,000.

“Infrared Counter-Countermeasure Research.” Sponsor: AFRL/RX. Funding: $73,511.

**MATTHEWS, KIRK A.**

PERRAM, GLEN P.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $100,300. [CDE]

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: $89,877. [CDE]

“Center of Excellence for Gas Phase Hybrid Lasers: Additional Student Support.” Sponsor: AFOSR. Funding: $58,492. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges.” Sponsor: AFRL/RD. Funding: $52,500. [CDE]

“Hazard Analysis for a Forward-Looking Interferometer.” Sponsor: NASA. Funding: $19,995. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: AFRL/RD. Funding: $176,000. [CDE]

“Iron Rose II Muzzle Flash Field Test.” Sponsor: NASIC. Funding: $40,000. [CMSR]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/RD. Funding: $78,750. [CDE]

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/RD. Funding: $220,000. [CDE]

PETROSKY, JAMES C.


“Support to NTNFC: Nuclear Forensics of Interest.” Sponsor: DHS. Funding: $52,000.


RUSSELL, TIMOTHY H., Maj

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: AFRL/RD. Funding: $60,000. [CDE]

SMITHTRO, CHRISTOPHER G., Lt Col


TUTTLE, RONALD F.

“Advanced Technical Intelligence Research Support.” Sponsor: NASIC. Funding: $114,576. [CMSR]

“Advanced Sensor Integration Study.” Sponsor: OSD. Funding: $14,000. [CMSR]

WEEKS, DAVID E.

“A Wigner Distribution Analysis of Scattering Dynamics.” Sponsor: AFOSR. Funding: $20,000.

5.3.4. FUNDED EDUCATIONAL PROJECTS
Note: Research Center affiliations are listed in [ ] if applicable.

CUSUMANO, SALVATORE J.


PETROSKY, JAMES C.

“GNE Student Support.” Sponsor: DTRA. Funding: $82,910.

TUTTLE, RONALD F.

“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: $756,000. [CMSR]

5.3.5. REFEREED JOURNAL PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

BOHN, MATTHEW J., Lt Col


BURGRAFF, LARRY W.


GROSS, KEVIN C.


HENGHEHOLD, ROBERT L.


MARCINIAK, MICHAEL A.


MATHEWS, KIRK A.


MCCLORY, JOHN W., LTC


PERRAM, GLEN P.

Grady T. Phillips and Glen P. Perram, “Pressure broadening by argon in the hyperfine resolved P(10) and P(70)(17,1) transitions of I2 X' Σ(O1^+)→B3Π(O1^+) using sub-Doppler laser saturation spectroscopy,” J. Quantitative Spectroscopy and Radiative Transfer 109, pp. 1875–1885 (2008).


PETROSKY, JAMES C.


RANDALL, ROBB M., Maj


RUSSELL, TIMOTHY H., Maj


SMITHRO, CHRISTOPHER G., Lt Col


YEO, YUNG KEE


5.3.6. REFEREED CONFERENCE PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAILEY, WILLIAM F.


CUSUMANO, SALVATORE J.


FIORINO, STEVEN T., Lt Col


GROSS, KEVIN C.


MARCINIAK, MICHAEL A.


PERRAM, GLEN P.


TUTTLE, RONALD L.


CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

BOHN, MATTHEW J., Lt Col


5.3.7. SUBSTANTIAL CONSULTATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

CUSUMANO, SALVATORE J.

Cusumano, Salvatore, J., Consulted with the United States Air Force Academy on the procurement of their 2m class telescope.

FIORINO, STEVEN T., Lt Col


Fiorino, Steven T., “Cloud Free Line of Sight Analysis and other Atmospheric Effects for UAVs” to Dr Kevin Keefer, Aeronautical Systems Center, (658 AESS), WPAFB, OH, Jan-Jul 2008.

MATHEWS, KIRK A.

Analysis and modeling of nuclear event radiation, including source, transport, detection and data analysis of radiations that include the full spectrum of electromagnetic and nuclear radiation, with Air Force Technical Applications Command, AFTAC/TH, Patrick AFB, FL.

Analysis and modeling of nuclear fuels and fuel cycle processes, with Air Force Technical Applications Command, AFTAC/TM, Patrick AFB, FL.

PETROSKY, JAMES C.

Chair, QASPR review Committee, NNSA: Lead role in an 8 professional (PhD) member review committee at the request of the National Nuclear Security Agency (NNSA.) Our primary function is to analyze the technical aspects of an engineering project at Sandia National Laboratories to establish a process for nuclear weapon validation without the Sandia Pulsed Reactor (SPR.)

Member HEMP Review Committee, DTRA: Serve as nuclear weapons technical expert to a panel chartered to review testing methodology and computational codes used to determine high altitude electromagnetic pulse (HEMP) vulnerability, reports to DTRA/RD enterprise.
5.3.8. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

Note: Research Center affiliations are listed in [ ] if applicable.

BAILEY, WILLIAM F.


BOHN, MATTHEW J., Lt Col


BRIDGMAN, CHARLES J.

Bridgman, C. Panel member of the Nuclear Forensics Advisory Panel jointly hosted by The Department of Homeland Security, Domestic Nuclear Detection Office and the Defense Threat Reduction Agency (DoD) - met monthly at DHS, Washington D.C.

BUNKER, DAVID J.


BURGRAFF, LARRY W.

Burgraff, Larry W., Presented research results, evaluated ARRS contractor performance and recommended directions for future research at AFMC 709 ARSS, Air Force Nuclear Weapons and Counterproliferation Agency Program Meeting on Bacterial Spore Thermal Neutralization 11-12 March 2008 at the Nuclear Weapons Center (NWC), Kirtland Air Force Base, NM.
CUSUMANO, SALVATORE, J.


FIO RINO, STEV E N T , Lt Col


President, Wright Memorial Chapter of the American Meteorological Society.

GROSS, KEVIN C.


HENGEHOLD, ROBERT L.

Member, BRAC Physical Sciences Working Group.

Honors and Awards Chair, Ohio-Region Section, American Physical Society.

Moore, E. A., Y. K. Yeo, R. L. Hengehold, and Mee-Yi Ryu, “Electrical Activation Studies of Si-Implanted $Al_{0.6}Ga_{0.4}N$ and $Al_{0.5}Ga_{0.5}N$ Implanted with Si for N-type Doping,” the March 2008 Meeting of the American Physical Society, New Orleans, Louisiana, 10-14 March 2008.

MARCINIAK, MICHAEL A.


MATHEWS, KIRK A.


Founding Member: NPP Senior Advisory Panel, Air Force Technical Applications Center.

MCCLORY, JOHN W., LTC


MCCRAE, JACk E., Col


PERRAM, GLEN P.


RANDALL, ROBB R., Maj


RUSSELL, TIMOTHY H., Maj

TUTTLE, RONALD L.


WEEKS, DAVID E.


Served as the Ohio Section of the American Physical Society Chair Elect 2008-2009.

