The Department of Defense, federal government, and non-government agencies supported the work reported herein.

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FOREWORD

The mission of the Air Force Institute of Technology (AFIT) graduate programs, to support national security through education, research, and consultation, continues to be intrinsically interwoven into the Air Force mission. AFIT maintains a close affiliation with Air Force research organizations and operational communities as well as Department of Defense Agencies. This affiliation enables AFIT to provide a unique environment for research essential to the training of future managers and engineers in disciplines critical to anticipated defense needs.

This Research Report is prepared annually by the Office of Research and Consulting to solicit continued involvement and support from Air Force laboratories and DoD agencies, and to encourage new sponsors to participate in AFIT’s research program. AFIT recognizes that research provides a dual opportunity, to enhance military competitiveness and to ensure timely transfer of new technology to US industry.

The FY 1999 report reflects the final year of operation as two separate graduate schools, the Graduate School of Engineering and the Graduate School of Logistics and Acquisition Management. Effective October 1, 1999 the two resident graduate schools were merged to form the Graduate School of Engineering and Management. The educational and research programs from both schools are continuing to flourish under the new organizational structure.

GEORGE K. HARITOS, Colonel, USAF
Commandant
Air Force Institute of Technology
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AFIT HISTORY

The Institute
AFIT traces its roots to the early days of powered flight when it was apparent that the progress of military aviation depended upon special education in this new science. In 1919, the Air School of Application was established at McCook Field in Dayton, Ohio, the home of Orville and Wilbur Wright.

When Congress authorized creation of the Air Corps in 1926, the school was renamed the Air Corps Engineering School and moved to Wright Field in 1927. Shortly after Pearl Harbor, the school suspended classes, but it reopened as the Army Air Forces Engineering School in 1944 to conduct a series of accelerated courses to meet emergency requirements.

After World War II, 1946, the Army Air Force Institute of Technology was established as part of the Air Materiel Command. The Institute was composed of two colleges: Engineering and Maintenance, and Logistics and Procurement. These colleges were later redesignated the College of Engineering Sciences and the College of Industrial Administration.

When the Air Force became a separate service in 1947, the Institute was renamed the Air Force Institute of Technology. That same year, the School of Civil Engineering Special Staff Officer's Course began. In 1948 civilian institution programs were transferred to AFIT.

In 1950, command jurisdiction of AFIT shifted from Air Materiel Command to Air University (AU) with headquarters at Maxwell AFB, Alabama. The Institute, however, remained at what was now known as Wright-Patterson AFB. In 1951, the two AFIT colleges were combined into the Resident College.

The Institute established a logistics education program at WPAFB in 1955, and The Ohio State University conducted the first courses on a contract basis. In 1958, AFIT began a series of short courses in logistics as part of the Air Force Logistics Command (AFLC) Education Center. Later that year, the School of Logistics became a permanent part of AFIT.

In 1954, the 83d Congress authorized the Commander, Air University, to confer degrees upon persons in the AFIT Resident College. The college was later divided into the School of Engineering, the School of Logistics, and the School of Business. The first undergraduate engineering degrees were granted in 1956, and the first graduate degrees in business in 1958. The School of Business programs were transferred to civilian universities in 1960. In 1963, the School of Logistics was redesignated the School of Systems and Logistics. The Civil Engineering Center was also redesignated as the Civil Engineering School.

In 1967, AFIT became a member of the Dayton Miami Valley Consortium (DMVC), which later changed its name to Southwestern Ohio Council for Higher Education (SOCHE). The council is an association of colleges, universities, and industrial organizations in the Dayton area which are united to promote educational advancement. AFIT has traditionally been active in both the council and in other community and interinstitutional programs.

AFIT's flexibility is such that it adjusts quickly to changing Air Force requirements. The faculty, comprised of highly qualified military and civilian personnel, stay abreast of projected Air Force
operations, and the programs are continually updated to offer its students the latest available material. For example, an Air Force Software Review in 1989 led to AFIT programs in software engineering and software systems management barely a year later. When environmental concerns culminated in the Pollution Prevention Act of 1990, AFIT designed and implemented both graduate and professional continuing education programs in environmental engineering management. In 1994, Air Force Weather requested a meteorology program designed specifically for the warfighter, and in less than one year AFIT delivered a graduate education program in military meteorology with an initial enrollment of fourteen officers.

In 1995, AFIT’s Graduate School of Engineering became a member of the Dayton Area Graduate Studies Institute (DAGSI) along with the graduate engineering schools of Wright State University and the University of Dayton. The purpose of the partnership was to provide, through the combined engineering and research resources of the three schools, educational and research opportunities at the MS and PhD level. The University of Cincinnati and the Ohio State University became affiliate members of DAGSI in 1997. DAGSI provides a continuing source of advanced technological expertise for the region covered by the five schools. The DAGSI program covers a broad spectrum of over 30 major research areas and benefits from the support of business and industry, government, and civic sectors of the Dayton Region.

Early in Fiscal Year 97, the Secretary of the Air Force made a decision to close AFIT resident graduate schools. In anticipation of closure, AFIT developed and began a transition and closure plan. Resident Ph.D. students scheduled for FY 97 were diverted to the Civilian Institution Program and a transition plan for actual closure was developed, identifying manpower positions for elimination in FYs 97 through 00.

In April 1998, after a visit to AFIT, the Acting Secretary of the Air Force, F. Whitten Peters, announced a reversal of the Air Force decision to terminate the AFIT resident graduate programs. AFIT will continue a restructuring initiative begun in FY 96 that will size the resident graduate programs to meet the Air Force education requirements of the FY 03 force structure. As part of this restructuring, the two resident graduate schools were merged into The Graduate School of Engineering and Management on Oct 1, 1999.

Research
Creative, relevant research programs are essential to both graduate education and the continuous modernization of military capability. Consequently, research has been an important element of the educational enterprise throughout AFIT’s history, often in collaboration with scientists of the Air Force Research Laboratories co-located at Wright-Patterson Air Force Base. The implementation of the PhD program at AFIT in 1965 resulted in significant growth of the research activities on the AFIT campus. The expanded role of sponsored research at AFIT was recognized by creating the Office of Research for the School of Engineering in 1989 and the Office of Research and Consulting for the School of Logistics and Acquisition Management in 1990 (now the Office of Research and Consulting in the Graduate School of Engineering and Management).

Several key projects are illustrative of AFIT’s research impact on the Air Force, the Department of Defense, and the nation. For more than twenty years, the Department of Engineering Physics has conducted strong research in high energy laser technology and delivered mission ready graduates to AF laboratories. Two PhD graduates served as directors of the Air Force laser
program, and four PhD graduates led the team demonstrating a 40 kW laser for anti-satellite missions. The AFIT laser weapons research group is now supporting the development of the Airborne Laser, based on the Chemical Oxygen Iodine Laser co-invented by an AFIT graduate. Other work of the laser weapons research group includes the development of lasers for remote sensing and counter-proliferation applications, new optical diagnostic methods, and studies of ionization mechanisms in the thermosphere for satellite survivability.

In support of the Air Force's and DoD's environmental restoration programs, AFIT established a remediation research program in the early 1990s involving faculty from four departments. Since that time, over 50 student theses on the subject have been published and graduates have gone on to manage remediation programs at bases and major commands throughout the Air Force. Research contributions include a field demonstration of a bioremediation technology that destroys trichloroethylene, the most common groundwater contaminant at DoD installations, and some of the first studies of the biodegradability of tolyltriazole, an aircraft deicing fluid additive recently recognized as an important groundwater contaminant at airfields throughout the nation.

AFIT researchers in the Department of Operational Science, responding to the needs of the C-17 Systems Program Office (SPO), developed an object-oriented simulation model to quantify the rate of paratrooper/vortex interaction for various airdrop formations, enhanced through high-resolution computer visualization of model results. The research results were briefed to the C-17 SPO Director, the Director of Test and Evaluation for the Office of the Secretary of Defense, the Undersecretary of the Army for Operations Research, and the Commander of the XVIII Airborne Corps. Utilizing their C-17 airdrop simulation model, the AFIT researchers also led a preflight study of the multinational CENTRAZBAT '97 Exercise; their analysis was praised by the XVIII Airborne Corps Commander as "dead-on!"

The Department of Aeronautics and Astronautics has an ongoing research program studying high cycle fatigue, the cause of the most dominant issue relevant to gas turbine engine damage. Currently, there exists only a cursory understanding of damage, crack initiation, and crack propagation under high cycle fatigue conditions. It has been recognized that a significant number of failures of engine components are attributable to fretting damage, such as dove-tailed blades, including press-fit or interlocking connections which are subjected to surface wear and fretting fatigue. The study in collaboration with the Materials and Manufacturing Directorate of the Air Force Research Laboratory uses an integrated experimental/analytical numerical modeling approach to investigate the high cycle fretting fatigue behavior of titanium alloys.

In December 1998, AFIT broke ground for a $8.9 million engineering laboratory. The facility will be used for experimental research in aeronautical engineering, electrical engineering, applied physics and environmental science. The lab is scheduled for completion in the summer of 2000, and will enable AFIT to continue its tradition of high quality research programs in support of the Air Force mission.
SECTION 1

INTRODUCTION

Research, inextricably integrated with graduate education, requires support to sustain and develop new knowledge. Defense research has dual benefits, enhanced military operational capabilities and commercial application in the development of new products and processes. This report describes the broad technical spectrum of AFIT research interests and faculty expertise; the involvement of research sponsors; and the procedure for developing opportunities for participation in AFIT research activities. This report highlights and summarizes the FY 99 contributions of the Graduate School of Engineering (EN) and the Graduate School of Logistics and Acquisition Management (LA) to the Air Force mission. The October 1, 1999 merger of the two schools into the Graduate School of Engineering and Management will be reflected in the FY 00 report.

The Graduate School of Engineering consisted of 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 Engineering and Environmental Management (ENV), and the Department of Aeronautics and Astronautics (ENY). The Graduate School of Logistics and Acquisition Management consisted of the Dean's Office (LA), the Department of Graduate Logistics Management (LAL), and the Department of Graduate Acquisition Management (LAS).

AFIT welcomes the opportunity to conduct research on topics of interest to the Air Force and other DoD organizations. Thesis/dissertation topics may be sent directly to the appropriate departments or to the Office of Research and Consulting. The Air Force, the DoD, and other government agencies are not the exclusive benefactors of faculty expertise, consultation, and the research technology developed at AFIT. Consultation and technology can be made available to the public for immediate commercial application and industrial problem solving. Technology transfer, through Cooperative Research and Development Agreements, gives direct access to the expertise to help solve problems and give advice. The cost of participation in technology transfer depends on the extent or resources used for any particular commercial/industrial client or educational institution. There may be no cost involved or prolonged use of equipment or faculty and students may be billed at cost.

Office of Research and Consulting
Graduate School of Engineering and Management

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SECTION 2
EXECUTIVE SUMMARY

2.1 RESEARCH AND CONSULTING OUTPUT MEASURES

Technology sharing and transfer are critical to the timely development of new operational capabilities. 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 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 MS theses and PhD dissertations that are completed and submitted to the Defense Technical Information Center. For fiscal year 1999, these output measures are shown in Table 2.1 and in Fig. 2.1.

Table 2.1: Graduate School's Faculty Research and Consulting Output

<table>
<thead>
<tr>
<th>Graduate School Department</th>
<th>Number of Faculty</th>
<th>Refereed Publications</th>
<th>Other Publications</th>
<th>Presentations</th>
<th>Funded Research Projects</th>
<th>Significant Consultations</th>
<th>Masters Theses Advised</th>
<th>Doctoral Disserts. Advised</th>
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<td>Total (LA)</td>
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<td>Total EN+LA</td>
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<td>215</td>
<td>130</td>
<td>57</td>
<td>199</td>
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</table>

2.2 RESEARCH AND CONSULTING SPONSORSHIP

As members of an Air Force School, the faculty of the AFIT 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 Air Force, DoD and Government agencies externally sponsored 85% of all theses and dissertations listed in Table 2.2. In addition, most of the research projects and consultations were carried out for Air Force and DoD units. The data are summarized in Table 2.2 and Fig. 2.2.
Figure 2.1: Research Output Measures, AFIT Resident Graduate Schools

Figure 2.2: Sponsors of AFIT Resident Graduate Schools’ Theses and Dissertations
Table 2.2: Sponsorship of AFIT Graduate Schools’ Research

<table>
<thead>
<tr>
<th>Sponsor Organization</th>
<th>Master’s Theses (LA)</th>
<th>Masters’ Theses (EN)</th>
<th>PhD Dissertation (EN)</th>
<th>Funded Research (EN)</th>
<th>Significant Consultations (LA)</th>
<th>Significant Consultations (EN)</th>
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<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td>30</td>
<td>169</td>
<td>16</td>
<td>110</td>
<td>4</td>
<td>53</td>
</tr>
</tbody>
</table>
2.3 OUTSIDE FUNDING OF THE SCHOOL OF ENGINEERING’S RESEARCH

Many of the School of Engineering’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. Table 2.3 and Fig. 2.3 summarize outside funding for FY 1999.

Table 2.3: Sponsoring Organizations for Funded Research

<table>
<thead>
<tr>
<th>Sponsoring Organization</th>
<th>Dollars ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Force Research Lab (AFRL)</td>
<td>768,756</td>
</tr>
<tr>
<td>AFOSR</td>
<td>1,509,730</td>
</tr>
<tr>
<td>Other AFMC</td>
<td>55,772</td>
</tr>
<tr>
<td>Other USAF</td>
<td>188,650</td>
</tr>
<tr>
<td>Other DOD</td>
<td>385,062</td>
</tr>
<tr>
<td>DOE</td>
<td>52,257</td>
</tr>
<tr>
<td>Tech Transfer (CRDAs)</td>
<td>143,772</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,103,999</strong></td>
</tr>
</tbody>
</table>

Figure 2.3: Funded Research for Fiscal Year 1999
2.4 RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Form was sent to each sponsor (See sample on the following page) of a master's thesis and doctoral dissertation project during FY 1999 to determine the projects contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 2.4. The data in this table are based on seventy-seven (77) questionnaires returned out of the one hundred eighty-five (185) questionnaires mailed.

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>EN</th>
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</thead>
<tbody>
<tr>
<td>Did this research contribute to a current Air Force/DoD project?</td>
<td>94%</td>
</tr>
<tr>
<td>The thesis work was:</td>
<td></td>
</tr>
<tr>
<td>Highly significant</td>
<td>40%</td>
</tr>
<tr>
<td>Significant</td>
<td>47%</td>
</tr>
<tr>
<td>Slightly significant</td>
<td>9%</td>
</tr>
<tr>
<td>Not significant</td>
<td>3%</td>
</tr>
<tr>
<td>Avg. Man-years of effort saved</td>
<td>1.2</td>
</tr>
<tr>
<td>Average cost avoided per thesis/dissertation</td>
<td>$140,462</td>
</tr>
<tr>
<td>Total cost avoided for all theses and dissertations sponsored (extrapolated from returned questionnaires)</td>
<td>$25,985,615</td>
</tr>
<tr>
<td>Rank of respondents</td>
<td></td>
</tr>
<tr>
<td>Colonel (GM-15)</td>
<td>6%</td>
</tr>
<tr>
<td>Lt Col (GM-14)</td>
<td>24%</td>
</tr>
<tr>
<td>Major (GM-13)</td>
<td>40%</td>
</tr>
<tr>
<td>Captain (GS-12)</td>
<td>16%</td>
</tr>
<tr>
<td>Other</td>
<td>14%</td>
</tr>
</tbody>
</table>

Table 2.4: Assessment of AFIT Graduate Schools Research
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:

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 P Street, Wright-Patterson AFB OH 45433-7765, or fax it to (937) 656-7302 (DSN 986-7302), or just e-mail your answers (only) to 1 to 5 to enr@afit.af.mil. 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
2000 CALL FOR MS THESIS TOPICS

AFIT sends out an annual call for theses in an effort to involve sponsor organizations actively in research and education. Interested organizations may review the material presented in this report and contact AFIT with questions and areas of interest.