YEO, YUNG KEE

Moore, E. A., Y. K. Yeo, R. L. Hengehold, and Mee-Yi Ryu, “Electrical Activation Studies of Si-Implanted Al_{0.4}Ga_{0.6}N and Al_{0.5}Ga_{0.5}N Implanted with Si for N-type Doping,” the March 2008 Meeting of the American Physical Society, New Orleans, Louisiana, 10-14 March 2008.
5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS

Access Phone: 937-255-3098, DSN 785-3098  
Fax: 937-656-4413, DSN 986-4413  
Homepage:  http://www.afit.edu/en/enc/

5.4.1 MASTER'S THESES

5.4.2 FUNDED RESEARCH PROJECTS

5.4.3 REFEREED JOURNAL PUBLICATIONS

5.4.4 REFEREED CONFERENCE PUBLICATIONS

5.4.5 SUBSTANTIAL CONSULTATIONS

5.4.6 OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES
5.4.1.  MASTER’S THESES

5.4.1.1.  APPLIED MATHEMATICS (GAM)

HOCKERSMITH, BRIAN D., *Statistical Removal of Shadow for Applications to Gait Recognition.*
AFIT/GAM/ENC/08-04. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

MASSAR, MELODY L., *Time-Frequency Analysis of Terahertz Radar Signals for Rapid Heart and Breath Rate Detection.* AFIT/GAM/ENC/08-05. Faculty Advisor: Dr. Matthew C. Fickus. Sponsor: N/A.

AFIT/GAM/ENC/08-02. Faculty Advisor: Dr. Aihua W. Wood. Sponsor: N/A.

SLATTERY, MELANIE R., *Estimation of the Number of Microbial Species Comprising a Population.*
AFIT/GAM/ENC/08-03. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

WAGENMAN, SETH B., *Risk-Based Comparison of Classification Systems.* AFIT/GAM/ENC/08-01. Faculty Advisor: Maj Steven N. Thorsen. Sponsor: N/A.

WALSH, MICHAEL B., *ROC Curves of Fused Independent Classification Systems.* AFIT/GAM/ENC/08-06. Faculty Advisor: Dr. Mark E. Oxley. Sponsor: N/A.

5.4.1.2.  OPERATIONS RESEARCH (GOR)


AFIT/GOR/ENC/08-02. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

5.4.1.3.  RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

RUSNOCK, CHRISTINA F., *Predicting Cost and Schedule Growth for Military and Civil Space Systems.*
AFIT/GRD/ENC/08M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: AFSPC.

5.4.2.  FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [ ] if applicable.

ABRAMSON, MARK A., Lt Col


BULUTOGLU, DURSUN A.


FICKUS, MATTHEW C.

OXLEY, MARK E.

“Qualia Exploitation of Sensor Technology (QUEST) for Structural Health Management.” Sponsor: AFRL/RB. Funding: $8,000. [COA]

5.4.3. REFEREEED JOURNAL PUBLICATIONS
Note: Research Center affiliations are listed in [ ] if applicable.

ABRAMSON, MARK A., Lt Col


BULUTOGLU, DURSUN A.


KAZISKA, DAVID M., Maj


LAIR, ALAN V.


WOOD, AIHUA W.


5.4.4. REFEREEED CONFERENCES
Note: Research Center affiliations are listed in [ ] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

FICKUS, MATTHEW C.


THORSEN, STEVEN N., Maj


CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

OXLEY, MARK E.


5.4.5. SUBSTANTIAL CONSULTATIONS

BUSH, BRETT A., Maj


Duckro, Donald E., Lt Col


5.4.6. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

Abramson, Mark A., Lt Col

Editorial board, *Optimization and Engineering*


Abramson, M. A., “Mesh adaptive direct search algorithms for mixed variable constrained optimization,” Department of Mathematics, Missouri University of Science and Technology, Rolla, MO, February, 2008.


BAKER, WILLIAM P.


BULUTOGLU, DURSUN A.


Bulutoglu, D. “Classification of Orthogonal Arrays by Integer Programming,” 29th OSU Dennison Conference, Ohio State University, Columbus, OH, May, 2008.
DEA, JOHN R., Maj


FICKUS, MATTHEW C.


LAIR, ALAN V.

Reviewer, *Mathematical Reviews*.


OXLEY, MARK E.

Referee, *Applicable Analysis* and *Journal of Optical Society of America B, Sensors*.


THORSEN, STEVEN N., Lt Col


WOOD, AIHUA W.


5.5. DEPARTMENT OF OPERATIONAL SCIENCES

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5.5.1. DOCTORAL DISSERTATIONS


RODRIGUEZ, JUNE F.D., *Metamodeling Techniques to Aid in the Aggregation Process of Large Hierarchical Simulation Models*. AFIT/DS/ENS/08-06. Faculty Advisor: Dr. John O. Miller. Sponsor: HQ USAF.

5.5.2. MASTER’S THESES

5.5.2.1. LOGISTICS MANAGEMENT (GLM)


KENDALL, KELLY D., *AFMC Customer Satisfaction Study at the Air Logistics Centers*. AFIT/GLM/ENS/08-5. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AFMC/A4SP.


WILLIAMSON, DEREK L., Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems. AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

5.5.2.2. OPERATIONS RESEARCH (GOR)

ALKANAT, OMER, Determining the Surface-to-Air Missile Requirement for Western and Southern Part of the Turkish Air Defense System. AFIT/GOR/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: Turkish Air Force.

BURNWORTH, TODD C., Simulated Multi-Echelon Readiness-Based Inventory Leveling With Lateral Resupply. AFIT/GOR/ENS/08M-23. Faculty Advisor: Dr. John O. Miller. Sponsor: AFMC/A9A.


GOKCEN, OSMAN BAHADIR, Robust Aircraft Squadron Scheduling in the Face of Absenteeism. AFIT/GOR/ENS/08-06. Faculty Advisor: Maj Shane J. Knighton. Sponsor: Turkish Air Force.

JOHNSON, ROBERT J., Improved Feature Extraction, Feature Selection, and Identification Techniques that Create a Fast Unsupervised Hyperspectral Target Detection Algorithm. AFIT/GOR/ENS/08-07. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: N/A.

KANG, YOUN IN, Combat Identification Using Multiple TUAV Swarm. AFIT/GOR/ENS/08-09. Faculty Advisor: Dr. John O. Miller. Sponsor: N/A.

KAPPEDAL, RYAN D., Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness. AFIT/GOR/ENC/08-10. Faculty Advisor: Maj August G. Roesener. Sponsor: USSTRATCOM.

KIM, TAE HO, Combat Identification Modeling Using Robust Optimization Techniques. AFIT/GOR/ENS/08-11. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: ACC/A8SI.


LUPA, JOSEPH S., Simulation of National Intelligence Process with Fusion. AFIT/GOR/ENS/08-13. Faculty Advisor: Dr. John O. Miller. Sponsor: NSSO.


TANNEHILL, BRYAN R., Forecasting Instability Indicators in the Horn of Africa Region. AFIT/GOR/ENS/08-21. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: USCENTCOM J8-ARB.

5.5.2.3. ENGINEERING MANAGEMENT (GEM)

CULLEN, ANDREW J., A Multi-Objective Linear Program Model to Test Hub-and-Spoke Networks as a Potential Air Force Deployment Alternative. AFIT/GEM/ENS/08-M01. Faculty Advisor: Dr. James T. Moore. Sponsor: AFOSR/NM or AF/A7.

5.5.3. GRADUATE RESEARCH PAPERS

5.5.3.1. GRADUATE LOGISTICS MANAGEMENT (ILM)

GRANT, SCOTT D., Improving the Tanker Employment Model. AFIT/ILM/ENS/08-02. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

HACKLER, GEORGE C., Goal Programming Tanker Beddown Decisions. AFIT/ILM/ENS/08-03. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

KIMBROUGH, JAMES M., Examining US Irregular Warfare Doctrine. AFIT/ILM/ENS/08-04. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: N/A.


STEELE, RICHARD V., See Pettus, Evan L.

5.5.3.2. GRADUATE MOBILITY OPERATIONS (IMO)

BUFORD, TRAVIS P., Contingency Response Groups: How Many Do We Really Need? AFIT/IMO/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: 621 COSG/CD.