The Department of Electrical and Computer Engineering invites M.S. thesis suggestions and topics for the Computer Science and Computer Engineering programs. The areas covered by these programs include:

- Artificial Intelligence
- Computer Communications Networks
- Database Systems
- High Performance Computing
- Information Systems Security and Assurance
- Information Visualization
- Numerical Analysis
- Software Engineering
- VLSI/VHSIC Systems

The Department of Electrical and Computer Engineering invites M.S. theses suggestions and topics for the Electrical Engineering and Electro-Optics programs. The areas covered by these programs include:

- Analog & Digital Communications
- Satellite Communications
- Signal Processing
- Computational Electromagnetics
- Radar, Electronic Combat
- Low Observables (stealth)
- Integrated Navigation Systems
- Global Positioning System (GPS)
- Flight Control Systems
- Automatic Target Recognition
- Computational Electronics
- Micro-Electro-Mechanical Systems (MEMS)
- Micro- & Opto-Electronic Materials & Devices
- Photonic Devices & Systems
- Very Large Scale Integrated (VLSI) Circuits
- VLSI/VHSIC Systems
- Radiation Hardened & Space Electronics
- Statistical Optics
- Optical Information Processing
- Pattern Recognition

The Department of Engineering Physics invites M.S. theses suggestions and topics for the Engineering Physics, Nuclear Engineering and Electro-Optics programs. (Electro-Optics shared between Electrical Engineering and Engineering Physics) The areas covered by these programs include:

- Lasers & Nonlinear Optics
- Nuclear Weapons Effects
- Nuclear Proliferation and Their Effects
- Electronic & Photonic Materials and Devices
- Environmental Remediation
- Atmospheric and Space Optics
- Optical Systems, Imaging & Remote Sensing
- Space Nuclear Power and Propulsion

The Department of Operational Sciences invites M.S. theses suggestions and topics for the Operations Research, and Operational Analysis programs. Areas covered by these programs include:

- Operations Research
- Risk Assessment and Analysis
- Quantitative and Qualitative Approaches to Space Operations
- Quantitative and Qualitative Approaches to Operational Analysis
- Planning, Deployment and Employment
- Transportation
- Wargaming
The Department of Systems and Engineering Management invites M.S. thesis suggestions and topics. Areas covered include:

- **Engineering Management**
- **Environmental Policy and Planning**
- **Environmental Risk Analysis**
- **Air Quality and Air Resource Mgmt**
- **Outsourcing and Privatization**
- **Ecosystem Management Strategies**
- **Pollution Prevention & Econ Analysis**
- **Groundwater Hydrology and Contaminant Transport**
- **Professional Development and Retention**
- **Environmental Compliance and Remediation**
- **Contract and Program Management**
- **Management Decision Analysis**
- **Risk Communication**
- **Contingency Engineering Management**
- **Facilities Engineering and Management**

The Department of Aeronautics and Astronautics invites M.S. theses suggestions and topics. Areas covered by these programs include:

- **Aerodynamics of Flight Vehicles**
- **Analysis of Aerospace Structures**
- **Theory and Applications of Composite Materials**
- **Dynamics & Control of Flight Vehicles**
- **Propulsion Systems for Flight Vehicles**
- **Numerical Analysis & Computer Simulation**
- **Computational Fluid Dynamics**
- **Reliability and Maintainability**
- **Systems Engineering Design Studies**

The Graduate School of Engineering and Management invites M.S. thesis suggestions and topics for the Logistics and Acquisition Management Programs. The areas covered by these programs include:

- **Acquisition Logistics Management**
- **Information Resource Management**
- **Transportation Logistics Management**
- **Logistics Management**
- **Inventory Management**

If you have any questions about engineering programs, please contact the Office of the Associate Dean for Research and Consulting, AFIT/ENR, 2950 P Street, Wright-Patterson AFB OH, 45433-7765 (email enrsta@afit.af.mil, (937) 255-3633, DSN 785-3633).

**ESTABLISHING YOUR THESIS TOPIC IDEA EFFICIENTLY**

1. Look through the credentials and interests of the AFIT faculty members in this book who support the programs listed above. Cross-reference with the Areas of Professional Expertise (section 3.2). Match your areas of interest with the research interests and applications of one or more faculty.

2. Read through the list of selected recent graduates' thesis topics. You may find one or more AFIT Faculty Advisors who have dealt with a topic in your interest area.

3. **All of the above information is under AFIT’s home page on the internet. Please enter http://www.afit.af.mil then select ‘Research’**.
4. **This is essential:** Whether you work from this booklet or from the internet, contact a faculty member to discuss your idea for a thesis topic. A topic that has strong faculty endorsement and support is much more likely to be chosen by the students than one that lacks faculty advocacy. Topics that fall outside the collective areas of faculty competence cannot be approved, even if chosen. For maximum effectiveness all around, *please talk to AFIT faculty before you submit a thesis suggestion.*

5. When calling, use the faculty member’s DSN phone number to make direct contact. For commercial calling, replace the DSN number 785-xxxx, ext xxxx with (937) 255-xxxx, ext xxxx.

6. After talking to an AFIT faculty member, prepare and send your proposal as soon as possible. Use the sample proposal format in this book, or make up your own. **Send your proposal to the faculty member, to the department, or to AFIT/ENR, 2950 P St., Wright-Patterson AFB OH 45433-7765.**

**Sample Thesis Topic Proposal**

Use this format to write up your proposal, or develop your own. Send your proposal to the faculty member, appropriate department, or AFIT/ENR, Bldg 640, 2950 P St, Wright-Patterson AFB OH 45433-7765.

*************** SAMPLE ***************

PROPOSED THESIS TOPIC

1. **THESIS TOPIC:** Object-Oriented, Parallel, Discrete-Event Simulation Environment

2. **INDIVIDUAL SPONSOR:** Capt Lienert, RL/IRAA (DSN 785-3708)
Aeronautical Systems Center
5125 C St
Wright-Patterson AFB OH 45433-0098

3. **AFIT FACULTY CONTACTED:** Dr Thomas C. Hartrum, AFIT/ENG

4. **BACKGROUND/PROBLEM:** In order to investigate various approaches to speeding up the execution of battlefield simulations using parallel processors, there is a need to develop a simulation environment to allow for easy changes in application simulations, as well as parallel simulation protocols. The environment is to be written in Ada. An object-oriented simulation environment would provide AFIT students and faculty in the parallel simulation group the opportunity to write simulation programs without having to worry about low-level details of the machine interface. Such a simulation environment would need to support a distributed network of various parallel and sequential computers to support future simulation applications.

5. **OBJECTIVE/APPROACH:**
   a. Analyze what is needed in a simulation environment.
   b. Design the system, using objects defined in the analysis.
   c. Implement the environment in Ada.

6. **RESOURCE REQUIREMENTS:**
   a. Access to a parallel processor
   b. Compatible parallel Ada compiler
   c. Local area network

7. **REFERENCES:** Parallel Program Design, Chandy & Misra

*************** SAMPLE ***************
SECTION 3

GRADUATE SCHOOL OF ENGINEERING

3.0 OVERVIEW

AFIT supports the Air Force mission by providing uniquely defense-oriented education through high quality graduate instruction, research, and consultation.

The FY 99 Graduate School of Engineering consisted of six departments: Department of Aeronautical and Astronautical Engineering (ENY), Department of Electrical Engineering and Computer Engineering (ENG), Department of Mathematics and Statistics (ENC), Department of Engineering and Environmental Management (ENV), Department of Engineering Physics (ENP), and Department of Operational Sciences (ENS). All six departments were retained following the October 1, 1999 merger with the Graduate School of Logistics and Acquisition Management to form the Graduate School of Engineering and Management. However, ENV was renamed the Department of Systems and Engineering Management to reflect its expanded program responsibilities.

A total of 169 masters theses and 16 PhD dissertations addressing a wide range of Air Force and DoD critical issues were written in 1999. In addition, the faculty produced 71 refereed journal articles, 115 other publications, 195 technical presentations, and were involved in 130 funded research projects.

The Dayton Area Graduate Studies Institute (DAGSI) is a unique university partnership originated by the engineering colleges of the University of Dayton (UD), Wright State University (WSU), and the Air Force Institute of Technology (AFIT). DAGSI coordinates, integrates, and leverages the formidable resources of the partnership, including the combined faculty, facilities, equipment and other supporting elements of all three institutions. Through DAGSI, AFIT, UD, and WSU allow their graduate engineering students to enroll in appropriate course offerings at any of the institutions for full credit toward their degree programs. The Ohio State University and the University of Cincinnati are affiliate members of DAGSI who participate in research collaboration. DAGSI operates the Joint AFRL/DAGSI Research Program, with an annual budget of approximately $4 million from the Ohio Board of Regents. Through DAGSI, scholarships are available at AFIT on either a part-time or full-time basis. Both civilians and military officers are eligible. For further information contact AFIT/ENA, (937) 255-3636 x4550, DSN 785-3636 x4550, or see www.dagsi.org.

Most of AFIT’s research is conducted as the result of Air Force or DoD active sponsorship. The research suggested by these sponsors directly supports on-going defense projects, tasks and sub tasks. The majority of this sponsorship comes from the Air Force Materiel Command, especially the science and technology laboratories of that command. While the bulk of the AFIT research program responds to USAF/DoD suggestions, AFIT also collaborates with other universities on joint projects proposed by the National Science Foundation and other university grantors. AFIT is also active in transferring technology to the private sector through Cooperative Research and Development Agreements (CRDAs).

Committed to the continued involvement of Air Force, DoD, and government agencies in AFIT research and education, AFIT also encourages educational institutions and industry to benefit from AFIT resources through technology transfer. Persons and organizations interested in AFIT research may identify potential faculty collaborators from this report using section 3.2, “Areas of Professional Expertise,” which is a list of technology key words followed by the names of involved faculty. Once a possible match is identified, further details regarding the faculty member’s research interests may be found in section 3.3, “Faculty Credentials”, which also includes his/her phone number and e-mail address. For general information and assistance, contact the Office of Research and Consulting (AFIT/ENR) at (937) 255-3633, DSN 785-3633. AFIT supports the Air Force mission by providing uniquely defense-oriented education through high quality graduate instruction, research, and consultation.
### 3.1 DEPARTMENT SYMBOLS AND LOCATIONS

Graduate School of Engineering (AFIT/EN), Bldg. 640, 2950 P Street, Wright-Patterson AFB, OH 45433-7765

<table>
<thead>
<tr>
<th>Symbol</th>
<th>School Office/Department</th>
<th>Room</th>
<th>Telephone, (DSN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>Office of the Dean</td>
<td>100</td>
<td>(937) 255-3025 (DSN 785-3025)</td>
</tr>
<tr>
<td></td>
<td>Dr. Robert A. Calico, Jr., Dean</td>
<td></td>
<td>(937) 255-3025 (DSN 785-3025)</td>
</tr>
<tr>
<td></td>
<td>Col Wayne F. Hallgren, Associate Dean</td>
<td></td>
<td>(937) 255-4372 (DSN 785-4372)</td>
</tr>
<tr>
<td></td>
<td>Dr. D. Kirk Vaughan, Assistant Dean for Academic Affairs</td>
<td></td>
<td>(937) 255-3636, x4557 (DSN 785-3636, x4557)</td>
</tr>
<tr>
<td>ENR</td>
<td>Office of Research and Consulting</td>
<td>103</td>
<td>(937) 255-3633 (DSN 785-3633)</td>
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<td></td>
<td>Dr. Heidi R. Ries, Associate Dean for Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENC</td>
<td>Department of Mathematics and Statistics</td>
<td>114</td>
<td>(937) 255-3098 (DSN 785-3098)</td>
</tr>
<tr>
<td></td>
<td>Dr. Alan V. Lair</td>
<td></td>
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<tr>
<td>ENG</td>
<td>Department of Electrical and Computer Engineering</td>
<td>218</td>
<td>(937) 255-2024 (DSN 785-2024)</td>
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<tr>
<td></td>
<td>Col Thurmon L. Deloney, II</td>
<td></td>
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<tr>
<td>ENP</td>
<td>Department of Engineering Physics</td>
<td>106</td>
<td>(937) 255-2012 (DSN 785-2012)</td>
</tr>
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<td></td>
<td>Dr. Robert L. Hengehold</td>
<td></td>
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</tr>
<tr>
<td>ENS</td>
<td>Department of Operational Sciences</td>
<td>177</td>
<td>(937) 255-2549 (DSN 785-2549)</td>
</tr>
<tr>
<td></td>
<td>Col John M. Andrew</td>
<td></td>
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<tr>
<td>ENV</td>
<td>Department of Engineering and Environmental Management</td>
<td>204</td>
<td>(937) 255-2998 (DSN 785-2998)</td>
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<tr>
<td></td>
<td>Lt Col WM Brent Nixon</td>
<td></td>
<td></td>
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<tr>
<td>ENY</td>
<td>Department of Aeronautics and Astronautics</td>
<td>201</td>
<td>(937) 255-3069 (DSN 785-3069)</td>
</tr>
<tr>
<td></td>
<td>Dr. Bradley S. Liebst</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2 AREAS OF PROFESSIONAL EXPERTISE