CLARK, WILL, Optimal Cargo Compartment Size for the Advanced Joint Combat System. AFIT/IMO/ENS/08-02. Faculty Advisor: Lt Col Pamela S. Donovan. Sponsor: AMC/A8X.

DeVOE, DANIEL A., When Precision Becomes Precise: What it Takes to Achieve 10 Meter Accuracy with the Joint Precision Airdrop System. AFIT/IMO/ENS/08-03. Faculty Advisor: Dr. James T. Moore. Sponsor: SAF/AQQ.


Eastland, Kevin M., *Has the Expeditionary Mobility Task Force (EMTF) Organization Outlived Its Usefulness?* AFIT/IMO/ENS/08-06. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: USAF EC/CC.


### 5.5.4. Funded Research Projects

Note: Research Center affiliations are listed in [ ] if applicable.

**Bauer, Kenneth W., Jr.**

“Sensor Fusion for Automatic Target Recognition (Combat ID Research).” Sponsor: ACC. Funding: $33,000. [COA]

**Chambal, Stephen P., Lt Col**

“COA Support.” Sponsor: AFMC/A9. Funding: $175,000. [COA]

**Deckro, Richard F.**


HALL, SHANE N., Maj

“The Optimal Allocation and Utilization of Weather Assets for Strategic Weather.” Sponsor: AFSOC. Funding: $12,000.

KNIGHTON, SHANE A., Maj

“Effects-Based Operations (EBO) Research Consortium.” Sponsor: AFRL/RI. Funding: $15,000.

MILLER, JOHN O.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $346,910. [COA]


MOORE, JAMES T.

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: $51,500. [COA]

OGDEN, JEFFREY A.

“ECSS Research.” Sponsor: ECSS. Funding: $36,293. [COA]

WEIR, JEFFERY D., Lt Col

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $11,700. [COA]

ZALEWSKI, DANIEL J., Col


5.5.5. REFEREEED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

BAUER, KENNETH W., Jr.


CHRISSIS, JAMES W.


COCHRAN, JEFFERY K.


COOPER MARTHA C.


CUNNINGHAM, WILLIAM A.


DECKRO, RICHARD F.


HILL, RAYMOND R.


JOHNSON, ALAN W.


MOORE, JAMES T.

OGDEN, JEFFREY A.


5.5.6. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

CONFERNECE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAUER, KENNETH W., Jr.


Leap, N. J. and Bauer, K.W., “Confidence Framework in Classification”, Proceedings of the Artificial Neural Networks In Engineering Conference (ANNIE 2006), November 2007, St. Louis, Missouri, USA. [COA]
COCHRAN, JEFFERY K.


COOPER, MARTHA C.


HILL, RAYMOND R.


JOHNSON, ALAN W.


MILLER, J.O.


OGDEN, JEFFREY A.


SKIPPER, JOSEPH B., Maj

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

CHRISSIS, JAMES W.


HALL, SHANE N., Maj


HILL, RAYMOND R.


JOHNSON, ALAN W.


OGDEN, JEFFREY A.


PETTIT, TIMOTHY, J., Lt Col

SKIPPER, JOSEPH B., Maj


5.5.7. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [ ] if applicable.

DECKRO, RICHARD F.

Deckro, R. F., Member Behavioral Influence Analysis workgroup of the Human Factors for Homeland and National Security, Subcommittee of the National Science and Technology Council Committee on Homeland and National Security.

Deckro, R. F., Served as Subject Matter Expert (SME) for Vice Chief of the Joint Staff requested study on Human Network Attack undertaken by the Global Innovation and Strategy Center (GISC), USSTRATCOM. Group leader for conferences breakout groups; Human Network Analysis Conference February 2008.


5.5.8. BOOKS AND CHAPTERS IN BOOKS

Note: Research Center affiliations are listed in [ ] if applicable.

BAUER, KENNETH W., Jr.


HALL, SHANE N., Maj


HILL, RAYMOND R.


OGDEN, JEFFERY A.

5.5.9. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

CHRISSIS, JAMES W.

PRESENTATIONS


PROFESSIONAL ACTIVITIES


Member of the AIAA Multidisciplinary Design Optimization (MDO) Technical Committee (TC).


Reviewed papers for the MDO sessions at the 2008 AIAA Aerospace Sciences Meeting, January 2008, Reno, NV.

Session chair AIAA Aerospace Sciences Meeting.

Member of the MDO/TC Education Subcommittee.

Reviewer for Military Operations Research.

Reviewer for European Journal of Operational Research.

Committee chair and reviewer scholarships/grants provided by the Buckeye Chapter of AHEPA (American Hellenic Educational Progressive Association).

COCHRAN, JEFFERY K.

PROFESSIONAL ACTIVITIES

Editorial Board, Computers in Industry.


Program Committee, IASTED International Conference on Modeling and Simulation.
COOPER, MARTHA C.

PROFESSIONAL ACTIVITIES


Production and Operations Management Society (POMS).

2008 Conference Track Chair on Logistics in Government, La Jolla, California.

CUNNINGHAM, WILLIAM A.

PRESENTATIONS


PROFESSIONAL ACTIVITIES

National Testing Committee - American Society of Transportation & Logistics.


Book Reviewer for Army Logistician.

DECKRO, RICHARD F.

OTHER PUBLICATIONS


PRESENTATIONS


PROFESSIONAL ACTIVITIES


Organizing Committee, MORS Cyber & Networking Workshop.


Editor, Military Operations Research.

Area Editor, Service Systems, Computers & Industrial Engineering.

Chair, Military Applications Society Awards Committee.

Member, MORS Publication Committee.

Member, Peacekeeping and Stability Operations Institute Academic Consortium.

Member, Advisory Group on Applications, GMU/CMU MURI “Computational Modeling of Cultural Dimensions in Adversary Modeling”.

HILL, RAYMOND R.

OTHER PUBLICATIONS


PRESENTATIONS


PROFESSIONAL ACTIVITIES


Associate Editor, Military Operations Research.

Associate Editor, Journal of Simulation.

Associate Editor, Journal of Defense Modeling and Simulation.

Associate Editor, International Journal of Mathematics in Operational Research.

Guest Editor, Military Operations Research, special issue on Value Focused Thinking, Volume 8, Number 2, June 2008.


JOHNSON, ALAN W.

PRESENTATIONS


PROFESSIONAL ACTIVITIES

Track co-chair (eight sessions), Space Logistics, Tourism and Colonization, AIAA Space 2008 Conference, September 2008, San Diego, California.


Secretary/Treasurer, Military Applications Society, INFORMS.

MILLER, JOHN O.

PRESENTATIONS


PROFESSIONAL ACTIVITIES

INFORMS Simulation Society Council Representative (elected position).


MOORE, JAMES T.

PRESENTATIONS


PROFESSIONAL ACTIVITIES

Working Group 18 Chair (Strategic Deployment and Distribution), Military Operations Research.

Site Coordinator, MORS Education and Professional Development Colloquium, Air Force Institute of Technology, March 2008.

Session Chair, Military OR Applications, INFORMS, Seattle, WA, November 2007.

Cluster Chair, Military Applications Society, INFORMS, Seattle, WA, November 2007.

**OGDEN, JEFFREY A.**

**PRESENTATIONS**


**PETTIT, TIMOTHY J., Lt Col**

**OTHER PUBLICATIONS**


**PRESENTATION**

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</table>
5.6.1. DOCTORAL DISSERTATIONS

5.6.1.1. SYSTEMS ENGINEERING (DSE)

FORD, THOMAS C., Interoperability Measurement. AFIT/DSE/ENV/08-S01. Faculty Advisor: Dr. John M. Colombi. Sponsor: N/A.

5.6.2. MASTER’S THESES

5.6.2.1. COST ANALYSIS (GCA)

VAN DYK, STEFANIE L., Forecasting Flying Hour Costs of the B-1, B-2, and B-52 Bomber Aircraft. AFIT/GCA/ENV/08-M02. Faculty Advisor: Lt Col Eric J. Unger. Sponsor: N/A.

5.6.2.2. ENGINEERING MANAGEMENT (GEM)


BEACH, MICHAEL J., An Analysis of Construction Cost and Schedule Performance. AFIT/GEM/ENV/08-M02. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

BURRIS, ANDREW B., A Qualitative and Quantitative Assessment of Readiness for Organizational Change Literature. AFIT/GEM/ENV/08-M02. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CORBIN, REBECCA S., An Analysis of Groundwater Flow Patterns in a Constructed Treatment Wetland Cell. AFIT/GEM/ENV/08-M04. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE.

CRABTREE, DONALD C., Factors Leading to Effectiveness and Satisfaction in Civil Engineer Information Systems. AFIT/GEM/ENV/08-M05. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCESA.

CRAIG, DANIEL A., Development of a Screening Tool to Facilitate Technology to Treat Perchlorate-Contaminated Water. AFIT/GEM/ENV/08-M06. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: ESTCP.

GRiffin, JAMES S., Impacts of Weather Variations on Energy Consumption Efforts at U.S. Air Force Installations. AFIT/GEM/ENV/08-M08. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: HQ AFCESA.

HICKMAN, KRISTA M., A Decision Tool to Evaluate Budgeting Methodologies for Estimating Facility Recapitalization Requirements. AFIT/GEM/ENV/08-M09. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.


KAYS, JUAN A., Position Characteristics and Their Relationship to Selection for Promotion. AFIT/GEM/ENV/08-M11. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.


NIELSEN, TYLER K., Characterization Patterns of MILCON Project Contract Modifications. AFIT/GEM/ENV/07-D01. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AF/ILE.


SOTOROPOLIS, THEODORE J., *Selecting the Best Thermal Building Insulation Using a Multi-Attribute Decision Model*. AFIT/GEM/ENV/08-M17. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.


TRAMEL, BILLY D., *Factors that may Affect Retention of Enlisted Explosive Ordinance Disposal Airmen*. AFIT/GEM/ENV/08-J02. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.


5.6.2.3. **ENVIRONMENTAL ENGINEERING AND SCIENCE (GES)**

CLARKE, BRIAN M., *In Vitro Toxicity and Inflammation Response Induced by Copper Nanoparticles in Rat Alveolar Macrophages*. AFIT/GES/ENV/08-M01. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RHPB.


LEON, ELISABETH M., *Molecular Characterization of Wetland Soil Bacterial Communities in Constructed Mesocosms*. AFIT/GES/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

THOMPSON, IAN F., Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics. AFIT/GES/ENV/08-M07. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE/ERD.

5.6.2.4. INFORMATION RESOURCE MANAGEMENT (GIR)

ASCHENBRENNER, BRIAN D., Identification of Command and Control Information Requirements for the Cyberspace Domain. AFIT/GIR/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC/IO.

ASHE, ERIC M., An Analysis of Critical Technology Identification and AntiTamper Protection in Department of Defense Acquisition Programs. AFIT/GIR/ENV/08-M01. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RYT.


CHESSMAN, JOHN A., A Delphi Study of HIPAA Compliance to Battlefield Medical Evacuation. AFIT/GIR/ENV/08-M03. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 88 MDSS/SGSN.


EDWARDS, MICHAEL T., Strategies for Minimizing Monetary Loss in the Department of Defense Budget Through Use of Financial Derivatives. AFIT/GIR/ENV/08-M05. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.

FRUGÉ, JOHN W., Comparing Information Assurance Awareness Training for End-Users: A Content Analysis Examination of Air Force and Defense Information Systems Agency User Training Modules. AFIT/GIR/ENV/08-M07. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XCPPI.

GOUGH, DAVID P., A Multiple Case Study Analysis of Digital Preservation Techniques Across Government, Private, and Public Service Organizations. AFIT/GIR/ENV/08-M08. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

HAAN, NICHOLAS W., Examination of Insider Threat Detection within a Generic Unmanned Aerial Vehicle System. AFIT/GIR/ENV/08-M09. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.


KETTLES, THOMAS R., Integration of Information Operations Theory into the Corporate Air Force. AFIT/GIR/ENG/08-02. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AETC/SOC/DE.


NORGAARD, JASON C., *An Examination Into How Group Performance is Influenced by Various Communication Channels*. AFIT/GIR/ENV/08-M16. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.


5.6.2.5. **RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)**


GOEHRING, SIDNEY W., *An Analysis of Competencies for Managing Science and Technology Programs.* AFIT/GRD/ENV/08-M06. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: HQ AFMC/A5S.


POGORZELSKI, WILLIAM A., *Software Acquisition Improvement in the Aeronautical Systems Center.* AFIT/GRD/ENV/08-S1. Faculty Advisor: Lt Col Brian Hermann. Sponsor: N/A.

SHAHADY, DAVID E., *Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations.* AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/CA and AFRL/RY.

5.6.2.6. **INDUSTRIAL HYGIENE (GIH)**


5.6.2.7. **LOGISTICS MANAGEMENT (GLM)**


5.6.2.8. **GRADUATE SYSTEMS ENGINEERING (GSE)**


CARTWRIGHT, ARTHUR D., See BROWN, RICHARD A.

CHARLES-VICKERS, MARTHA, See ALEXANDER, JEFF A.


HANSON, TRAVIS J., See BROWN, JASON L.


LONG, ALICE M., See DAWLEY, LYLE M.

LOUIE, ALAN K., See HARIHARAN, ANIL N.

MAILLOUX, LOGAN O., See HUMPHREYS, CLAY J.

MARENTETTE, LENORE A., See DAWLEY, LYLE M.

MCCLAIN, BRYON E., See BROWN, RICHARD A.

RIVERA, SCOTT V., See HARIHARAN, ANIL N.

ROACH, NEAL R., ROHE, WAYNE C., and WELTY, NATHAN F., A System Engineering Approach to the Design of a Spacecraft Dynamics and Control Testbed. AFIT/GSE/ENV/08-M01. Faculty Advisor: Dr. Jonathan T. Black. Sponsor: N/A.

ROHE, WAYNE C., See ROACH, NEAL R.

SAKRYD, GREGORY A., Systems Engineering Analysis for the Development of the Fleeting Target. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RY and AFRL/RB.

SMITH, TALBOT L., See ALEXANDER, JEFF A.

SPEAR, GRANT E., See HUMPHREYS, CLAY J.

VICKERS, MICHAEL S., See ALEXANDER, JEFF A.

WELTY, NATHAN F., See ROACH, NEAL R.
5.6.3. GRADUATE RESEARCH PAPERS

5.6.3.1. GRADUATE SYSTEMS ENGINEERING (ISE)

BORNEJKO, TRINA L., GLASSCOCK, CHARLES G. and SPRENKLE, DENNIS R., Creating a Discrete Event Simulation to Determine the Military Worth of Developing an Electronic Warfare Battle Manager Function within an Airborne Electronic Attack System of Systems Architecture. AFIT/ISE/ENV/08-J05. Faculty Advisor: Dr. David R. Jacques. Sponsor: ASC/XRS.


GLASSCOCK, CHARLES G., See BORNEJKO, TRINA L.