Ada: Graham, R.P.; Hartram, T.C.
Adaptive Estimation: Maybeck, P.S.; Miller, M.M.
Adaptive Filtering, Multiple Model: Maybeck, P.S.; Miller, M.; Pachter, M.
Adaptive Optics: Gustafson, S.C.; Magee, E.P.; Pachter, M.
Adaptive Robust Estimation: Gustafson, S.C.; Miller, M.; Pachter, M.
Adaptive/Interferometric Clutter Erasure (ACE/ICE): Temple, M.A.
Advanced Distributed Simulation: Jacobs, T.M.
Aero/Gas Dynamics and Propulsion: Bons, J.P.; Franke, M.E.; King, P.I.
Aerodynamics: Bons, J.P.; Franke, M.E.; King, P.I.; Tragesser, S.G.
Pachter, M.
Air Pollution Transport Modeling: Quinn, D.W.
Air Quality Management: Brothers, H.S.
Aircraft Impact Damage: Palazotto, A.N.
Aircraft Performance: Hallgren, W.F.
Algorithm Development/Analysis: Deckro, R.F.; Graham, R.P.; Gustafson, S.C.; Hill, R.R.; Lamont,
G.B.; Moore, J.T.; Potoczny, H.B.; Terzuoli, A.J.
Algorithms: Graham, R.P.; Lamont, G.B.
Analysis, Defense Systems: Hill, R.R.
Analysis, Probabilistic: Bauer, K.W.; Crown, J.S.; Gustafson, S.C.; Maybeck, P.S.; Murdock, W.P.; Reid,
T.F.
Analytical Dynamics: Pachter, M.; Palazotto, A.N.; Spenny, C.H.
Applied Aerodynamics: Hallgren, W.F.
Pachter, M.; Quinn, D.W.; Wood, A.W.
Applied Mathematics: Baker, W.P.; Chilton, L.K.; Ericksen, W.S.; Gustafson, S.C.; Lair, A.V.; Lamont,
Artificial Perception: Gustafson, S.C.; Kabrisky, M.J.; Oxley, M.E.
Asymptotic and Perturbation Methods: Baker, W.P.
Atmospheric Chemistry: Bailey, W.F.; Burggraf, L.W.; Della-Rose, D.J.; Miner, C.A.; Perram, G.P.;
Walters, M.K.; Wolf, P. J.
Atmospheric Optics: Magee, E.P.; Pachter, M.
Lamont, G.B.
Aviation Meteorology: Miner, C.A.
Ballistic Missile Defense: Deloney, T.L.
Battlefield Weather Sensing: Miner, C.A.; Walters, M.K.
Bi-level Programming: Deckro, R.F.; Moore, J.T.
Biodegradation and Biodeterioration: Bleckmann, C.A.; Goltz, M.N.; Shelley, M.L.
Boundary Layer Stability and Transition: Franke, M.E.
Boundary Value Problems, Free/Moving: Collins, P.J.; Oxley, M.E.; Chilton, L.K.; Terzuoli, A.J.;
Wood, A.W.
Campaign Planning: Deckro, R.F.
Cascade Flows: King, P.I.
Cavity Acoustics: Baker, W.P.; Franke, M.E.
Chemical Toxicity: Burggraf, L.W.
Combat Modeling: Kloeber, J.M.; Miller, J.O.
Combustion Molecular Dynamics: Little, J.K.
Command Control Communications: Raines, R.A.; Temple, M.A.
Communication Theory: Magee, E.P.; Temple, M.A.
Communications Networks: Baldwin, R.O.; Chan, Y.; Deckro, R.F.; Raines, R.A.; Temple, M.A.
Complex Adaptive Simulation: Bailey, T.G.; Hill, R.R.; Miller, J.O.; McIntyre, G.A.
Composite Materials: Mall, S.; Palazotto, A.N.
Computation, Parallel/Distributed: Hartrum, T.C.; Lamont, G.B.; Terzuoli, A.J.
Computational Complexity: Moore, J.T.; Deckro, R.F.; Chrissis, J.W.; Chan, Y.; Hill, R.R.
Computational Electromagnetics: Chilton, L.K.; Collins, P.J.; Lamont, G.B.; Terzuoli, A.J.; Wood, A.W.
Computational Electronics and Nanoelectronics: Lott, J.A.
Computational Structural Mechanics: Chilton, L.K.
Computer Aided Design (CAD): Brothers, C.P.; Jacobs, T.M.; Lott, J.A.
Computer Aided Software Engineering: Jacobs, T.M.
Computer Architecture: Brothers, C.P.; Lamont, G.B.
Computer Communication Networks: Baldwin, R.O.; Gunsch, G.H.; Lamont, G.B.; Raines, R.A.; Reid, T.F.; Temple, M.A.
Constitutive Modeling: Haritos, G.K.
Contaminant Transport: Goltz, M.N.; LaPuma, P.T.; Oxley, M.E.; Quinn, D.W.; Shelley, M.L.; Thal, A.E.
Contaminated Groundwater Assessment: LaPuma, P.T.; Shelley, M.L.
Continuous Simulation: Kelso, T.S.; Pachter, M.
Continuum Mechanics: Mall, S.; Turcotte, J.S.
Control Systems, Intelligent: Lamont, G.B.; Maybeck, P.S.; Miller, M.; Pachter, M.
Control Systems, Parallel/Distributed: Lamont, G.B.; Pachter, M.
Control Systems, Robotic: Miller, M.; Pachter, M.
Cost Models: Deckro, R.F.; Gallagher, M. A.
Critical Path Methods: Deckro, R.F.; Chrissis, J.W.
Data Acquisition: King, P.I.
DataBases: Chan, Y.; Lamont, G.B.; Talbert, M.L.
Data Mining: Talbert, M.L.
Data Processing: Talbert, M. L.
DataBase Management: Talbert, M.L.
Database Systems, Management: Potoczny, H.B.; Talbert, M.L.
Database Systems, Object-Oriented: Potoczny, H.B.; Talbert, M.L.
Decision Support Systems: Gunsch, G.H.
Differential Games: Pachter, M.
Digital Communications: Magee, E.P.; Raines, R.A.; Reid, T.F.; Temple, M.A.
Dynamic Meteorology: Miner, C.A.; Walters, M.K.
Dynamics, Aircraft/Spacecraft: Liebst, B.S.; Pachter, M.; Spenny, C.H.; Tragesser, S.G.
Dynamics, Chaotic: Chan, Y.; Wiesel, W.E.
Ecological Resource Management: Bleckmann, C.A.; Shelley, M.L.
Economic Models: Chan, Y.; Deckro, R.F.
Economic Theory: Chan, Y.
Eigenstructure Assignment and Control: D’Azzo, J.J.; Liebst, B.S.; Pachter, M.
Elasticity: Chilton, L.K.
Electroluminescence: Largent, C.C.
Electromagnetic Propagation Phenomenology: Temple, M.A.; Terzuoli, A.J.
Electromagnetic Theory: Collins, P.J.; Pyati, V.P.; Terzuoli, A.J.
Electromagnetics: Collins, P.J.; Pyati, V.P.; Terzuoli, A.J.
Electronic Warfare: Miller, M.; Pyati, V.P.; Raquet, J.F.; Temple, M.A.
Embedded Software Systems: Baldwin, R.O.; Lamont, G.B.
Encryption/Decryption: Potoczny, H.B.
Engineering Design Optimization: Chrissis, J.W.
Environmental Chemistry: Burggraf, L.W.
Environmental Management in Acquisition: Brothers, H.S.
Environmental Management Systems: Brothers, H.S.; LaPuma, P.T.; Nixon, W.B.
Environmental Microbiology: Bleckmann, C.A.
Environmental Protection: Deckro, R.F.; Kloeber, J.M.
Environmental Remediation - Chemical and Radioactive: Bleckmann, C.A.; Goltz, M.N.; Nixon, W.B.; Perram, G.P.
Environmental Risk Assessment: Chan, Y.; Deckro, R.F.; Kloeber, J.M.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Environmental Risk Reduction Engineering: Goltz, M.N.; LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.
Epitaxial Crystal Growth: Lott, J.A.
Evolutionary Computation: Lamont, G.B.
Executive Development: Holt, D.T.
Facility Engineering Management: Brothers, H.S.; Nixon, W.B.
Facility Location: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J. T; Nixon, W.B.
Failure Mechanisms, Monolithic/Multiphase Materials: Haritos, G.K.
Fatigue: Haritos, G.K.; Mall, S.
Fault Detection and Isolation in Dynamic Systems: Maybeck, P.S.; Miller, M.
Finite Array Scattering (EM Waves): Collins, P.J.; Terzuoli, A.J.
Fire Control: Pachter, M.
Flexible Structure Control: Jacques, D.R.; Liebst, B.S.; Maybeck, P.S.; Pachter, M.
Flight Test Engineering: Liebst, B.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Fluid Dynamics, Viscous/Incompressible: Bons, J.P.; Franke, M.E.; King, P.I.
Fluid Mechanics: Bons, J.P.; Franke, M.E.; King, P.I.; Little, J.K.
Fluidics: Franke, M.E.
Forecasting: Chan, Y.; Gallagher, M. A.; Gustafson, S.C.; Lanning, J.W.
Fracture Mechanics: Haritos, G.K.; Mall, S.
Fuzzy Logic Control: Lamont, G.B.; Pachter, M.
Gallium Arsenide Lasers: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.
Gas Dynamics: Bailey, W.F.; Franke, M.E.; King, P.I.; Perram, G.P.
Gas Turbine Cooling: Bons, J. P.
General Systems Theory: Kramer, S.C.; Smith, E.P.
Geographic Information Systems: Chan, Y.
Global Communications: Raines, R.A.; Temple, M.A.
Global Positioning Systems: Miller, M.M.; Raquet, J.F.
Goal Programming: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J.T.
Goodness-of-Fit Reliability Testing: Crown, J.S.; Moore, A.H.
Graph Theory and Optimization: Smith, E.P.
Graph Theory: Lamont, G.B.; Potoczny, H.B.
Graphics: Jacobs, T.M.
Ground Water Modeling: Goltz, M.N.; Lair, A.V.; Oxley, M.E.; Shelley, M.L.
Ground Water Monitoring and Remediation: Bleckmann, C.A.; Goltz, M.N.; Thal, A.E.
Guidance and Navigation: Maybeck, P.S.; Miller, M.M.; Pachter, M.; Raquet, J.F.
Hazardous Materials Management: LaPuma, P.T.; Nixon, W.B.
Hazardous Waste Management: Nixon, W.B.; Thal, A.E.
Hazardous Waste Treatment Technologies: Bleckmann, C.A.; Goltz, M.N.; Nixon, W.B.; Thal, A.E.
Health Physics: John, G.
Heat Transfer: Bons, J. P.; Franke, M.E.; King, P.I.; Little, J.K.
High Performance Computing: Lamont, G.B.
High Range Resolution Radar: Temple, M.A.; Terzuoli, A.J.
Hueristics: Bailey, T.G.; Deckro, R.F.; Hill, R.R.; McIntyre, G.A.; Moore, J.T.
Human Information Processing: Chan, Y.; Kabrisky, M.J.
Human Resource Management: Holt, D.T.
Hypersonics: Little, J.K.
Image Generation/Storage/Processing: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.
Imaging, Sensors and Signal Processing: Gustafson, S.C.; Lamont, G.B.; Magee, E.P.
Industrial Engineering: Chambal, S.P.; Chrissis, J.W.; Deckro, R.F.; Lanning, J.W.
Inertial Navigation Systems: Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Information Operations: Chan, Y.; Deckro, R.F.; Gunsch, G.H.; Raines, R.A.
Information Survivability: Deckro, R.F.; Gunsch, G.H.; Raines, R.A.
Information Visualization: Jacobs, T.M.
Information Warfare: Chan, Y.; Deckro, R.F.; Gunsch, G.H.; Raines, R.A.; Talbert, M.L.; Temple, M.A.
Infrared countermeasures: Largent, C.C.
Infrared lasers: Largent, C.C.; Marciniak, M.A.; Hengehold, R.L.
Infrared signatures: Largent, C.C.
Integrated Navigation Systems: Miller, M.; Raquet, J.F.
Intelligent Interfaces: DeLoach, S.A.; Gunsch, G.H.; Talbert, M.L.
Intelligent Systems: Gunsch, G.H.; Gustafson, S.C.; Kabrisky, M.J.
Inventory Analysis and Control: Chrissis, J.W.; Deckro, R.F.
Job-Shop Scheduling: Deckro, R.F.
Kalman Filters: Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.
Laser Optics: Gustafson, S.C.; Magee, E.P.
Laser Spectroscopy: Burggraf, L.W.; Marciniak, M.A.; Perram, G.P.,
Lasers - Chemical: Perram, G.P.
Lasers - Semiconductor: Lott, J.A.
Lasers - Vertical Cavity Surface Emitter: Lott, J.A.
Lidar: Gustafson, S.C.; Magee, E.P.
Life Cycle Management: Deckro, R.F.
Light-Emitting Diodes: Lott, J.A.
Linear Optics: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.
Linear Programming: Bailey, T.G.; Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Moore, J.T.
Linear Systems: Kabrisky, M.J.; Magee, E.P.; Maybeck, P.S.; Miller, M.; Pachter, M.; Raquet, J.F.;
Terzuoli, A.J.
Logic Design: Brown, W.M.; Lamont, G.B.
Logistics: Chan, Y.; Hill, R.R.
Low Observables: Collins, P.J.; Terzuoli, A.J.
Luminescence: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.; Yeo, Y.K.
Maintainability: Chambal, S. P.; Murdock, W.P.; Temple, M.A.; Terzuoli, A.J.
Management Cybernetics: Reynolds, D.E.
Management Engineering: Deckro, R.F.
Management Planning and Control: Deckro, R.F.
Manufacturing: Chrissis, J.W.; Deckro, R.F.
Mass Transport Phenomena: Goltz, M.N.; Shelley, M.L.
Materials Chemistry: Burggraf, L.W.
Mathematical Programming: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Lamont, G.B.; Moore, J.T.; Pachter,
M.; Reid, T.F.
Maximum Thrust Propulsive Nozzles: Franke, M.E.
Mechanics: Impact and Penetration: Torvik, P.J.
Medical Imaging: Collins, P.J.; Terzuoli, A.J.
Mesoscale Meteorology: Miner, C.A.; Walters, M.K.
Meteorology: Huffines, G.R.; Miner, C.A.; Walters, M.K.
Meteorological Data: Talbert, M.L.
Micro-Electro-Mechanical Systems (MEMS): Lott, J.A.
Microelectronics: Brothers, C.P.; Lott, J.A.
Microwave Acoustics: Terzuoli, A.J.
Military Space Systems: Deloney, T.L.; Kelso, T.S.
Molecular Dynamics: Perram, G.P.; Weeks, D.E.
Molecular Electronics: Lott, J.A.
Molecular Orbital Calculations: Burggraf, L.W.
Molecular Spectroscopy: Burggraf, L.W.; Perram, G.P.; Weeks, D.E.
Mössbauer Spectroscopy: John, G.
Multicriteria Decision Making: Chan, Y.; Kloeber, J.M.; Lamont, G.B.; LaPuma, P.T.; Pachter, M.
Multirate and Wavelet Signal Processing: Gustafson, S.C.
P.S.; Miller, M.; Pachter, M.
Network Flows: Bailey, T.G.; Chan, Y.; Chrissis, J.W.; Deckro, R.F.
Neural Networks: Bauer, K.W.; Gustafson, S.C.; Kabrisky, M.J.; McIntrye, G.A.; Oxley, M.E.; Pachter, M.
Nonlinear Control: Jacques, D.R.; Pachter, M.; Wiesel, W.E.
Nonlinear Dynamics: Agnes, G.S.; Liebst, B.S.; Pachter, M.; Palazotto, A.N.; Wiesel, W.E.
Nonlinear Optics: Gustafson, S.C.; Magee, E.P.
Nonlinear Programming: Chrissis, J.W.; Deckro, R.F.
Nonlinear Systems Stability: Pachter, M.; Wiesel, W.E.
Nonlinear Vibrations: Pachter, M.
Nuclear Chemical Engineering, Computational: Mathews, K.A.
Nuclear Fallout Modeling: Jodoin, V.J.
Nuclear Proliferation: Jodoin, V.J.
Nuclear Radiation Detection: Burggraf, L.W.
Nuclear Radiation Spectroscopy and Detection: John, G.
Nuclear Radiation Transport, Computational: Mathews, K.A.
Nuclear Weapon Effects Simulation: Mathews, K.A.
Nuclear Weapon Effects: Jodoin, V.J.; Mathews, K.A.; Susalla, M.J.
Numerical Weather Prediction: Walters, M.K.
Operations Testing and Evaluation: Crown, J.S.; Reid, T.F.
Optical Diagnostics: Hengehold, R.L.; Marciniak, M.A.; Perram, G.P.; Roh, W.B.
Optical Information Processing: Gustafson, S.C.; Kabrisky, M.J.; Magee, E.P.
Optical Neural Computers: Gustafson, S.C.; Kabrisky, M.J.
Optimal Control: Jacques, D.R.; Pachter, M.; Reid, T.F.; Wiesel, W.E.
Optimization Theory: Chan, Y.; Chrissis, J.W.; Deckro, R.F.; Gustafson, S.C.; Lamont, G.B.; Maybeck, P.S.; Moore, J.T.; Oxley, M.E.; Pachter, M.; Reid, T.F.
Optimization, Network and Combinatorial: Chan, Y.; Lamont, G.B.; Moore, J.T.; Deckro, R.F.
Optimization: Hill, R.R.; Moore, J.T.
Optoelectronic/Semiconductor Device Physics: Hengehold, R.L.; Largent, C.C.; Marciniak, M.A.; Yeo, Y.K.
Optoelectronics: Lott, J.A
Orbital Mechanics: Kelso, T.S.; Tragesser, S.G.; Wiesel, W.E.
Organic Chemistry: Bleckmann, C.A.; Golz, M.N.
Organizational Change & Development: Holt, D.T.
Organizational Climate and Cultural Assessments: Holt, D.T.
Parallel Processors: Brothers, C.P.; Lamont, G.B.; Raines, R.A.
Parametric Programming: Deckro, R.F.; Moore, J.T.

Personnel Evaluation: Holt, D.T.

PERT: Deckro, R.F.

Pharmacokinetic Modeling: Quinn, D.W.; Shelley, M.L.

Phased Array Antennas: Collins, P.J.; Terzuoli, A.J.

Photonic Crystals: Wood, A.W.

Photonics: Lott, J.A.

Physical Meteorology: Huffines, G.R.

Physics of the Upper Atmosphere (Ionosphere & Magnetosphere): Bailey, W. F.; Della-Rose, D.J.; Wolf, P.J.

Planetary Astronomy: Wiesel, W.E.

Pointing and Tracking: Maybeck, P.S.; Pachter, M.

Pollution Prevention: Brothers, H.S.; LaPuma, P.T.


Production Models: Deckro, R.F.; Kloeber, J.M.

Program Management: Brothers, H.S.; Deckro, R.F.; Holt, D.T.; Nixon, W.B.

Quadratic Programming: Deckro, R.F.; Chrissis, J.W.


Quantitative Feedback Theory: Houpis, C.H.; Pachter, M.