HAZEL, BRIAN, See ELLER, JOHN W.

LITTLE, ADAM W., See BROWN, KYLE D.

MUHA, MATTHEW T., See BROWN, KYLE D.


ROONEY, BRENDA D., See ELLER, JOHN W.

SPRENKLE, DENNIS R., See BORNEJKO, TRINA L.

ZALL, JONATHAN E., See O’MALLEY, DAVID R.

5.6.4. FUNDED RESEARCH PROJECTS

Note: Research Center affiliation is listed in [ ] if applicable.

BARELKA, ALEXANDER J., Lt Col

“Cyber Deny and Disrupt.” Sponsor: AFRL/RH. Funding: $45,000.

“The Influence of Pop-Culture IT.” Sponsor: AFRL/RH. Funding: $20,000.

GRIMALDA, MICHAEL R.


HAVLICEK, JEFFREY D., Maj

“Net-Centric Joint Force Protection Values.” Sponsor: 642nd ESS. Funding: $40,578. [CSE]

“Resourcing Global Strike or Global Persistent Attack Architecture.” Sponsor: ACC. Funding: $28,974. [CSE]
JACQUES, DAVID R.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $322,140. [CSE]

“Human Systems Interface Research.” Sponsor: AFRL/RH. Funding: $30,000. [CSE]

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: $60,000. [CSE]

REHG, MICHAEL T.


SLAGLEY, JEREMY M., Maj

“Partial Enclosures for Noise and Dust Control in Underground Longwall Coal Mining.” Sponsor: NIOSH. Funding: $7,700.

SONI, SOM R.

“Optimization of Z-Pinning Volume Fraction in Joints for Structural Integrity.” Sponsor: DAGSI. Funding: $20,160. [CSE]

STROUBLE, DENNIS D.

“Strategic Information System Architecture.” Sponsor: HQ AFMC/A6. Funding: $30,000. [CSE]

WALTER, JOERG D., Lt Col

“Impacts of Uninhabited Long-Range Strike Aircraft.” Sponsor: AFRL/RB. Funding: $25,000. [CSE]

5.6.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliation is listed in [ ] if applicable.

BLECKMANN, CHARLES A.


GOLTZ, MARK N.


GRIMAILA, MICHAEL R.


HOLT, DANIEL T., Lt Col


JACQUES, DAVID R.


SHELLEY, MICHAEL L.


SLAGLEY, JEREMY, M., Maj


THAL, ALFRED E., Jr.


TURNER, JASON M., Maj


WEST, CHRISTOPHER J., Lt Col


5.6.6. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

COLOMBI, JOHN. M.


GRIMAILA, MICHAEL R.


HEMINGER, ALAN R.


HOLT, DANIEL T., Lt Col


JACQUES, DAVID R.


SLAGLEY, JEREMY M., Maj


SMITH, DAVID A., Lt Col


STROUBLE, DENNIS D.


THAL, ALFRED E., Jr.


TURNER, JASON M., Maj


CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

BADIRU, ADEDEJI B.


GOLTZ, MARK N.


SLAGLEY, JEREMY M., Maj


SMITH, DAVID A., Lt Col


5.6.7. SUBSTANTIAL CONSULTATIONS

BADIRU, ADEDEJI B.


COLOMBI, JOHN M.


GRIMAILA, MICHAEL R.


HASTY, BRYAN K.


HEMINGER, ALAN R.


JACQUES, DAVID R.

Jacques, David R. – Scholar in Residence for the Air Force Center for Systems Engineering. Provided consultation services regarding implementation of capability based development and early application of Systems Engineering to numerous high level DoD acquisition executives, user requirements organizations and external review panels. Provided support and report findings to Independent Review Team for the Air Force Research Laboratory surveying the application of Systems Engineering in the Defense Laboratory environment.

STROUBLE, DENNIS D.


TURNER, JASON M., Maj


5.6.8. BOOKS AND CHAPTERS IN BOOKS

BADIRU, ADEDEJI B.

5.6.9. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BADIRU, ADEDEJI, B.


COLOMBI, JOHN M.


GOLTZ, MARK N.


**GRIMAILA, MICHAEL R.**


**HOLT, DANIEL T., Lt Col**


JACQUES, DAVID R.


SLAGLEY, JEREMY M., Maj


Slagley, J., and D. Sweeney. Partial Enclosures for Noise and Dust Control in Underground Longwall Coal Mining. Poster presentation at the U of Cincinnati NIOSH Education and Research Center Pilot Research Project Symposium, Cincinnati, OH, 4-5 Oct 07.

SMITH, DAVID A., Lt Col


SONI, SOM R.


THAL, ALFRED E., Jr.


WEST, CHRISTOPHER J., Lt Col


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 department.
6.1. ADVANCED NAVIGATION TECHNOLOGY CENTER

Advanced Navigation Technology Center (ANT)
Director 255-3636 x4580
Executive Program Coordinator 255-3636 x4583
Laboratory Manager 255-3636 x4911
Homepage: http://www.afit.edu/en/ant

6.1.1. FUNDED RESEARCH PROJECTS

BLUE, PAUL A., Maj
“Planning, Guidance, and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/RB. Funding: $35,000. [ANT]

COBB, RICHARD G.
“Systems Engineering Support for Urgent Needs Efforts.” Sponsor: AFRL/RV. Funding: $35,000. [ANT]

HUFFMAN, RICHARD E., Maj

MARTIN, RICHARD K.

PACHTER, MEIR,
“New Navigation Techniques.” Sponsor: AFRL/RV. Funding: $15,000. [ANT]

PETERSON, GILBERT L.
“CANIS-Related Navigation Research Projects for the ANT Laboratory.” Sponsor: AFRL/RY. Funding: $100,000. [ANT]

RAQUET, JOHN F.
“ANT Center and Laboratory Support per ANT Center Appendix of MOA.” Sponsor: AFRL/RY. Funding: $196,000. [ANT]
“Development of High Accuracy TSPI Systems.” Sponsor: 746 TS. Funding: $45,900. [ANT]
“Image-Aided Aerial Refueling.” Sponsor: AFRL/RY. Funding: $35,000. [ANT]

VETH, MICHAEL J., Lt Col

“Autonomous Indoor Micro Air Vehicle.” Sponsor: AFRL/RW. Funding: $125,000. [ANT]

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: $30,000. [ANT]

6.1.2. REFEREED JOURNAL PUBLICATIONS

RAQUET, JOHN F.


6.1.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

LAMONT, GARY B.


MARTIN, RICHARD K.


RAQUET, JOHN F.


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

**LAMONT, GARY B.**


**RAQUET, JOHN F.**


**VETH, MICHAEL J., Lt Col**


6.2. CENTER FOR DIRECTED ENERGY

Center for Directed Energy [CDE]
Director 255-3636 x7294
Program Coordinator 255-3636
Homepage: http://www.afit.edu/de/

6.2.1. FUNDED RESEARCH PROJECTS

BAILEY, WILLIAM F.
“Single Surface Multipactor.” Sponsor: AFRL/RD. Funding: $30,000. [CDE]

CUSUMANO, SALVATORE J.
“Airborned Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: $200,760. [CDE]

“HELJTO Model & Simulation.” Sponsor: HELJTO. Funding: $400,000. [CDE]


PERRAM, GLEN P.
“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $100,300. [CDE]

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: $89,877. [CDE]

“Center of Excellence for Gas Phase Hybrid Lasers: Additional Student Support.” Sponsor: AFOSR. Funding: $58,492. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges” Sponsor: AFRL/RD. Funding: $52,500. [CDE]

“Hazard Analysis for a Forward-Looking Interferometer.” Sponsor: NASA. Funding: $19,995. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: AFRL/RD. Funding: $176,000. [CDE]

“Iron Rose II Muzzle Flash Field Test.” Sponsor: NASIC. Funding: $40,000. [CMSR]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/RD. Funding: $78,750. [CDE]

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/RD. Funding: $220,000. [CDE]

RUSSELL, TIMOTHY H., Maj

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: AFRL/RD. Funding: $60,000. [CDE]
SCHMIDT, JASON D., Maj

“Advanced Wavefront Control.” Sponsor: AFRL/RD. Funding: $30,000. [CDE]

6.2.2. FUNDED EDUCATIONAL PROJECTS

CUSUMANO, SALVATORE J.