Queueing Networks: Chan, Y.; Chrissis, J.W.

Radar Cross-Section Statistics: Gustafson, S.C.; Magee, E.P.; Pyati, V.P.; Terzuoli, A.J.

Radar Detection: Magee, E.P.; Pyati, V.P.; Terzuoli, A.J.

Radar Measurements: Collins, P.J.; Magee, E.P.; Pyati, V.P.; Temple, M.A.; Terzuoli, A.J.

Radar: Magee, E.P.; Pyati, V.P.; Temple, M.A.; Terzuoli, A.J.

Radiation Imaging: Burggraf, L.W.

Radomes: Collins, P.J.; Temple, M.A.


Real-Time Communications Protocol: Baldwin, R.O.

Reliability: Barr, D.R.; Chan, Y.; Chambal, S. P.; Crown, J.S.; Moore, A.H.; Murdock, W.P.


Research Management: Deckro, R.F.; Kloeber, J.M.

Response Surface Methodology: Lanning, J.W.

Risk Analysis: Deckro, R.F.; Kloeber, J.M.; LaPuma, P.T.; Shelley, M.L.

Risk Communication and Management: LaPuma, P.T.; Nixon, W.B.; Shelley, M.L.

Robotics: Gustafson, S.C.; Magee, E.P.; Spenny, C.H.

Routing: Bailey, T.G.; Chan, Y.; Deckro, R.F.; Hill, R.R.; Moore, J.T.

Satellite Communications Systems: Raines, R.A.; Temple, M.A.

Satellite Dynamics: Pachter, M.; Spenny, C.H.; Wiesel, W.E.


Scheduling: Deckro, R.F.; Hill, R.R.; Moore, J.T.

Scientific Visualization: Gustafson, S.C.; Lamont, G.B.

Search Theory: Lamont, G.B.; Pachter, M.

Secure Communications: Gunsch, G.H.; Potoczny, H.B.; Raines, R.A.

Semiconductor devices: Hengehold, R.L.; Largent, C.C.; Yeo, Y.K.


Semiconductors Physics: Brothers, C.P.; Hengehold, R.L.; Lott, J.A.; Marciniak, M.A.; Yeo, Y.K.

Sensor Management: McIntyre, G.A.

Sensor Scheduling: McIntyre, G.A.

Sensors: Brothers, C.P.; Burggraf, L.W.

Shell Analysis: Palazotto, A.N.
Shock and Vibration: Palazotto, A.N.
Silicon and Silicon Carbide Chemistry: Burggraf, L.W.
Smart Structures: Agnes, G.S.; Jacques, D.R.
Software Engineering, Knowledge-Based: DeLoach, S.A; Graham, R.P.; Hartrum, T.C.; Lamont, G.B.
Software Visualization: Jacobs, T.M.
Solid State Physics: Lott, J.A.
Space Communications: Raines, R.A.; Temple, M.A.
Space Electronics: Brothers, C.P.
Spatial-Temporal Modeling: Chan, Y.; Gustafson, S.C.; Lamont, G.B.
Spectral Estimation: Gustafson, S.C.; Pachter, M.
Speech and Image Processing: Gustafson, S.C.; Kabrisky, M.J.
Speech Recognition: Gustafson, S.C.; Kabrisky, M.J.
Statistical Optics: Gustafson, S.C.; Magee, E.P.; Pachter, M.
Statistics, Parametric: Gustafson, S.C.
Statistics, Environmental: Bauer, K.W.; Reynolds, D.E.
Steganography: Potoczny, H.B.
Stochastic Search Algorithms: Gustafson, S.C.; Lamont, G.B.; Pachter, M.
Strategic Management: Holt, D.T.
Stress Analysis: Torvik, P.J.
Structural Control Optimization/Dynamics: Calico, R.A.; Jacques, D.R.; Liebst, B.S.; Pachter, M.
Structural Dynamics: Turcotte, J.S.
Superlattice Structures: Lott, J.A.; Weeks, D.E.
Supersonic Flight Trajectory Optimization: Pachter, M.
Surface Chemistry and Physics: Burggraf, L.W.
Surfactant Enhanced Subsurface Remediation: Thal, A.E.
Synoptic Meteorology: Miner, C.A.
System Dynamics: Pachter, M.; Shelley, M.L.
System Identification: Pachter, M.
Systems Engineering: Miller, M.M.; Talbert, M.L.
Systems Management: Deckro, R.F.
Technology Assessment: Chan, Y.; Kloobe, J.M.
Technology Transfer: Deckro, R.F.; Goltz, M.N.
Telecommunications: Raines, R.A.; Reid, T.F.; Temple, M.A.
Test Design and Analysis: Crown, J.S.
Thrust Vector Control: Franke, M.E.; Pachter, M.
Total Quality Management: Deckro, R.F.
Trajectory Optimization: Tragesser, S.G.

Very Large Scale Integrated Circuits (VLSI): Brothers, C.P.; Lott, J.A.

Vibration and Damping: Torvik, P.J.

Vibration Suppression - Active and Passive: Agnes, G.S.; Jacques, D.R.

Vibrational Dynamics: Calico, R.A.; Pachter, M.; Palazotto, A.N.; Weeks, D.E.

Virtual Environments: Gustafson, S.C.; Jacobs, T.M.

Viscoelasticity: Palazotto, A.N.

Voice Communications: Raines, R.A.

Wargaming: Kloeyer, J.M.; McIntyre, G.A.; Pachter, M.

Wastewater Analysis and Treatment: Bleckmann, C.A.; Goltz, M.N.; Shelley, M.L.


Wavelet Analysis: Gustafson, S.C.; Kabrisky, M.J.; Oxley, M.E.

Weakly Ionized Gases: Bailey, W.F.; Della-Rose, D.J.

Weapons Effects (Non-Nuclear): Franke, M.E.

Weather Analysis and Forecasting: Miner, C.A.
3.3 FACULTY CREDENTIALS

AGNES, GREGORY S., Capt, Assistant Professor of Aerospace Engineering, Dept of Aeronautics and Astronautics, (AFIT/ENY); B.S.A.E., Rensselaer Polytechnic Institute, 1989; M.S.A.E., University of Maryland, 1991; PhD, Engineering Mechanics, Virginia Tech, 1997. Capt Agnes previously worked in the Structural Dynamics Branch of the Air Force Research Laboratory. His research interests center around active and passive vibration suppression, smart structures, and nonlinear dynamics. He has published numerous conference and journal papers and is a member of the AIAA and ASME. Tel. 937-255-6565, x4317 (DSN 785-6565 x 4317), email = Gregory.Agnes@afit.af.mil

ANDREW, JOHN M., Col, Assistant Professor of Operations Research and Head, Dept of Operational Sciences (AFIT/ENS); BS, United States Air Force Academy, 1976; SM, Harvard University, 1982; PhD, Harvard University, 1985. Col Andrew’s areas of interest include training simulations and stochastic processes. He is a member of the Institute for Operations Research and Management Science (INFORMS) and the Military Operations Research Society (MORS). Tel 937-255-6565, x4329 (DSN 785-6565, x4329), email = John.Andrew@afit.af.mil

BAILEY, T. GLENN, Lt Col, Assistant Professor of Operations Research, Dept of Operational Sciences (AFIT/ENS); BS, United States Air Force Academy, 1978; MA, Oklahoma State University, 1982; MS, Air Force Institute of Technology, 1988; PhD, University of Texas at Austin, 1995. Lt Col Bailey’s areas of interest include simulation, response surface methodology, heuristics, and stochastic programming. He is a member of the Institute for Operations Research and Management Science (INFORMS), the Society for Industrial and Applied Mathematics (SIAM), and the Military Operations Research Society (MORS). Tel 937-255-6565, x4332 (DSN 785-6565, x4332), email = Glenn.Bailey@afit.af.mil

BAILEY, WILLIAM F., Associate Professor of Physics, Dept of Engineering Physics, (AFIT/ENP); BS, United States Military Academy, 1964; MS, The Ohio State University, 1966; PhD, Air Force Institute of Technology, 1978. Professor Bailey's research interests center on weakly ionized gases and reactive kinetics, with special applications to semiconductor processing in gas discharges, shock characterization in ionized flows and solutions of the inhomogeneous electron kinetic equation. Dr. Bailey has published over 20 papers in referred conference proceedings and international journals and chaired over 25 theses and dissertations. He is a member of Tau Beta Pi, Sigma Pi Sigma, and Sigma Xi. Tel. 937-255-3636, x4501 (DSN 785-3636, x4501), email = William.Bailey@afit.af.mil

BAKER, WILLIAM P., Associate Professor of Mathematics, Dept of Mathematics and Statistics, (AFIT/ENC): BA, University of California at Irvine, 1969; MA, University of California at Irvine, 1970; PhD, Northwestern University, 1987. Dr. Baker's research interests include asymptotic and perturbation methods, wave propagation and scattering theory, applied mathematics, functional analysis, low observables, and numerical analysis. Dr. Baker's current research is in acoustical and electromagnetic scattering, and vibrational dynamics of composite sandwich material. His recent papers have been on fractional derivative models of viscoelastic materials. Dr. Baker is a Master Navigator with prior military assignments in flight test, satellite communications, cruise missile and radar analysis. Tel. 937-255-3636, x4517 (DSN 785-3636, x4517), email = William.Baker@afit.af.mil

BALDWIN, RUSTY O., Maj, Assistant Professor of Computer Engineering, Department of Electrical and Computer Engineering (AFIT/ENG), BSEE, New Mexico State University, 1987; MS, Computer Engineering, Air Force Institute of Technology, 1992; PhD, Virginia Polytechnic Institute and State University, 1999. His research interests include computer communication networks, queueing theory, performance modeling, and analysis and simulation of real-time communication systems. Tel. 937-255-3636, x4582 (DSN 785-3636, x4582), email = Rusty.Baldwin@afit.af.mil
BARR, DAVID R., Associate Professor Emeritus of Statistics, Dept of Mathematics and Statistics, (AFIT/ENC); BA, Miami University, 1954; MA, Miami University, 1954; MS, Miami University, 1957; PhD, State University of Iowa, 1964. Dr. Barr's interests include probability, statistics and stochastic processes, as well as the design of experiments. Tel. 937-255-3636, x4529 (DSN 785-3636, x4529), email = David.Barr@afit.af.mil

BAUER, KENNETH W., Jr., Professor of Operations Research, Dept of Operational Sciences (AFIT/ENS); BS, Miami University (Ohio), 1976; MEA, University of Utah, 1980; MS, Air Force Institute of Technology, 1981; PhD, Purdue University, 1987. Dr. Bauer's research interests include the statistical aspects of simulation, design of experiments, neural networks, and multivariate statistics. Tel. 937-255-6565, x4326 (DSN 785-6565, x4326), email = Kenneth.Bauer@afit.af.mil

BLECKMANN, CHARLES A., Associate Professor of Engineering and Environmental Management, Department of Systems and Engineering Management, (AFIT/ENV); BA, Secondary Education (Biology), University of Evansville, 1967; MS, Biology, Incarnate Word College, 1971; PhD, Botany, University of Arizona, 1977. Dr. Bleckmann's research interests include wastewater analyses and treatment, hazardous waste identification and management, land treatment of hazardous and non-hazardous wastes, groundwater monitoring and remediation, biodegradation and biodeterioration of materials and bioassays. Tel. 937-255-3636, x4721 (DSN 785-3636, x4721), email = Charles.Bleckmann@afit.af.mil

BONS, JEFFREY P., Maj, Assistant Professor of Aeronautical Engineering, Dept. of Aeronautics and Astronautics, (AFIT/ENY); BS, Massachusetts Institute of Technology, 1988; MS, Massachusetts Institute of Technology, 1990; PhD, Massachusetts Institute of Technology, 1997. Major Bons’ research interests include fluid dynamics and heat transfer with a focus on applications to gas turbine engines. He has published several articles relating to turbine cooling and compressor stability with a research emphasis on experimentation. Major Bons’ previous assignment was as a research engineer in the Propulsion Directorate of Wright Laboratory where he was awarded the 1995 S.D. Heron Award for Basic Research. Tel. 937-255-3636 x4643 (DSN 785-3636, x4643), email = Jeffrey.Bons@afit.af.mil

BRIDGMAN, CHARLES J., Professor Emeritus of Nuclear Engineering, Dept of Engineering Physics, (AFIT/ENP); BS, United States Naval Academy, 1952; MS, North Carolina State University, 1958; PhD, North Carolina State University, 1963. Dr. Bridgman's interest's center around nuclear weapon effects and military nuclear power applications. He has been associated with nuclear weapon defense since 1952. He was a member of the first military team to be operational on the H-bomb. His current research interest is nuclear weapon fallout modeling. He is the author of numerous technical articles in a wide variety of journals. In his 38 years on the AFIT faculty, he has chaired over 120 MS theses and PhD dissertations. He has received several awards including Tau Beta Pi Teacher of the Year and the Gage H. Crocker Outstanding Professor award. Dr. Bridgman is a Fellow of the American Nuclear Society. Tel. 937-255-3636, x4679 (DSN 785-3636, x4679), email = Charles.Bridgman@afit.af.mil

BROTHERS, CHARLES P. Jr., Maj, Assistant Professor of Electrical Engineering and Chief, Electrical Engineering Division, Dept of Electrical and Computer Engineering, (AFIT/ENG); BSEE, Portland State University, 1985; MS, University of Southern California, 1987; MSEE, Air Force Institute of Technology, 1990; PhD, Air Force Institute of Technology, 1994. Major Brothers research interests are focused on space electronics, high-performance low-power microelectronic circuits, semiconductor devices, and advanced silicon materials technologies. He is funded by the Air Force Research Laboratory to develop radiation tolerant microelectronics. He is advising PhD and MS students since his arrival at AFIT in June 1998. He has authored several papers and is a senior member in the IEEE. Tel. 937-255-3636, x4618 (DSN 785-3636, x4618), Email = Charles.Brothers@afit.af.mil
BROTHERS, HEIDI S., Maj, Assistant Professor of Engineering and Environmental Management, Department of Systems and Engineering Management, (AFIT/ENV); BS, Civil Engineering, Portland State University, 1984; MS, Systems Management, University of Southern California, 1987; PhD., Environmental Engineering, University of Cincinnati, 1995. Her research interests include air quality management, engineering management, environmental management and environmental management in acquisition. Major Brothers is a professional engineer. Tel. 937-255-3636, x4800 (DSN 785-3636 x4800), email = Heidi.Brothers@afit.af.mil

BROWN, WILLIAM M., Professor of Electrical and Computer Engineering, Dept of Electrical and Computer Engineering (AFIT/ENG); BSEE, West Virginia University, 1952; MSE., 1955, Dr. Eng., The John Hopkins University, 1957. Dr. Brown has over forty years of varied experience in research, teaching, management, and administration. He was the founder and President for 24 years of the Environmental Research Institute of Michigan, prior to which he was a Professor of Electrical and Computer Engineering at the University of Michigan. His research and teaching experience is extensive in remote sensor systems, random processes, and information theory. He has served as a member of the Air Force Scientific Advisory Board and the Army Science Board. Dr. Brown is a Fellow of the Institute of Electrical and Electronic Engineers, and a member of the National Academy of Engineering. Tel. 937-255-3636, x4612 (DSN 785-3636, x4612), email = William.Brown@afit.af.mil

BURGGRAF, LARRY W., Burggraf, Larry W., Associate Professor of Engineering Physics, Dept. of Engineering Physics (AFIT/ENP); B.A., Chemistry, Olivet Nazarene University, 1968; MS, Chemistry, Ohio State University, 1971; M.A., Applied Mathematics, University of West Florida, 1977; Ph.D., Chemistry, University of Denver, 1981; Postdoctoral Associate, Computational Chemistry, Iowa State University, 1994. Dr. Burggraf’s research applies surface physics and radiation measurements including photoluminescence spectroscopy, infrared spectroscopy, Raman spectroscopy, spectro-electrochemistry and nuclear spectrometry to solve DoD problems. Applications include chemical and biochemical detection, MEMS photothermal IR detectors, nuclear fuels detection, uranium oxide surface chemistry, chemical toxicity, and imaging radiation sources and hidden interfaces using Compton CT imaging. His surface modeling research centers on using hybrid molecular mechanics/molecular orbital models to predict surface structures for silicon, silicon carbide, silica and alumina surfaces. Tel. 937-255-3636 (DSN 785-3636) ext. 4507, email = Larry.Burggraf@afit.af.mil