6.2.3. REFEREED JOURNAL PUBLICATIONS

RUSSELL, TIMOTHY, H., Maj


SCHMIDT, JASON D., Maj


6.2.4. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF A FULL PAPER REVIEW

BAILEY, WILLIAM, F.


CUSUMANO, SALVATORE J.


MARCINIAK, MICHAEL A.


PERRAM, GLEN P.


6.2.5. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

CUSUMANO, SALVATORE J.


FIORINO, STEVEN T., Lt Col


RUSSELL, TIMOTHY, H., Maj


SCHMIDT, JASON D., Maj


6.3. CENTER FOR CYBERSPACE RESEARCH

Center for Cyberspace Research (CCR)
Director  255-6565 x4278
Associate Director  255-6565 x4445
Executive Program Coordinator  255-3636 x4602
Homepage:  http://www.afit.edu/ccr/

6.3.1. FUNDED RESEARCH PROJECTS

BALDWIN, RUSTY O.
“Emerging Technologies (IA).”  Sponsor:  NSA.  Funding:  $87,084. [CCR]

GRIMAILA, MICHAEL R.

McDONALD, J. TODD, Lt Col

MILLS, ROBERT F.
“Technical Support, Information/Cyber Operations.”  Sponsor:  AFIOC.  Funding:  $25,010. [CCR]

MULLINS, BARRY E.
“Air Force Communications Systems Modeling.”  Sponsor:  AFCA.  Funding:  $19,520. [CCR]
“Ground Mobility Objective Gateways.”  Sponsor:  AFRL/RW.  Funding:  $25,000. [CCR]
“Technical Support:  Cyber Operations.”  Sponsor:  AFRL/RI.  Funding:  $20,000. [CCR]

RAINES, RICHARD A.
“Target Discovery, Sensor Fusion, and Mitigation Analysis.”  Sponsor:  AFRL/RY.  Funding:  $60,000. [CCR]

TEMPLE, MICHAEL A.
“EME Characterization and Exploitation.”  Sponsor:  Naval Surface Warfare Center (NSWC).  Funding:  $73,549. [CCR]

WILLIAMS, PAUL D., Maj
“AFIT Support for AFRL Cybercraft Project.”  Sponsor:  AFOSR.  Funding:  $50,000. [CCR]
“Support to JCTD Vulnerability Assessment.” Sponsor: JIOWC. Funding: $25,000. [CCR]

6.3.2. FUNDED EDUCATIONAL PROJECTS

RAINES, RICHARD A.

“AFIT Transformation Chair.” Sponsor: DoD/OSD. Funding: $200,000. [CCR]

“Anti-Tamper Software Protection Initiative Education, Outreach and Research.” Sponsor: AFRL/RY. Funding: $200,000. [CCR]


“IASP Tuition and Resource Support for the AFIT Center for Cyberspace Research.” Sponsor: NSA. Funding: $312,848. [CCR]

6.3.3. REFEREED JOURNAL PUBLICATIONS

BALDWIN, RUSTY O.


GRIMAILA, MICHAEL R.


**McDONALD, J. TODD., Lt Col**


**MENDENHALL, MICHAEL, J., Maj**


**MILLS, ROBERT F.**


**MULLINS, BARRY E.**


PETERSON, GILBERT L.


RAINES, RICHARD A.


6.3.4. REFEREED CONFERENCE PUBLICATIONS

REFEREED CONFERENCE PAPERS BASED ON FULL PAPER REVIEW

BALDWIN, RUSTY O.


GRAMAILA, MICHAEL R.


HOPKINSON, KENNETH M.


KIM, YONG C.


MILLS, ROBERT F.


MULLINS, BARRY E.


RAINES, RICHARD A.


STROUBLE, DENNIS D.


6.3.5. OTHER PUBLICATIONS, PRESENTATIONS AND PROFESSIONAL ACTIVITIES

MULLINS, BARRY E.


SAVILLE, MICHAEL A., Maj


6.3.6. BOOKS AND CHAPTERS IN BOOKS

RAINES, RICHARD A.


6.4. CENTER FOR MASINT STUDIES AND RESEARCH

Center for MASINT Studies and Research [CMSR]
Director 255-3636 x4536
Executive Program Coordinator 255-7287
FAX 656-6000
Homepage: http://www.afit.edu/cmsr/

6.4.1. FUNDED RESEARCH PROJECTS

BUNKER, DAVID J.
“ONIR Ground Truth.” Sponsor: NASIC. Funding: $140,160. [CMSR]

GROSS, KEVIN C.
“Novel use of Advanced Sensors for Battlespace Characterizations.” Sponsor: SAF. Funding: $49,000. [CMSR]

TERZUOLI, ANDREW J., Jr.
“Remote Sensing and Communication for MASINT.” Sponsor: NASIC. Funding: $150,000. [CMSR]

TUTTLE, RONALD F.
“Advanced Technical Intelligence Research Support.” Sponsor: NASIC. Funding: $114,576. [CMSR]
“Advanced Sensor Integration Study.” Sponsor: OSD. Funding: $14,000. [CMSR]

6.4.2. FUNDED EDUCATIONAL PROJECTS

TUTTLE, RONALD F.
“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: $756,000. [CMSR]

6.4.3. REFEREED CONFERENCE PUBLICATIONS

REFEREED CONFERENCE PAPERS BASED ON FULL PAPER REVIEW

GROSS, KEVIN C.

PERRAM, GLEN P.


TUTTLE, RONALD, L.


6.4.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BUNKER, DAVID, J.


GROSS, KEVIN, C.


PERRAM, GLEN, P.


TUTTLE, RONALD, L.

6.5. CENTER FOR OPERATIONAL ANALYSIS

Center for Operational Analysis (COA)
Director 255-6565 x4538
Projects Director 255-6565 x4251
Homepage: http://www.afit.edu/coa/

6.5.1. FUNDED RESEARCH PROJECTS

BAUER, KENNETH W., Jr.

“Sensor Fusion for Automatic Target Recognition (Combat ID Research).” Sponsor: ACC. Funding: $33,000. [COA]

CHAMBAL, STEPHEN P., Lt Col

“COA Support.” Sponsor: AFMC/A9. Funding: $175,000. [COA]

MILLER, JOHN O.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $346,910. [COA]


MOORE, JAMES T.

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: $51,500. [COA]

OGDEN, JEFFREY A.

“ECSS Research.” Sponsor: ECSS. Funding: $36,293. [COA]

OXLEY, MARK E.

“Qualia Exploitation of Sensor Technology (QUEST) for Structural Health Management.” Sponsor: AFRL/RB. Funding: $8,000. [COA]

PETERSON, GILBERT L.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $110,800. [COA]

WEIR, JEFFERY D., Lt Col

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $11,700. [COA]

6.5.2. REFEREED JOURNAL PUBLICATIONS

BAUER, KENNETH W., Jr.


**CHRISIS, JAMES W.**


**COCHRAN, JEFFERY K.**


**COOPER MARTHA C.**


**CUNNINGHAM, WILLIAM A.**


**HILL, RAYMOND R.**


**JOHNSON, ALAN W.**


**MOORE, JAMES T.**

6.5.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAUER, KENNETH W., Jr.


Leap, N. J. and Bauer, K.W., “Confidence Framework in Classification”, *Proceedings of the Artificial Neural Networks In Engineering Conference (ANNIE 2006)*, November 2007, St. Louis, Missouri, USA. [COA]

COCHRAN, JEFFERY K.


COOPER, MARTHA C.


HILL, RAYMOND R.


JOHNSON, ALAN W.


MILLER, JOHN O.


CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

HALL, SHANE N., Maj


HILL, RAYMOND R.


JOHNSON, ALAN W.


PETTIT, TIMOTHY, J., Lt Col


6.5.4. BOOKS AND CHAPTERS IN BOOKS

BAUER, KENNETH W., Jr.


HALL, SHANE N., Maj


HILL, RAYMOND R.

6.6. CENTER FOR SYSTEMS ENGINEERING

Center for Systems Engineering
Education and Training Division
Homepage: http://cse.afit.edu/

Chief 937-255-3355 x3363
Fax 937-255-4981

6.6.1. FUNDED RESEARCH PROJECTS

HAVLICEK, JEFFREY D., Maj

“Net-Centric Joint Force Protection Values.” Sponsor: 642nd ESS. Funding: $40,578. [CSE]

“Resourcing Global Strike or Global Persistent Attack Architecture.” Sponsor: ACC. Funding: $28,974. [CSE]

JACQUES, DAVID R.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: $322,140. [CSE]

“Human Systems Interface Research.” Sponsor: AFRL/RH. Funding: $30,000. [CSE]

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: $60,000. [CSE]

SONI, SOM R.

“Optimization of Z-Pinning Volume Fraction in Joints for Structural Integrity.” Sponsor: DAGSI. Funding: $20,160. [CSE]

STROUBLE, DENNIS D.

“Strategic Information System Architecture.” Sponsor: HQ AFMC/A6. Funding: $30,000. [CSE]

WALTER, JOERG D., Maj

“Impacts of Uninhabited Long-Range Strike Aircraft.” Sponsor: AFRL/RB. Funding: $25,000. [CSE]

6.6.2. REFEREED JOURNAL PUBLICATIONS

COLOMBI, JOHN M.


JACQUES, DAVID R.

6.6.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

COLOMBI, JOHN. M.


JACQUES, DAVID R.


APPENDICES

APPENDIX A: FACULTY CREDENTIALS
NOTE: Additional information may be obtained from the AFIT Yellow Pages at http://www.afit.edu/YellowPages/default.cfm

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/en/eny/

BLACK, JONATHAN T., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2007 (AFIT/ENY); BS Industrial Engineering, University of Illinois at Urbana-Champaign, 2001; MS Mechanical and Aerospace Engineering, Joint Institute for Advancement of Flight Sciences (joint NASA Langley Research Center and George Washington University program), 2003; PhD Mechanical Engineering, University of Kentucky, 2006. Dr. Black’s research interests include lightweight and inflatable aerospace structures, structural and nonlinear dynamics, noncontact measurement systems, and computational structural mechanics. His current work involves developing novel measurement and modeling techniques to characterize the static and dynamic behavior of new, stiff, self-deploying lightweight aerospace structures. He recently received an AFOSR Young Investigator Award. Tel. 255-3636 x4578, email: Jonathan.Black@afit.edu

BLUE, PAUL A., Maj, Instructor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS, University of Nebraska - Lincoln, 1993; MS, University of Minnesota - Twin Cities, 1995; PhD (ABD), University of Minnesota - Twin Cities, 2004. Maj Blue's research interests include the guidance and control of aerospace vehicles and the flight-testing of advanced control concepts. His current research is focused on guidance, navigation, and control of small unmanned aircraft systems, operator interfaces, and developing techniques to evaluate a controlled system’s performance (e.g. an aircraft’s handling qualities) based on the operators ability to perform a given task. Maj Blue’s prior assignments include Flight Control Research Engineer at the Air Vehicles Directorate of the Air Force Research Laboratory and Exchange Engineer at the German Aerospace Center. He has several publications, including a textbook on robust control with Prof. Juergen Ackermann et al.

BRANAM, RICHARD D., Lt Col, Assistant Professor of Aeronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Aerospace Engineering, The Ohio State University, 1993; MS, Aeronautical Engineering, Air Force Institute of Technology, 1997; PhD, Aerospace Engineering, The Pennsylvania State University, 2005. Major Branam’s primary research areas of interest are rocket propulsion and hypersonics. Previous assignments include research scientist at the German Aerospace Center in the area of supercritical injection and as program manager of the upper stage rocket demonstration at the Air Force Research Laboratory. Tel. 937-255-3636 x7485 (DSN 785-3636 x7485), email: Richard.Branam@afit.edu

CALICO, ROBERT A., Jr., Dean Emeritus of Aerospace Engineering, AFIT Appointment Date: 1972 (AFIT/EN); BS, University of Cincinnati, 1966; MS, University of Cincinnati, 1968; PhD, University of Cincinnati, 1971. Dr. Calico’s research interests include aircraft stability and control, analytical dynamics, stability of non-linear systems, satellite dynamics, control theory, and vibration analysis. Tel. 937-255-3025 (DSN 785-3025), email: Robert.Calico@afit.edu

CANFIELD, ROBERT A., Professor in Aeronautics and Astronautics, Department of Aeronautics and Astronautics, 2000 (AFIT/ENY); BSE, Mechanical Engineering, Duke University, 1983; MS, Aeronautics and Astronautics, Stanford University, 1984; PhD, Engineering Mechanics, Virginia Polytechnic Institute and State University, 1992. Dr. Canfield’s research interests include structural optimization, multidisciplinary analysis and design methods, structural dynamics and controls, and aeroelasticity. He has published a book, 34 journal articles and 66 papers in conference proceedings on these topics. Dr. Canfield is the former Program Manager for Computational Mathematics at the Air Force Office of Scientific Research (AFOSR) and AFOSR Director of Policy and Integration. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics.
Cobb, Richard G., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2001 (AFIT/ENY); BS, the Pennsylvania State University, 1988; MS, Air Force Institute of Technology, 1992; PhD, Air Force Institute of Technology, 1996. Research interests include dynamics and control of flexible space structures for remote sensing applications, system identification techniques, control of micro air vehicles, and applications of optimal control theory. Prior to teaching at AFIT, Dr. Cobb was responsible for the establishment of an Air Force wide Reliability Centered Maintenance program to enhance jet engine reliability. In recognition of his accomplishments, Dr. Cobb was selected as the 2001 Senior Military Engineer of the Year for the Aeronautical Systems Center. Prior to his assignment at WPAFB in September 1999, Dr. Cobb served as program manager for the Air Force Research Laboratory's TechSat 21 program, a revolutionary satellite technology program investigating the feasibility of using distributed micro-satellite constellations to satisfy Air Force global sensing requirements. While at Kirtland AFB NM, Dr. Cobb also served as the technical advisor for the Space Vehicles Technology Branch, and Chief of the Dynamic Systems Group. Dr. Cobb is an Associate Fellow of AIAA. Tel. 937-255-3636 x4559 (DSN 785-3636 x4559), email: Richard.Cobb@afit.edu