CALICO, ROBERT A., Jr., Professor of Aerospace Engineering and Dean of Graduate School of Engineering and Management (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.af.mil

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QUINN, DENNIS W., P.E., Professional Engineer, State of Ohio, E-056873

SPENNY, CURTIS H., P.E., Professional Engineer, State of Ohio, E-038759
3.6 DOCTORAL DISSERTATIONS


Maj J. Mark DelGrande, “Positive Anistropic Group Scattering Cross Sections For Radiation Transport,” (AFIT/DS/ENP/99-03), Faculty Advisor: Mathews, Sponsor: DTRA/NSN

Maj Donald E. Duckro, “Multiple Comparison Pruning of Neural Networks,” (AFIT/DS/ENC/99S-02), Faculty Advisor: Quinn, Sponsor: DAGSI

Capt Brian L. Evans, “Fan-Beam Multiplexed Compton Scatter Tomography For Single-Sided Noninvasive Inspection,” (AFIT/DS/ENP/99-01), Faculty Advisor: Martin, Sponsor: AFRL/MLL

Capt Kelly A. Greene, “Feature Saliency In Artificial Neural Networks With Application To Modeling Workload,” (AFIT/DS/ENS/98-02), Faculty Advisor: Bauer, Sponsor: AFOSR/NL


Capt John G. Keller, “SCAN-IT: A Computer Vision Model Motivated by Human Physiology and Behavior,” (AFIT/DS/ENG/99J-03), Faculty Advisor: Rogers, Sponsor: AFRL/IFEC

Claudia V. Kropas-Hughes, “Image Fusion Using Autoassociative-Heteroassociative Neural Networks,” (AFIT/DS/ENG/99J-06), Faculty Advisor: Rogers, Sponsor: AFRL/MLMR

Capt James P. Lake, “Flow Separation on a Turbine Blade in Cascade at Low Reynolds Number,” (AFIT/DS/ENY/99-01), Faculty Advisor: King, Sponsor: AFRL/PRTT


3.7 MASTERS’ THESES BY PROGRAM

AERONAUTICAL ENGINEERING

Capt M.J. Chapa, "A Nonlinear Pre-Filter To Prevent Departure And/Or Pilot-Induced Oscillations Due To Actuator Rate Limiting," (AFIT/GAE/ENY/99M-01), Faculty Advisor: Liebst, Sponsor: AFRL/VAAD

Capt D.S. Conley, "Fatigue Response of Repaired Thick Aluminum Panels With Bondline Flaws," (AFIT/GAE/ENY/99M-03), Faculty Advisor: Mall, Sponsor: AFRL/VASE

2d Lt J.M. Corneille, "Wind Tunnel Investigation Of Joined Wing Configuration," (AFIT/GAE/ENY/99J-02), Faculty Advisor: Franke, Sponsor: AFRL/MNAV


Capt F.L. Dement, "Effects Of Pressure Gradients on Turbulent Boundary Layer Flow Over a Flat Plate With Riblets," (AFIT/GAE/ENY/99M-09), Faculty Advisor: King, Sponsor: AFRL/PRTT


1st Lt A.G. Harris, "Robust Eigenstructure Assignment Using Positive Definite Output Feedback Control," (AFIT/GAE/ENY/99M-06), Faculty Advisor: Liebst, Sponsor: AFRL/VSOC

2d Lt O.A. Powell, "Heat Transfer To The Inclined Trailing Wall Of An Open Cavity," (AFIT/GAE/ENY/99M-07), Faculty Advisor: Bons, Sponsor: AFRL/PRSS


Capt B.W. St Germain, "Tip Vortex And Crenulation Effects In A Compressor Cascade With Moving Endwall," (AFIT/GAE/ENY/99M-02), Faculty Advisor: King, Sponsor: AFRL/PRTF

APPLIED PHYSICS


Capt Jay Foil, “Use of Diffuse Reflectance Spectroscopy to Determine Desorption Coefficients of Trichloroethylene from Powdered Soils,”(AFIT/GAP/ENP/99M-02), Faculty Advisor: Wolf

Capt David Gerts, “Characterization of the Double Scatter Spectrum in Multiplexed Compton Scatter Tomography,” (AFIT/GAP/ENP/99M-03), Faculty Advisor: Martin, Sponsor: AFRL/MLLP

Capt Kelly Law, “Validation of the Gallagher Protonospheric Model,” (AFIT/GAP/ENP/99M-04), Faculty Advisor: Goldizen, Sponsor: AFRL/VS

2d Lt Christian Morath, “Electrical Characterization of Ion Implanted 4H-Silicon Carbide,”
(AFIT/GAP/ENP/99M-05), Faculty Advisor: Yeo, Sponsor: AFRL/MLPO

Capt Michael J. Murphy, “Modeling Four-Component Uranium Gaseous Diffusion Enrichment Cascades,” (AFIT/GAP/ENP/99J-01), Advisor: Mathews


1st Lt Dennis Rand, “Characterization of Weathering in Uranium Oxide Particles by Raman Photoluminescence and Infrared Spectroscopy,” (AFIT/GAP/ENP/99M-08), Faculty Advisor: Martin, Sponsor: AFTAC/TMA

1st Lt Blake Rodgers, “Laser Beam Combining and Cleanup Via Stimulated Brillouin Scattering in Multimode Optical Fibers,” (AFIT/GAP/ENP/99M-09), Faculty Advisor: Roh, Sponsor: AFRL/DELS

Capt Marc Sands, “An Investigation into the Noninvasive Assessment of Bone Density Using Multiplexed Compton Scattered Tomography,” (AFIT/GAP/ENP/99M-10), Faculty Advisor: Martin, 74th Med Group Wright Patterson Medical Center

Capt Scott H. Sinkular, “Dose Rate Estimates for Reprocessing Spent Nuclear Fuel,”
(AFIT/GAP/ENP/99M-11), Advisor: Mathews

Capt Brian Smith, “A Continuous Wave Atomic Bromine Laser Produced by Photolysis of Iodine Monobromide,”
(AFIT/GAP/ENP/99J-12), Faculty Advisor: Perram, Sponsor: AFRL/DEL

Capt Christopher Smithtro, “Numerical Solutions to the Two-Dimensional Boltzmann Equation,”
(AFIT/GAP/ENP/99J-13), Faculty Advisor: Bailey, Sponsor: AFRL/PR


(AFIT/GAP/ENP/99J-16), Faculty Advisor: Burggraf, Sponsor: HQ CBDCOM/SCBRD

ASTRONAUTICAL ENGINEERING

Capt G.A. Leisman & 1st Lt A.D. Wallen, "Design And Analysis Of On-Orbit Servicing Architectures For The Global Positioning System Constellation," (AFIT/GA/GOR/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS


COMPUTER ENGINEERING


COMPUTER SCIENCE


1st Lt E. Colonese, “Methodology for Integrating the Scenario Database of Simulation Systems,” (AFIT/GCS/ENG/99J-03), Faculty Advisor: Hartrum, Sponsor: AFRL/SNZW


1st Lt L.P. Hammack, "Parallel Data Mining With The Message Passing Interface Standard on Clusters Of Personal Computers," (AFIT/GCS/ENG/99M-06), Faculty Advisor: Lamont, Sponsor: AFRL/IFTA

2d Lt G.M. Harrison, "A Real-Time Airdrop Visualization in a Virtual Environment," (AFIT/GCS/ENG/99M-07), Faculty Advisor: Jacobs, Sponsor: ASC/YC

Capt R.H. Hartz, "Methodology for Application Design Using Information Dissemination and Active Database Technologies," (AFIT/GCS/ENG/99M-08), Faculty Advisor: Potoczny, Sponsor: AFRL/SNAA


Capt A.W. Learn, "Target Pose Estimation from Radar Data Using Adaptive Networks," (AFIT/GCS/ENG/99M-10), Faculty Advisor: Gustafson, Sponsor: AFRL/SNAT


Capt C.G. Marks, "Extensible Multi-Agent System For Heterogeneous Database Mining And Verification Association Rule Mining and Unification," (AFIT/GCS/ENG/99M-12), Faculty Advisor: DeLoach, Sponsor: AFIT/ENG

Capt D.L. Moraes, "Transforming COBOL Legacy Software To A Generic Imperative Model," (AFIT/GCS/ENG/99M-22), Faculty Advisor: Graham, Sponsor: AFRL/IFTD


Capt T.I. Page, "Incorporating Scene Mosaics As Visual Indexes Into UAV Video Imagery Databases," (AFIT/GCS/ENG/99M-16), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

1st Lt B.L. Pyburn, "Analysis of the Applicability of Video Segmentation to Unmanned Aerial Vehicle Surveillance Video," (AFIT/GCS/ENG/99M-17), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC


ELECTRICAL ENGINEERING


Capt C.A. Bohn, "Asymmetric Load Balancing On A Heterogeneous Cluster Of PCs," (AFIT/GE/ENG/99M-02), Faculty Advisor: Lamont, Sponsor: ASC/HP


Capt J.G. Cochran, "TE Scattering From Bubbles In RAM," (AFIT/GE/ENG/99M-04), Faculty Advisor: Collins, Sponsor: ASC/ENAD

Mr. C.R. Colon, "An Efficient GPS Position Determination Algorithm," (AFIT/GE/ENG/99M-33), Faculty Advisor: Pachter, Sponsor: AFRL/VAAD


1st Lt B.J. Crothers, "Radar Cross-Section Enhancement Of Simple Targets," (AFIT/GE/ENG/99M-06), Faculty Advisor: Pyati, Sponsor: AFRL/XPN


Capt A.J. Feltman, "Trade-off Analysis Of Communications Capabilities Of Intersatellite Links," (AFIT/GE/ENG/99M-08), Faculty Advisor: Raines, Sponsor: SMC/XRI


Capt S.R. Graham, "An Immersive User Interface For The Cave Automatic Virtual Environment," (AFIT/GE/ENG/99M-12), Faculty Advisor: Jacobs, Sponsor: ASC/YCA

1st Lt B.M. Huether, "Optimal Wavelet Denoising for High Range Resolution Radar Classification," (AFIT/GE/ENG/99M-14), Faculty Advisor: Gustafson, Sponsor: AFRL/SNZT


2d Lt J.M. Kos, "Graphical User Interface And Microprocessor Control Enhancement Of A Pseudorandom Code Generator," (AFIT/GE/ENG/99M-15), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

Capt A. MacDonald, "Classification Of High Range Resolution Radar Returns Using Hidden Markov and Gaussian Mixture Models," (AFIT/GE/ENG/99M-16), Faculty Advisor: Rogers, Sponsor: AFRL/SNZT

2d Lt R. Mediavilla, "Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-18), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS


2d Lt D.J. Petrovich, "Structural Emergence and the Collaborative Behavior of Nano-Satellites," (AFIT/GE/ENG/99M-22), Faculty Advisor: Gustafson, Sponsor: AFRL/ATT

Capt T.S. Pittman, "A Climatology-Based Model For Long-Term Prediction Of Radar Beam Refraction," (AFIT/GE/ENG/99M-23), Faculty Advisor: Pyati, Sponsor: NAIC/TAER


2d Lt B.J. Vanek, "GPS Signal Offset Detection and Noise Strength Estimation In A Parallel Kalman Filter Algorithm," (AFIT/GE/ENG/99M-30), Faculty Advisor: Maybeck, Sponsor: AFRL/SNAR


ELECTRO OPTICS

Capt Bradley Rennich, “Active Multispectral Band Selection and Reflectance Measurement System,” (AFIT/GEO/ENP/99M-01), Faculty Advisor: Roh, Sponsor: AFRL/SNJ

ENGINEERING AND ENVIRONMENTAL MANAGEMENT


Capt S.L. Anason, "Cost-Benefit Analysis of Cosolvent Flushing to Treat NAPL's at Contaminated Sites," (AFIT/GEE/ENV/99M-02), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE


Capt B.W. Burke, "Biodegradation Of Aircraft Deicing Fluid Components In Soil," (AFIT/GEE/ENV/99M-04), Faculty Advisor: Bleckmann, Sponsor: AFRL/MLSE

Capt A.L. Gepner, Jr., "Textual Analysis of Environmental Compliance Assessment Program Findings," (AFIT/GEE/ENV/99M-05), Faculty Advisor: Lofgren

2d Lt C.A. Garrett, "Optimization of In Situ Aerobic Cometabolic Bioremediation Of Trichloroethylene-Contaminated Groundwater Using A Parallel Genetic Algorithm," (AFIT/GEE/ENG/99M-02), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

Capt J.M. Griffin, "Expeditious Method For Estimating Cleanup Costs At Department of Defense Installations in Korea," (AFIT/GEE/ENV/99M-06), Faculty Advisor: Goltz, Sponsor: INSS


Capt N.W. Kassel, "Development Of Site Characterization Simulator," (AFIT/GEE/ENG/99M-01), Faculty Advisor: Goltz, Sponsor: AFIT/CEV


1st Lt D.D. Veerkamp, "Natural Attenuation Of Chlorinated Ethenes By Anaerobic Reductive Dechlorination Coupled With Aerobic Cometabolism," (AFIT/GEE/ENV/99M-16), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE

METEOROLOGY

Capt Mark Adair, “A Refinement and Cross-Validation of the Special Sensor Microwave Imager (SSM/I) Calibration-Validation (LV), (AFIT/GM/ENP/99M-01), Faculty Advisor: Goldizen, Sponsor: HQ AFWA/DNXM


Capt Christopher C. Cox, “A Comparison of Horizontal Cloud-to-Ground Lightning Flash Distance Using Weather Surveillance Radar and the Distance Between Successive Flashes Method,” (AFIT/GM/ENP/99M-03); Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt John Crane, “Improving Cape Canaveral’s Next-Day Thunderstorms Forecasting Using a Meso-ETA Model-Based Index,” (AFIT/GM/ENP/99M-04), Faculty Advisor: Walters, Sponsor: 45 WS/SYR

1st Lt Michael W. Engel, “Evaluation of Barnes’ Method and Kriging for Estimating the Low Level Wind Field,” (AFIT/GM/ENP/99M-05); Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

Capt James Everitt, “An Improved Thunderstorm Forecast Index for Cape Canaveral Florida,” (AFIT/GM/ENP/99M-06), Faculty Advisor: Miner, Sponsor: 45WS/SYR


Capt Travis A. Steen, “Forecasting Downdraft Wind Speeds Associated with Airmass Thunderstorms for Peterson Air Force Base, Colorado, Using the WSR-88D,” (AFIT/GM/ENP/99M-10), Faculty Advisor: Miner; Sponsor: HQ AFSPC/DORW

Capt Steven J. Storch, “Predicting Launch Pad Winds at the Kennedy Space Center with a Neural Network Model,” (AFIT/GM/ENP/99M-11), Faculty Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt Gerald Sullivan, “Using the WSR-88D to Forecast Downburst Winds at Cape Canaveral Air Station and the Kennedy Space Center,” (AFIT/GM/ENP/99M-12), Faculty Advisor: Walters, Sponsor: 45th WS/SYR

OPERATIONAL ANALYSIS

1st Lt C. B. Bassham, “Visualizing Early-Stage Breast Cancer Tumors in a Mammographic Environment Through a 3-Dimensional Mathematical Model,” (AFIT/GOA/ENS/99M-01), Faculty Advisor: Bauer, Sponsor: AFRL

Capt K. S. Bellamy, “Analysis of a Non-Trivial Queuing Network,” (AFIT/GOA/ENS/99M-02), Faculty Advisor: Murdock & Reid, Sponsor: NSA


Maj T. S. Szvetecz, “C-17 Strategic Airdrop Simulation and Analysis,” (AFIT/GOA/ENS/99M-08), Faculty Advisor: Bailey, Sponsor: ASC/YC