Decker, Douglas D., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2008 (AFIT/ENY); BS, University of Kansas, 1987; MS, Air Force Institute of Technology, 1994; PhD, Air Force Institute of Technology, 2004. Research interests include nonlinear control, optimal control, optimization, applications of nonlinear/optimal control, astrodynamics, satellite attitude control, control of unmanned air vehicles, search theory. Previous assignments include serving as a SCRAMJET Controls Engineer, GPS Satellite Engineering Officer and Systems Analyst, and Satellite Vehicle Crew Evaluator. He is a member of Sigma Gamma Tau, Tau Beta Pi, and is a Senior Member of AIAA. Tel. 937-255-3636 x7465 (DSN 785-3636 x7465), email: Douglas.Decker@afit.edu

Franke, Milton E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1959 (AFIT/ENY); BME, University of Florida, 1952; MSME, University of Minnesota, 1954; PhD, The Ohio State University, 1967. Research interests include fluid transmission lines, thrust vector control, high lift aerodynamics, fluids, cavity acoustics, thrust augmenting ejectors, heat transfer, electrostatic cooling, boundary layers, aerodynamic in-ground effects, lean aerospace initiatives, reusable launch vehicles, and engineering of complex systems. Dr. Franke has authored or co-authored over 130 technical articles. He holds five patents, was the recipient of the AFIT Charles A. Stone Award in 1986 and the AFIT Bernard A. Schriever Award in 1993. Dr. Franke is a retired colonel in the Air Force Reserve. He is chair of the Committee on Organization and Rules (a committee of the ASME Board of Governors), past Vice President for Communications of the ASME (1990-1992), past Vice President for Systems and Design of the ASME (1993-1996), co-chair of the AIAA Weapon System Effectiveness Technical Committee, a Fellow of the ASME, and Associate Fellow of the AIAA. Dr. Franke retired 31 March 2007. Tel. 937-255-3636, x 4720 (DSN 785-3636, x 4720), email: Milton.Franke@afit.edu

Greendyke, Robert B., Associate Professor of Aeronautics and Astronautics and Director, AFIT Scientist and Engineer Education Programs at Kirtland AFB; 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 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
HARMON, FREDERICK G., Lt Col, Assistant Professor of Aeronautical Engineering, BS, Electrical Engineering, Embry-Riddle Aeronautical University, 1992; MS, Electrical Engineering, Air Force Institute of Technology, 1996; PhD, Mechanical Engineering, University of California-Davis, 2005. Lt Col Harmon’s research interests include the cooperative control of multiple unmanned aerial vehicles, autonomous vehicle guidance and control, bio-inspired control and technologies, adaptive and reconfigurable flight control, nonlinear control, robotics, alternative energy systems, and fuel cell technology. He has published several conference papers and journal articles. His previous assignments were in research labs, intelligence organizations, and flight test squadrons. He has published several conference papers and journal articles as well as DoD publications. He is a member AIAA, IEEE, and AUVSI. Tel. 937-255-3636, x7478 (DSN 785-3636, x7478), e-mail: Frederick.Harmon@afit.edu

HICKS, KERRY D., Lt Col, Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY), BS Aeronautical and Astronautical Engineering, University of Illinois (UIUC), 1985; MS Astronautical Engineering, Air Force Institute of Technology, 1986; PhD Astronautical Engineering, Air Force Institute of Technology, 1989. Lt Col Hicks' research interests include astrodynamics, re-entry dynamics, and electric space propulsion with emphasis on numerical solutions and mathematical modeling. He has published several conference papers and journal articles as well as DoD publications. He is a member of Tau Beta Pi and a Senior Member of AIAA. Tel. 937-255-3636 x4568 (DSN 785-3636 x4568), email: Kerry.Hicks@afit.edu

HUFFMAN Jr., RICHARD E., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2007 (AFIT/ENY); BS Aeronautical and Astronautical Engineering, Purdue University, 1994; MS Aeronautical Engineering, Air Force Institute of Technology 1995; PhD Aerospace Engineering, University of Illinois at Urbana-Champaign, 2007. Major Huffman’s research interests include weapon design, combat survivability enhancement, plasma dynamics, non-intrusive fluid diagnostics and covert navigation systems. His current work involves using the earth’s gravity field for unique navigation techniques and the creation of non-intrusive diagnostics to measure plasma propulsion and control devices. Major Huffman’s prior assignments include airframe and avionics flight test on the F-22, instructor at the USAF Test Pilot School, avionics integration flight testing in the Air Force Research Laboratory’s Air Vehicles Directorate and combat simulation with the National Air and Space Intelligence Center. Tel. 255-6565 x7490, email: Richard.Huffman@afit.edu

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APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations.

86th FWS  Eighty-sixth Fighter Wing Squadron
ACC       Air Combat Command
ACES      Applied Computational Electromagnetic Society
AETC      Air Education and Training Command
AFCEE     Air Force Center for Environmental Excellence
AFCESA    Air Force Civil Engineer Support Agency
AFIT      Air Force Institute of Technology
AFLMA     Air Force Logistics Management Agency
AFMC      Air Force Materiel Command
AFOTEC    Air Force Operational Test and Evaluation Center
AFRL      Air Force Research Laboratory
AFRL/AFOSR AFRL/Air Force Office of Scientific Research
AFRL/RD   AFRL/Directed Energy Directorate
AFRL/RH   AFRL/Human Effectiveness Directorate
AFRL/RI   AFRL/Information Directorate
AFRL/RX   AFRL/Materials and Manufacturing Directorate
AFRL/RW   AFRL/Munitions Directorate
AFRL/RZ   AFRL/Propulsion Directorate
AFRL/RY   AFRL/Sensors Directorate
AFRL/RB   AFRL/Air Vehicles Directorate
AFRL/RV   AFRL/Space Vehicles Directorate
AFCA      Air Force Communication Agency
AFSA      Air Force Security Agency
AFSEO     Air Force Seek Eagle Office (46 SK/SKE)
AFSPC     Air Force Space Command
AFTAC     Air Force Technical Applications Center
AFWA      Air Force Weather Agency
AHS       American Helicopter Society
AIA       Air Intelligence Agency
AIAA      American Institute of Aeronautics and Astronautics
AMC       Air Mobility Command
ARDA      Advanced Research and Development Activity
ASME      American Society of Mechanical Engineers
ASC       Aeronautical Systems Center
AU        Air University
DAGSI     Dayton Area Graduate Studies Institute
DARPA     Defense Advanced Research Projects Agency
DETEC     Directed Energy Test and Evaluation Capability
DISA      Defense Information Systems Agency
DoD       Department of Defense
DOE       Department of Energy
DoS       Department of State
DTRA      Defense Threat Reduction Agency
IEEE      Institute of Electrical and Electronics Engineers
INCOSE    International Council on Systems Engineering
ISSMO     International Society for Structural and Multidisciplinary Optimization
MORS      Military Operations Research Society
NASA      National Aeronautics and Space Administration
NASCIC    National Air and Space Intelligence Center
NSA       National Security Agency
NSF       National Science Foundation
NSSA         National Security Space Architect
NSSO         National Security Space Office
OSD          Office of the Secretary of Defense
PACAF        Pacific Air Forces
SAE          Society of Automotive Engineers
SAF          Office of the Secretary of the Air Force
SPIE         The International Society for Optical Engineering
USSTRATCOM   United States Strategic Command
USAF         United States Air Force
USNA         United States Naval Academy
USSOCOM      United States Special Operations Command
USTRANSCOM   United States Transportation Command
WPAFB        Wright-Patterson Air Force Base
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**ABSTRACT**  
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 university.  

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 Electromagnetics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Mathematics, Statistics and Engineering Physics.

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