OPERATIONS RESEARCH

Capt M. K. Betts, “Applying Value-Focused Thinking to Eliminating Enemy Satellite Capabilities,” (AFIT/GOR/ENS/99M-02), Faculty Advisor: Murdock, Sponsor: Space Battlelab


1st Lt P. M. Kerchner, Jr, “A Value-Focused Approach to Psychological Operations,” (AFIT/GOR/ENS/99M-07), Faculty Advisor: Deckro, Sponsor: JCCWC


Capt T. I. Laine, “Selection of Psychophysiological Features Across Subjects for Classifying Workload Using Artificial Neural Networks (ANNs),” (AFIT/GOR/ENS/99M-09), Faculty Advisor: Bauer, Sponsor: AFOSR/NL, AFRL/HECP

Capt E. L. McLarney, “Using Simulation to Model the Army Recruiting Station with Multi-Quality Prospects,” (AFIT/GOR/ENS/99M-10), Faculty Advisor: Miller, Sponsor: US Army Recruiting Command


1st Lt S. L. Naylor, “Portfolio Selection of Innovative Technologies Via Life Cycle Cost Modeling,” (AFIT/GOR/ENS/99M-12), Faculty Advisor: Deckro/Moore, Sponsor: AFIT/ENS

Capt F. N. Nelson, “A Validation Assessment of THUNDER 6.5’s Intelligence, Surveillance, and Reconnaissance Module,” (AFIT/GOR/ENS/99M-13), Faculty Advisor: McIntyre, Sponsor: Space Warfare Center


Maj C. H. Park, “A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Kurtosis,” (AFIT/GOR/ENC/99M-02), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Maj J. S. Park, “A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Q-Statistic,” (AFIT/GOR/ENC/99M-03), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE


1st Lt A. D. Wallen, “Design and Analysis of on-Orbit Servicing Architectures for the Global Positioning System Constellation,” (AFIT/GOR/ENY/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS


Capt M. F. Winthrop, “Selection of Best Technologies that Support the Warfighter for Air Vehicles Directorate,” (AFIT/GOR/ENS/99M-18), Faculty Advisor: Deckro/Kloeber, Sponsor: AFRL/XP

SPACE OPERATIONS


1st Lt Toby G. Doran, “Toward Development of An Integrate Aerospace Power Doctrine,” (AFIT/GSO/ENY/99M-02) Faculty Advisors: Kramer and Murdock, Sponsor: AFSB/XSB


SYSTEMS ENGINEERING

1st Lt O. Okuyucu, “Preliminary Design Of A Joint Simulation, Analysis, And Wargaming Center For The Turkish General Staff,” (AFIT/GSE/ENY/98M-01), Faculty Advisor: Kramer, Sponsor: ASC/YPX-SNR-TK


3.8 SPONSORS OF MASTERS’ THESES

NOTE: (  ) indicates page number

AIR COMBAT COMMAND (55)
- AEF BATTLELAB
- COMMAND AND CONTROL BATTLELAB
- UAV BATTLELAB

AIR EDUCATION AND TRAINING COMMAND (55)
- AIR FORCE INSTITUTE OF TECHNOLOGY

AIR FORCE (56)

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- AERONAUTICAL SYSTEMS CENTER
- 88TH WEATHER SQUADRON
- AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
- AIR FORCE RESEARCH LABORATORY
- SPACE AND MISSILE SYSTEMS CENTER

AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER (63)

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AIR INTELLIGENCE AGENCY (65)

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ARMY (65)
- US ARMY EDGEWOO CHEMICAL BIOLOGICAL CENTER
- US ARMY RECRUITING COMMAND
- US ARMY SAFETY CENTER

ATLANTIC COMMAND (65)
- JOINT COMMAND AND CONTROL WARFARE CENTER

AUSTRALIAN DEPARTMENT OF DEFENSE (65)

BRAZILIAN AIR FORCE (66)

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DEPARTMENT OF DEFENSE (66)
- DEFENSE INFORMATION SYSTEMS AGENCY
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Capt Jay Foil, “Use of Diffuse Reflectance Spectroscopy to Determine Desorption Coefficients of Trichloroethylene from Powdered Soils,” (AFIT/GAP/ENP/99M-02), Faculty Advisor: Wolf, Sponsor: AFIT

Capt A.L. Gepner, Jr., ”Textual Analysis of Environmental Compliance Assessment Program Findings,” (AFIT/GEE/ENG/99M-05), Faculty Advisor: Lofgren, Sponsor: AFIT


Capt C.G. Marks, "Extensible Multi-Agent System For Heterogeneous Database Mining And Verification Association Rule Mining and Unification," (AFIT/GCS/ENG/99M-12), Faculty Advisor: DeLoach, Sponsor: AFIT/ENG


1st Lt S. L. Naylor, “Portfolio Selection of Innovative Technologies Via Life Cycle Cost Modeling,” (AFIT/GOR/ENS/99M-12), Faculty Advisor: Deckro/Moore, Sponsor: AFIT/ENS


AIR FORCE


AIR FORCE MATERIEL COMMAND


Capt Marc Sands, "An Investigation into the Noninvasive Assessment of Bone Density Using Multiplexed Compton Scattered Tomography," (AFIT/GAP/ENP/99M-10), Faculty Advisor: Martin, Sponsor: 74th Med Group Wright Patterson Medical Center

AERONAUTICAL SYSTEMS CENTER

Capt C.A. Bohn, "Asymmetric Load Balancing On A Heterogeneous Cluster Of PCs," (AFIT/GE/ENG/99M-02), Faculty Advisor: Lamont, Sponsor: ASC/HP

Capt J.G. Cochran, "TE Scattering From Bubbles In RAM," (AFIT/GE/ENG/99M-04), Faculty Advisor: Collins, Sponsor: ASC/ENAD

Capt M. E. Delory, "AMRAAM Fleet Life Cycle Simulation," (AFIT/GOR/ENS/99M-04), Faculty Advisor: Murdock/Miller, Sponsor: ASC/YAA


Capt S.R. Graham, "An Immersive User Interface For The Cave Automatic Virtual Environment," (AFIT/GE/ENG/99M-12), Faculty Advisor: Jacobs, Sponsor: ASC/YCA

2d Lt G.M. Harrison, "A Real-Time Airdrop Visualization in a Virtual Environment," (AFIT/GCS/ENG/99M-07), Faculty Advisor: Jacobs, Sponsor: ASC/YC

1st Lt O. Okuyucu, "Preliminary Design Of A Joint Simulation, Analysis, And Wargaming Center For The Turkish General Staff," (AFIT/GSE/ENY/98M-01), Faculty Advisor: Kramer, Sponsor: ASC/YPX-SNR-TK
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88th WEATHER SQUADRON


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Capt T. I. Laine, “Selection of Psychophysiological Features Across Subjects for Classifying Workload Using Artificial Neural Networks (ANNs),” (AFIT/GOR/ENS/99M-09), Faculty Advisor: Bauer, Sponsor: AFOSR/NL, AFRL/HECP

2d Lt T.A. Niday, "Inelastic Scattering Matrix Elements for the Collision B(2P_{1/2}) + H_2(j) + B(2P_{3/2}) + H_2(j)," (AFIT/GAP/ENP/99M-06), Faculty Advisor: Weeks, Sponsor: AFOSR/NL


AIR FORCE RESEARCH LABORATORY

Capt S.L. Anason, "Cost-Benefit Analysis of Cosolvent Flushing to Treat NAPL's at Contaminated Sites," (AFIT/GEE/ENV/99M-02), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE


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1st Lt C. B. Bassham, “Visualizing Early-Stage Breast Cancer Tumors in a Mammographic Environment Through a 3-Dimensional Mathematical Model,” (AFIT/GOA/ENS/99M-01), Faculty Advisor: Bauer, Sponsor: AFRL


Capt B.W. Burke, "Biodegradation Of Aircraft Deicing Fluid Components In Soil," (AFIT/GE/ENV/99M-04), Faculty Advisor: Bleckmann, Sponsor: AFRL/MLSE

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1st Lt L.P. Hammack, "Parallel Data Mining With The Message Passing Interface Standard on Clusters Of Personal Computers," (AFIT/GCS/ENG/99M-06), Faculty Advisor: Lamont, Sponsor: AFRL/IFTA

1st Lt A.G. Harris, "Robust Eigenstructure Assignment Using Positive Definite Output Feedback Control," (AFIT/GAE/ENY/99M-06), Faculty Advisor: Liebst, Sponsor: AFRL/VSOC

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1st Lt B.M. Huether, "Optimal Wavelet Denoising for High Range Resolution Radar Classification," (AFIT/GE/ENG/99M-14), Faculty Advisor: Gustafson, Sponsor: AFRL/SNZT


2d Lt J.M. Kos, "Graphical User Interface And Microprocessor Control Enhancement Of A Pseudorandom Code Generator," (AFIT/GE/ENG/99M-15), Faculty Advisor: Temple, Sponsor: AFRL/SNRW

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Capt A. MacDonald, "Classification Of High Range Resolution Radar Returns Using Hidden Markov and Gaussian Mixture Models," (AFIT/GE/ENG/99M-16), Faculty Advisor: Rogers, Sponsor: AFRL/SNAT

2d Lt R. Mediavilla, "Terrain Backscattering Coefficient Generator," (AFIT/GE/ENG/99M-18), Faculty Advisor: Pyati, Sponsor: AFRL/SNAS

Capt D.L. Moraes, "Transforming COBOL Legacy Software To A Generic Imperative Model," (AFIT/GCS/ENG/99M-22), Faculty Advisor: Graham, Sponsor: AFRL/IFTD

2d Lt Christian Morath, “Electrical Characterization of Ion Implanted 4H-Silicon Carbide,” (AFIT/GAP/ENP/99M-05), Faculty Advisor: Yeo, Sponsor: AFRL/MLPO


Capt T.I. Page, "Incorporating Scene Mosaics As Visual Indexes Into UAV Video Imagery DataBases," (AFIT/GCS/ENG/99M-16), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

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2d Lt O.A. Powell, "Heat Transfer To The Inclined Trailing Wall Of An Open Cavity," (AFIT/GAE/ENY/99M-07), Faculty Advisor: Bons, Sponsor: AFRL/PRSS


1st Lt B.L. Pyburn, "Analysis of the Applicability of Video Segmentation to Unmanned Aerial Vehicle Surveillance Video," (AFIT/GCS/ENG/99M-17), Faculty Advisor: Talbert, Sponsor: AFRL/IFEC

Capt Bradley Rennich, “Active Multispectral Band Selection and Reflectance Measurement System,” (AFIT/GEO/ENP/99M-01), Faculty Advisor: Roh, Sponsor: AFRL/SNJ

1st Lt Blake Rodgers, “Laser Beam Combining and Cleanup Via Stimulated Brillouin Scattering in Multimode Optical Fibers,” (AFIT/GAP/ENP/99M-09), Faculty Advisor: Roh, Sponsor: AFRL/DELS


Capt Christopher Smithtro, "Numerical Solutions to the Two-Dimensional Boltzmann Equation," (AFIT/GAP/ENP/99J-13), Faculty Advisor: Bailey, Sponsor: AFRL/PR

Capt B.W. St Germain, "Tip Vortex And Crenulation Effects In A Compressor Cascade With Moving Endwall," (AFIT/GAE/ENY/99M-02), Faculty Advisor: King, Sponsor: AFRL/PRTF


2d Lt B.J. Vanek, "GPS Signal Offset Detection and Noise Strength Estimation In A Parallel Kalman Filter Algorithm," (AFIT/GE/ENG/99M-30), Faculty Advisor: Maybeck, Sponsor: AFRL/SNAR

1st Lt D.D. Veerkamp, "Natural Attenuation Of Chlorinated Ethenes By Anaerobic Reductive Dechlorination Coupled With Aerobic Cometabolism," (AFIT/GEE/ENV/99M-16), Faculty Advisor: Goltz, Sponsor: AFRL/MLQE


Capt M. F. Winthrop, “Selection of Best Technologies that Support the Warfighter for Air Vehicles Directorate,” (AFIT/GOR/ENS/99M-18), Faculty Advisor: Deckro/Kloeber, Sponsor: AFRL/XP

SPACE AND MISSILE SYSTEMS CENTER

Capt A.J. Feltman, “Trade-off Analysis Of Communications Capabilities Of Intersatellite Links,” (AFIT/GE/ENG/99M-08), Faculty Advisor: Raines, Sponsor: SMC/XRI


1st Lt A. D. Wallen, “Design and Analysis of on-Orbit Servicing Architectures for the Global Positioning System Constellation,” (AFIT/GOR/ENY/99M-01), Faculty Advisor: Kramer, Sponsor: SMC/CZS

AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER

1st Lt T. Memis, “A New Sequential Goodness-of-Fit Test for the Three-Parameter Weibull Distribution with Known Shape Parameter Value Based on the Skewness and the Q-Statistic GOF Test Statistics,” (AFIT/GOR/ENC/99M-01), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Maj C. H. Park, “A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Kurtosis,” (AFIT/GOR/ENC/99M-02), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

Maj J. S. Park, “A New Sequential Goodness-of-Fit Test for a Family of Two-Parameter Gamma Distributions with Known Shape Based on Skewness and Q-Statistic,” (AFIT/GOR/ENC/99M-03), Faculty Advisor: Crown, Sponsor: HQ AFOTEC/TSE

AIR FORCE PERSONNEL OPERATIONS AGENCY


AIR FORCE SPACE COMMAND

Capt Travis A. Steen, “Forecasting Downdraft Wind Speeds Associated with Airmass Thunderstorms for Peterson Air Force Base, Colorado, Using the WSR-88D,” (AFIT/GM/ENP/99M-10); Faculty Advisor: Miner; Sponsor: HQ AFSPC/DORW

SPACE BATTLELAB

Capt M. K. Betts, “Applying Value-Focused Thinking to Eliminating Enemy Satellite Capabilities,” (AFIT/GOR/ENS/99M-02), Faculty Advisor: Murdock, Sponsor: Space Battlelab

1st Lt Toby G. Doran, “Toward Development of An Integrated Aerospace Power Doctrine,” (AFIT/GSO/ENY/99M-02) Faculty Advisors: Kramer and Murdock, Sponsor: AFSB/XSB

SPACE WARFARE CENTER

Capt F. N. Nelson, “A Validation Assessment of THUNDER 6.5’s Intelligence, Surveillance, and Reconnaissance Module,” (AFIT/GOR/ENS/99M-13), Faculty Advisor: McIntyre, Sponsor: Space Warfare Center
AIR FORCE TECHNICAL APPLICATIONS CENTER


Capt Michael J. Murphy, “Modeling Four-Component Uranium Gaseous Diffusion Enrichment Cascades,” (AFIT/GAP/ENP/99J-01), Advisor: Mathews, Sponsor: AFTAC

1st Lt Dennis Rand, “Characterization of Weathering in Uranium Oxide Particles by Raman Photoluminescence and Infrared Spectroscopy,” (AFIT/GAP/ENP/99M-08), Faculty Advisor: Martin, Sponsor: AFTAC/TMA


AIR FORCE WEATHER AGENCY

Capt Mark Adair, “A Refinement and Cross-Validation of the Special Sensor Microwave Imager (SSM/I) Calibration-Validation (LV)”, (AFIT/GM/ENP/99M-01), Faculty Advisor: Goldizen, Sponsor: HQ AFWA/DNXM

45TH WEATHER SQUADRON (CAPE CANAVERAL/KENNEDY SPACE CENTER)

Capt Christopher C. Cox, “A Comparison of Horizontal Cloud-to-Ground Lightning Flash Distance Using Weather Surveillance Radar and the Distance Between Successive Flashes Method,”(AFIT/GM/ENP/99M-03); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt John Crane, “Improving Cape Canaveral’s Next-Day Thunderstorms Forecasting Using a Meso-ETA Model-Based Index,” (AFIT/GM/ENP/99M-04), Faculty Advisor: Walters, Sponsor: 45 WS/SYR

1st Lt Michael W. Engel, “Evaluation of Barnes’ Method and Kriging for Estimating the Low Level Wind Field,” (AFIT/GM/ENP/99M-05); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

Capt James Everitt, “An Improved Thunderstorm Forecast Index for Cape Canaveral Florida,” (AFIT/GM/ENP/99M-06), Faculty Advisor: Miner, Sponsor: 45WS/SYR

Capt Steven J. Storch, “Predicting Launch Pad Winds at the Kennedy Space Center with a Neural Network Model,” (AFIT/GM/ENP/99M-11); Advisor: Miner; Sponsor: 45th Weather Squadron (Cape Canaveral/Kennedy Space Center)

1st Lt Gerald Sullivan, “Using the WSR-88D to Forecast Downburst Winds at Cape Canaveral Air Station and the Kennedy Space Center,” (AFIT/GM/ENP/99M-12), Faculty Advisor: Walters, Sponsor: 45th WS/SYR
AIR INTELLIGENCE AGENCY


Capt T.S. Pittman, "A Climatology-Based Model For Long-Term Prediction Of Radar Beam Refraction," (AFIT/GE/ENG/99M-23), Faculty Advisor: Pyati, Sponsor: NAIC/TAER

AIR MOBILITY COMMAND


ARMY

US ARMY EDGEWOOD CHEMICAL BIOLOGICAL CENTER


US ARMY RECRUITING COMMAND


US ARMY SAFETY CENTER


ATLANTIC COMMAND

JOINT COMMAND & CONTROL WARFARE CENTER

1st Lt P. M. Kerchner, Jr, “A Value-Focused Approach to Psychological Operations,” (AFIT/GOR/ENS/99M-07), Faculty Advisor: Deckro, Sponsor: JCCWC

AUSTRALIAN DEPARTMENT OF DEFENCE

BRAZILIAN AIR FORCE


CANADIAN FORCES


DEPARTMENT OF DEFENSE

DEFENSE INFORMATION SYSTEMS AGENCY


DEFENSE THREAT REDUCTION AGENCY


NATIONAL SECURITY AGENCY

Capt K. S. Bellamy, “Analysis of a Non-Trivial Queuing Network,” (AFIT/GOA/ENS/99M-02), Faculty Advisor: Murdock & Reid, Sponsor: NSA

INSTITUTE FOR NATIONAL SECURITY STUDIES

Capt J.M. Griffin, "Expeditious Method For Estimating Cleanup Costs At Department of Defense Installations in Korea," (AFIT/GEE/ENV/99M-06), Faculty Advisor: Goltz, Sponsor: INSS


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION


THE BOEING COMPANY

FUNDED RESEARCH PROJECTS

[* Denotes duplicate entry, multiple faculty.]

AGNES, Capt GREGORY S. (ENY)

Agnes, “Vibration Suppression of Bladed-Disk Assemblies,” ENY, Sponsor: AFOSR
Agnes, “AFIT Space Research,” ENY, Sponsor: DoD
Agnes, “Smart Structures for Vibration Suppression of Optical Surfaces,” ENY, Sponsor: AFOSR
*Collins, P.J. and G.S. Agnes, “RCS Comparisons of Traditional and Adaptive UAV Wings,” ($65,000), ENG, Sponsor: DARPA/DSO

BAILEY, Lt Col T. GLENN (ENS)

Bailey, “C-17 Strategic Brigade Airdrop Simulation and Analysis,” ENS, Sponsor: ASC/YC

BAUER, KENNETH W. (ENS)

Bauer, “The Mathematical Modeling of Mental Workload using Artificial Neural Networks,” ENS, Sponsor: AFOSR.
*Bauer and Lanning “Feature Selection in Recurrent Neural Networks (RNN) with Application to Estimating Pilot Workload,” ENS, Sponsor: AFOSR
*Bauer and Miller, “An Investigation of Possible Solutions to the Technical Barriers facing Performance Estimation for MSTAR,” ENS, Sponsor: AFRL/SNA.

BONS, Major Jeffrey P. (ENY)

BROTHERS, Maj CHARLES P., JR. (ENG)

Brothers, C.P., Jr., “Advanced VLSI Research,” ($15,000), ENG, Sponsor: AFRL/IFTC.

Brothers, C.P., Jr., “Space Electronics Research,” ($2,000), ENG, Sponsor: AFRL/VSSE.

Brothers, C.P., Jr., researcher on Dr. Lamont’s program, “Global Information Compression Methodology & Implementation for Enhanced C4ISR System Integration,” ENG, Sponsor: DAGSI

BURGGRAF, LARRY W. (ENP)


Burggraf, L.W. and J.B. Martin, “Multiplexed Compton Imaging of Hidden Corrosion” (QWLML977200004), AFRL/ML $75K FY 97, $10.4K FY98.


CHAN, YUPO (ENS)


COLLINS, Maj PETER J. (ENG)

*Collins, P.J. and G.S. Agnes, “RCS Comparisons of Traditional and Adaptive UAV Wings,” ($65,000), ENG, Sponsor: DARPA/DSO

Collins, P.J., “HPM Susceptibility Models,” ($30,000 in ’98), ENG, Sponsor: AFRL/DEPA.

*Terzuoli, A.J., Jr., G. Agnes, and P.J. Collins, “Effects of Aircraft Flex on RCS.” Sponsor: DARPA, ASC/EN, and AFRL/SN


DECKRO, RICHARD F. (ENS)


Deckro, “Rapid Approaches to Joint Campaign Planning,” ENS, Sponsor: Air Force Office of Scientific Research

*Deckro, Jackson, Kloebber, and Doyle, “A Value Function Approach to Information Operations Measures of Merit,” ENS, Sponsor: JC²WC and USSOCOM

*Kloeber, Jackson, and Deckro, “Designing a CERCLA Based Hierarchy for DNAPL Remediation Technology Selection,” ENS, Sponsor: Department of Energy

*Jackson, Kloebber, and Deckro, “A Risk Profile for Remediation Technologies,” ENS, Sponsor: Department of Energy

*Deckro, Kloebber, and Jackson, “Technology Selection for the Air Force Research Laboratory,” ENS, Sponsor: HQ AFRL

*Deckro and Kloebber, “Modeling Psychological Operations,” ENS, Sponsor: AIA/DO2 and JC²WC


*Kloeber, and Deckro, “Identifying the Top Ten Army Aviation Hazards,” ENS, Sponsor: Army Safety Center, Ft. Rucker, AL


DELOACH, Maj SCOTT A. (ENG)


FRANKE, MILTON E. (ENY)


Franke, M. E., (with King, P. as PI), “Heat Exchanger Research,” ENY, AFOSR/NE.
GALLAGHER, Lt Col MARK A. (ENS)
Gallagher, “Combinatory Optimization for Strategic Nuclear War Planning,” ENS, Sponsor: AFOSR, USSTRATCOM

GOLTZ, MARK N. (ENV)
Goltz, "Bioenhanced In-well Vapor Stripping to Treat Trichloroethylene," ENV, Sponsor: DoD/DOE/EPA SERDP
Goltz, and Huang, "Hazardous Waste Site Characterization Simulator" ENV, Sponsor: DoD ERA
Goltz, "In Situ Catalytic Groundwater Treatment Using Pd-Catalysts and Horizontal Flow Treatment Wells," ENV, Sponsor: DoD ESTCP
Shelley and Goltz, "Abiotic and Biochemical Fate and Transport or Contaminants," ENV, Sponsor: AFRL/ML, DAGSI

GRAHAM, Maj, ROBERT P. (ENG)

GUSTAFSON, STEVEN C. (ENG)

HARITOS, GEORGE K. (ENY)
Haritos, G.K., “Matrix-Enabled Damage Tolerance in Oxide Continuous Fiber Ceramic Composites,” ENY, Sponsor: AFOSR/NA.
Haritos, G.K., “High Cycle Fatigue,” ENY, Sponsor: AFRL/ML

HARTRUM, THOMAS C. (ENG)
HENGEHOLD, ROBERT L. (ENP)


Yeo, Y.K. and Hengehold, R.L., “Ion Implantation and Metallic Contact Studies for Application to AlGaN Optoelectronic Devices,” ENP, Sponsor: AFOSR/NE


HILL, Lt Col RAYMOND R. (ENS)


*Hill and McIntyre, “Strategic Effects,” ENS, Sponsor: HQ USAF/XOC

JACOBS, Maj TIMOTHY M., (ENG)

Jacobs, “Strategic Brigade Airdrop Simulation and Analysis,” ENG, Sponsor: ASC/TC

KLOEBER, LTC JACK M., Jr. (ENS)

*Deckro, Kloeber, and Jackson, “Technology Selection for the Air Force Research Laboratory,” ENS, Sponsor: HQ AFRL


*Deckro, Kloeber, and Jackson, “Technology Selection for the Air Force Research Laboratory,” ENS, Sponsor: HQ AFRL.

*Deckro, Jackson, Kloeber, and Doyle, “A Value Function Approach to Information Operations Measures of Merit,” ENS, Sponsor: JC²WC and USSOCOM

*Kloeber, Jackson, and Deckro, “Designing a CERCLA Based Hierarchy for DNAPL Remediation Technology Selection,” ENS, Sponsor: Department of Energy
KLOEBER, LTC JACK M., Jr. (ENS) (continued)

*Kloeber and Deckro, “Identifying the Top Ten Army Aviation Hazards,” ENS, Sponsor: Army Safety Center, Ft. Rucker, AL

*Kloeber and McIntyre, “Precision Airdrop,” ENS, Sponsor: AF Mobility Battlelab and Army Dismounted Battlelab


LAMONT, GARY B. (ENG)


LANNING, Maj JEFFREY W. (ENS)

*Lanning and McIntyre, “Validation of the Space Information Distributed Architecture (SPIDAR) Model,” ENS, Sponsor: Space Warfare Center (SWC/AEA)

*Bauer and Lanning “Feature Selection in Recurrent Neural Networks (RNN) with Application to Estimating Pilot Workload,” ENS, Sponsor: AFOSR

LIEBST, BRADLEY S. (ENY)


LOTT, Maj JAMES A. (ENG)


MAGEE, Maj ERIC P. (ENG)


MAYBECK, P.S. (ENG)

McINTYRE, Lt Col GREGORY A. (ENS)

*Hill and McIntyre, “Strategic Effects,” ENS, Sponsor: HQ USAF/XOC

*Lanning and McIntyre, “Validation of the Space Information Distributed Architecture (SPIDAR) Model,” ENS, Sponsor: Space Warfare Center (SWC/AEA)

McIntyre, “Air-to-Air Combat Modeling Validation,” ENS, Sponsor: HQ USAF/XOC

*Kloeber and McIntyre, “Precision Airdrop,” ENS, Sponsor: AF Mobility Battlelab and Army Dismounted Battlelab


MILLER, Lt Col JOHN O. (ENS)


*Bauer and Miller, “An Investigation of Possible Solutions to the Technical Barriers facing Performance Estimation for MSTAR,” ENS, Sponsor: AFRL/SNA.

MILLER, Lt Col MIKEL M. (ENG)


MOORE, JAMES T. (ENS)


MURDOCK, Maj W. PAUL (ENS)

Murdock, “AMRAAM Pin Failure Data Analysis,” ENS, Sponsor: AMRAAM JSPO, ASC/YAA

*MILLER and Murdock, “AMRAAM Fleet Life Cycle Simulation,” ENS, Sponsor: AMRAAM JSPO, ASC/YAF

OXLEY, MARK E. (ENC)

PACHTER, M. (ENG)
Pachter, M., “Satellite Formation Control,” ($21,000), ENG, Sponsor: AFOSR

QUINN, DENNIS W. (ENC)

RAINES, Maj RICHARD A. (ENG)

RAQUET, Capt JOHN F. (ENG)
Raquet, J.F., “GPS Jamming Detection,” ($20,000), ENG, Sponsor: CIGTF

SHELLEY, MICHAEL L. (ENV)
Shelley and Goltz, "Abiotic and Biochemical Fate and Transport or Contaminants," ENV, Sponsor: AFRL/ML, DAGSI

SPENNY, CURTIS H. (ENY)

TALBERT, Maj MICHAEL L. (ENG)
Talbert, M.L., Object Store Object Oriented DBMS license maintenance ($4,150), ENG, Sponsor: AFRL/SNZW
Talbert, M.L., “Intelligent Profile-Based Access to Remote Target Databases and Metadata Holdings,” ($24,000), ENG, Sponsor: AFRL/SNAS.
TEMPLE, Maj MICHAEL A. (ENG)


TERZUOLI, ANDREW J., JR. (ENG)


WEEKS, DAVID E. (ENP)


WOOD, AIHUA W. (ENC)

Wood, A. W., “Scattering and propagation of electromagnetic waves,” ENC, Sponsor: AFOSR.

YEO, YUNG KEE (ENP)


Yeo, Y.K., “Electrical Characterization of Si1-x-yGexCy/Si Heterostructures,” ENP, Sponsor: DARPA/ETO

Yeo, Y.K. and Hengehold, R.L., “Ion Implantation and Metallic Contact Studies for Application to AlGaN Optoelectronic Devices,” ENP, Sponsor: AFOSR/NE

3.10 REFEREED JOURNAL PUBLICATIONS

[* Denotes duplicate entry, multiple faculty authors.]

BAILEY, Lt Col T. GLENN (ENS)


BAUER, KENNETH W. (ENS)


BLECKMANN, CHARLES A. (ENV)


BROTHERS, Maj CHARLES P., JR. (ENG)


BURGGGRAF, LARRY W. (ENP)

CHAN, YUPO (ENS)


DECKRO, RICHARD F. (ENS)


GOLTZ, MARK N. (ENV)


GUNSCH, GREGG H. (ENG)


HARITOS, GEORGE K. (ENY)

HENGEHOLD, ROBERT L. (ENP)


KLOEBER, LTC JACK M., Jr. (ENS)


LAIR, ALAN V. (ENC)


LIEBST, BRADLEY S. (ENY)


LOTT, Maj JAMES A. (ENG)


MALL, SHANKAR (ENY)


MALL, SHANKAR (ENY) (continued)


MATHEWS, KIRK A. (ENP)


MAYBECK, PETER S. (ENG)


MOORE, JAMES T. (ENS)


MURDOCK, Maj W. PAUL (ENS)


NIXON, Lt Col WM. BRENT (ENV)


OXLEY, MARK E. (ENC)


PACHTER, M. (ENG)


PERRAM, Lt Col GLEN P. (ENP)


RAINES, Maj RICHARD A. (ENG)


ROH, WON B. (ENP)


SHELLEY, MICHAEL L. (ENV)


SPENNY, CURTIS H. (ENY)


TEMPLE, Maj MICHAEL A. (ENG)


TURCOTTE, Lt Col JEFFREY S. (ENY)


WALTERS, Lt Col MICHAEL K. (ENP)


WEEKS, DAVID E. (ENP)

WOOD, AIHUA W. (ENC)


YEO, YUNG KEE (ENP)

3.11 OTHER PUBLICATIONS

[*Denotes duplicate entry, multiple faculty authors.]

**AGNES, Capt GREGORY S. (ENY)**


**ANDREW, Col JOHN M. (ENS)**


**BAILEY, Lt Col T. GLENN (ENS)**


**BAUER, KENNETH W. (ENS)**


**BONS, Maj JEFFREY P. (ENY)**

Bons, J.P. “Comparison of Computational Velocity and Heat Transfer Predictions to Experimental Measurements in a Rotating Cooling Passage with Smooth Walls.” Published as pamphlet from 1999 International Gas Turbine Institute (IGTI) Conference in Indianapolis, IN, paper #99-GT-264.
CHRISIS, JAMES W. (ENS)


COLLINS, Maj PETER J. (ENG)


D’AZZO, JOHN J. (ENG)


DECKRO, RICHARD F. (ENS)


DELOACH, Maj SCOTT A. (ENG)


FRANKE, MILTON E. (ENY)


GOLTZ, MARK N. (ENV)


GRAHAM, Maj ROBERT P. (ENG)

GUSTAFSON, STEVEN C. (ENG)


HARITOS, GEORGE K. (ENY)


HARTRUM, THOMAS C. (ENG)


HENGEHOLD, ROBERT L. (ENP)


HILL, Lt Col RAYMOND R. (ENS)


HOUPIUS, CONSTANTINE H. (ENG)


KLOEBER, Lt Col JACK M. (ENS)


KLOEBER, Lt Col JACK M. (ENS) (continued)


KRAMER, Lt Col STUART C. (ENY)


LAMONT, GARY B. (ENG)


LIEBST, BRADLEY S. (ENY)


LOTT, Maj JAMES A. (ENG)


MAGEE, Maj ERIC P. (ENG)


MALL, SHANKAR (ENY)


**MALL, SHANKAR (ENY) (continued)**


**MAYBECK, PETER S. (ENG)**


**McINTYRE, Lt Col GREGORY A. (ENS)**


**MILLER, Lt Col JOHN O. (ENS)**

MILLER, Lt Col MIKEL M. (ENG)

Johnston, K.D., “A Comparison of CW and Swept CW Effects on a C/A Code GPS Receiver,” Proceedings of the 11th ION GPS-99, Nashville TN, 14-17 Sep 99. (This was a student paper, thus only the student’s name could be on it).


MINER, Lt Col CECILIA A. (ENP)


MOORE, JAMES T. (ENS)


MURDOCK, Maj W. PAUL (ENS)


NIXON, Lt Col Wm. Brent (ENV)


OXLEY, MARK E. (ENC)


PACHTER, MEIR (ENG)

PACHTER, MEIR (ENG) (continued)


PYATI, VITTAL P. (ENG)


RAINES, Maj RICHARD A. (ENG)

RAQUET, Capt JOHN F. (ENG)


SPENNY, CURTIS H. (ENY)


TERZUOLI, ANDREW J., JR., (ENG)


TURCOTTE, Lt Col JEFFREY S. (ENY)


WALTERS, MICHAEL K. (ENP)


WEEKS, DAVID E. (ENP)


WOLF, Lt Col PAUL J. (ENP)

3.12 SUBSTANTIAL CONSULTATIONS

[*Denotes duplicate entry, multiple faculty contributors.]

BAILEY, Lt Col T. GLENN (ENS)

*Served as statistical consultant (with Dr. Bauer, ENS) for Department of Justice concerning mediation with Raytheon.

BAILEY, WILLIAM F. (ENP)

Evaluation of alternative Stealth technologies for Air Force Research Laboratory.

Analysis of shock modification in non-equilibrium flows for Air Force Research Laboratory.

BROTHERS, Maj CHARLES P., JR. (ENG)


Brothers, Charles P., Jr. Consultation: Space Electronics. Sponsor: AFRL/VSSE

BROWN, WILLIAM M. (ENG)


CHAN, YUPO (ENS)

Consulted with the National Security Agency on information warfare/operations, Dec 1998 and May 1999.

Consulted with AFRL/HECI on the low observable in-flight replanning program.

CHRISSIS, JAMES W. (ENS)

Consulted with ASC Electronic Combat Development System Program Office on the integration of a computerized production design, manufacturing, and control system.

COLLINS, Maj PETER J. (ENG)


CROWN, Maj JOHN S. (ENC)

DECKRO, RICHARD F. (ENS)
Worked with DARPA and OSD OT&E on formulating Information Assurance issues, procedures and policies. Participated with AIA DO-2 on developing measures for physiological operations.

DELOACH, Maj SCOTT A. (ENG)

FRANKE, MILTON E. (ENY)
Franke, M. E., Consultation: AFRL/MN, Joined-Wing Missile Model Test Results, 12 April 1999.
Franke, M. E., Consultation: AFRL/MLMA, Lean Aerospace Initiative (Test and Space Operations), March-April 1999 (2 days), 24-25 June 1999, July-September 1999 (3 days).
Franke, M. E., AFRL/VACM, Heat Transfer Research, January-September 1999 (2 days).

GUNSCH, GREGG H. (ENG)
Gunsch, G.H. Consultation: Invited member of a senior scientist search committee to develop an appropriate set of hiring criteria for the branch’s Senior Scientist position and a list of potential candidates to pursue. Sponsor: AFRL/IFGB

JACOBS, Maj TIMOTHY M. (ENG)
Jacobs, T.M. Consultation: Visualization of Airlift Flow Model Simulating Worldwide Air Mobility Missions. Sponsor: AMC/XP
Jacobs, T.M. Consultation: Visual Tools to Navigate and Consolidate Intelligence Data for Project BROADSWORD. Sponsor: AFRL/IFED
Jacobs, T.M. Consultation: AFIT-ASC collaboration to make greater use of the MSRC during systems acquisition; co-investigator: Bailey (ENS). Sponsor: ASC/HP

JODOIN, Maj VINCENT J. (ENP)
Advised DTRA/CPWE, USSTRATCOM/J53, and UK MOD on capabilities and possible improvements to current and future nuclear weapon fallout models.
JOHN, GEORGE (ENP)

Collaboration with AFML Tribology Branch on applications of Mossbauer Spectrometry to problems in tribology. Funding for equipment and materials provided by AFML. No formal project established.

KLOEBER, LTC JACK M., Jr. (ENS)

Co-taught a 4.5-day course to 32 Army Logistics Management College attendees at Ft. Lee, VA, January 1999.

Instructor and consultant to ACC’s and AFSPC’s project for improved and combined modernization efforts.


LAMONT, GARY B. (ENG)


LOTT, Maj JAMES A. (ENG)


MAGEE, Maj ERIC P. (ENG)

Magee, E.P.. Consultation: Bi-directional Reflectance Distribution Function (BRDF) experiments. Sponsor: AFRL/SNJ.

MILLER, Lt Col MIKEL M. (ENG)

Miller, M.M. and J.F. Raquet. Consultation: Consulted with the 746th Test Squadron concerning current GPS technology. Sponsor: 746th Test Squadron

MURDOCK, Maj W. PAUL (ENS)

Member of the System Evaluation and Analysis Simulation (SEAS) Tiger Team sponsored by HQ USAF/XOC to evaluate SEAS for inclusion in the Air Force Suite of Models.

NIXON, Lt Col WM. BRENT (ENV)

Lt Col Nixon serves as a member of the HQ AFMC Environmental Restoration Peer Review Committee, providing technical guidance and funding recommendations for projects in the Command’s $120-million FY99 environmental restoration program.

Lt Col Nixon, in cooperation with the Air Force Center for Environmental Excellence, provided technical peer review of 13 projects ($46 million) managed by the Air Force Base Conversion Agency for O’Hare and Chanute AFB IL.
PACHTER, MEIR N. (ENG)

Pachter, M.. Consultation: Member of AFRL/VAAD AFOSR Star Team. Sponsor: AFRL/VAAD

PERRAM, Lt Col GLEN P. (ENP)

Evaluated Small Business Innovative Research proposals on advanced lasers for the Ballistic Missile Defense Office.

RAQUET, Capt JOHN F. (ENG)

*Miller, M.M. and J.F. Raquet. Consultation: Consulted with the 746th Test Squadron concerning current GPS technology. Sponsor: 746th Test Squadron

TALBERT, Maj MICHAEL L. (ENG)

Talbert, M.L.. Consultation: A Sponsored Deployment Object Working Group (DOWG) via telecon. This is done on a recurring basis. Sponsor: DARPA

Talbert, M.L.. Consultation: Hand-picked database consultant to Base Tiger Team to investigate suspiciously Non-random nature of urinalysis test selection. Tentative findings were that software function used to generate random number seed is based on a repeating value generated by system clock.

Talbert, M.L. Consultation: Surveillance and Reconnaissance Database done for HQ USAF/XOIR DCS. Provided consulting services to the Air Force Tactical Exploitation of National Capabilities (AF TENCAP). Consult redirected the database effort and directly saved the AF TENCAP program $70,000. Sponsor: USAF/XOIR DCS.

Talbert, M.L. Consultation: Consortium for DARPA-sponsored Deployment Object Working Group

TERZUOLI, ANDREW J., JR. (ENG)


TURCOTTE, Lt Col JEFFREY S. (ENY)


WALTERS, MICHAEL K. (ENP)

Consulted with members of the 88th Weather Squadron in support of the ASC Reconnaissance Systems Program Office to explore the use of reconnaissance assets as platforms for gathering meteorological data in support of theater operations. Assisting in data analysis to evaluate platform/sensor applicability.
3.13 PRESENTATIONS

[* Denotes duplicate entry, multiple faculty involved in the presentation.]

AGNES, Capt GREGORY S. (ENY)


ANDREW, Col JOHN M. (ENS)


BAILEY, Lt Col T. GLENN (ENS)


BAILEY, Lt Col T. GLENN (ENS) (continued)


BAILEY, WILLIAM F. (ENP)


BAUER, KENNETH W. (ENS)


BLECKMANN, CHARLES A. (ENV)


BROTHERS, Maj CHARLES P., JR. (ENG)

BURGGRAF, LARRY W. (ENP)


CHAN, YUPO (ENS)


Chan, Y., “Multi-Criteria Stochastic-Network Optimization: Reliability, Throughput and Extensions,” Hong Kong Polytechnic University, Hong Kong, 12 Feb 1999.


CHRISSIS, JAMES W. (ENS)


COLLINS, Maj PETER J. (ENG)


CROWN, Maj JOHN S. (ENC)


DECKRO, RICHARD F. (ENS)


DECKRO, RICHARD F. (ENS) (continued)


DELOACH, Maj SCOTT A. (ENG)


FRANKE, MILTON E. (ENY)


GALLAGHER, Lt Col MARK A. (ENS)


GOLTZ, MARK N. (ENV)


Graham, Maj Robert P. (ENG)


Gustafson, Steven C. (ENG)


Harrum, Thomas C. (ENG)


Heneghond, Robert L. (ENP)


*Ahoujja, M., Y.K. Yeo, M.R. Smith, R.L. Heneghond, G.S. Pomrenke, and Jim Huffman, “Hall coefficient singularity observed from p-SiGeC grown on n’-Si substrate,” presented at the 26th International Symposium on Compound Semiconductors, held on 22-26 August 1999 in Berlin, Germany.


Hill,Lt Col Raymond R. (ENS)


HILL, Lt Col RAYMOND R. (ENS) (continued)


HOUPIS, CONSTANTINE H. (ENG)


Houpis, C.H., was invited by the National Technical University of Athens to present a three-day workshop on Quantitative Feedback Theory to the graduate students during the week of 24 May 99.

Houpis, C.H., was invited to be the Plenary Speaker at the 4th International Symposium on Quantitative Feedback Theory and Robust Frequency Domain Methods held at the University of Natal, Durban, South Africa, 26-27 Aug 99.

JODION, Maj VINCENT J. (ENP)


JOHN, GEORGE (ENP)


KLOEBER, LTC JACK M., Jr. (ENS)


LAIR, ALAN V. (ENC)

LAMONT, GARY B. (ENG)


LIEBST, BRADLEY S. (ENY)


LOTT, Maj JAMES A. (ENG)


MAGEE, Maj ERIC P. (ENG)

MALL, SHANKAR (ENY)
Lykins, C. and Mall, S., “High cycle Fretting Fatigue Behavior of Ti-6-4”, Proc. of The Seventh International Fatigue Conference, June 8-12, 1999, Beijing, China.


MAYBECK, PETER S. (ENG)


McINTYRE, Lt Col GREGORY A. (ENS)

McINTYRE, Lt Col GREGORY A. (ENS) (continued)


110(130,727),(140,734)


MILLER, Lt Col JOHN O. (ENS)


MILLER, Lt Col MIKEL M. (ENG)

Johnston, K.D., “A Comparison of CW and Swept CW Effects on a C/A Code GPS Receiver, “ 11th ION GPS-99, Nashville TN, 14-17 Sep 99. (This was a student paper, thus only the student’s name could be on it).


MOORE, JAMES T. (ENS)


MURDOCK, Maj W. PAUL (ENS)


OXLEY, MARK E. (ENC)


PACHTER, MEIR N. (ENG)


PERRAM, Lt Col GLEN P. (ENP)


PYATI, VITTAL P. (ENG)

QUINN, DENNIS W. (ENC)


RAQUET, Capt JOHN F. (ENG)


ROH, WON B. (ENP)


SPENNY, CURTIS H. (ENY)


TALBERT, Maj MICHAEL L. (ENG)


TERZUOLI, ANDREW J., JR. (ENG)


TERZUOLI, ANDREW J., JR. (ENG) (continued)


TURCOTTE, Lt Col JEFFREY S. (ENY)


WALTERS, Lt Col MICHAEL K. (ENP)


WEEKS, DAVID E. (ENP)


WOLF, Lt Col PAUL J. (ENP)

J.C. Holtgrave and P.J. Wolf, “Collisional broadening and shift of Sr lines by the rare gases,” APS Centennial Meeting, 25 March, 1999, Atlanta, GA.

WOOD, AIIHUA W. (ENC)


YEO, YUNG KEE (ENP)


3.14 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

AGNES, Capt GREGORY S. (ENY)

Session Chair, 1998 International Mechanical Engineering Conference and Exposition, Anaheim, CA.
Session Chair, 1999 Smart Materials and Structures Conference, Newport Beach, CA.
Session Chair, 40th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, St. Louis, MO.
Session Chair, 17th Biennial Conference on Mechanical Vibration and Noise, Las Vegas, NV.

BAILEY, Lt Col T. GLENN (ENS)

Chair, Utilizing Java in Operations Research, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.
Chair, Military Applications, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

BROTHERS, Maj CHARLES P., JR. (ENG)

Member, Awards Committee for the 1999 IEEE Nuclear and Space Radiation Effects Conference.

CHAN, YUPO (ENS)

Local Organizing Committee, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.
Chair, Ethics Committee, Military Operations Research Society.
National Secretary, Omega Rho International Honor Society.
Editorial board, Phalanx.
Associate editor, Naval Research Logistics.
Associate editor, Military Operations Research.
Associate editor, UPDD Journal.
AFIT University Representative, Transportation Research Board, National Research Council.

CHRISSIS, JAMES W. (ENS)

Secretary, Cincinnati/Dayton INFORMS Chapter.

CROWN, Maj JOHN S. (ENC)

Chair, Statistics: Goodness-of-Fit Tests Session of the 1999 Institute for Operations Research and the Management Sciences Spring Conference.
DECKRO, RICHARD F. (ENS)

Associate Editor, Military Operations Research.

Editorial Advisory Board, Computer and Operations Research.


Member, INFORMS Finance Committee.

Chair, INFORMS Bylaws, Policies & Procedures Committee.

Member, INFORMS Subdivisions Committee (Chair, Section/Societies Subcommittee).

Member, Local Committee, Cincinnati Spring 1999 INFORMS Meeting (Co-Chair Invited Sessions).

President, Cincinnati/Dayton INFORMS Chapter.

Track Chair, Production and Operations Management, Western DSI 28th Meeting, April 1999.

DELOACH, Maj SCOTT A. (ENG)


GALLAGHER, Lt Col MARK A. (ENS)

Director, Military Operations Research Society (MORS).

Chair, MORS Prize Committee.

GOLTZ, MARK N. (ENV)

Member, Science Advisory Committee, U.S. EPA’s Great Lakes/Mid-Atlantic Hazardous Substance Research Center.

City of Beavercreek Environmental Advisory Committee.

Consulting Associate Professor at Stanford University.

GUSTAFSON, STEVEN C. (ENG)

Associate Editor of the journal, Optical Engineering

HENGGEHOLD, ROBERT L. (ENP)

Conference co-chairman, Fall 1999 Meeting of the Ohio Section of the American Physical Society held in Dayton Ohio on 8-9 October 1999.
HILL, Lt Col RAYMOND R. (ENS)
Treasurer, Cincinnati/Dayton INFORMS Chapter.
Reviewer for Military Operations Research.
Reviewer for Naval Research Logistics.
Cluster Chair, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

KLOEBER, LTC JACK (ENS)
Director, Military Operations Research Society.
Associate Editor, Military Operations Research.
Prize Committee Member, MORS.
Education Committee Member, MORS.
Publicity Chair, Spring National Meeting of INFORMS, Cincinnati, OH, May 1999.

LOTT, Maj JAMES A. (ENG)
Lott, J.A., received the 1999 IEEE Dayton Section Harrell V. Noble Award for contributions in electron device research.
Lott, J.A., was named an “Eminent Engineer” by the Tau Beta Pi National Engineering Honor Society.
Lott, J.A., became a Senior Member of IEEE.

MAYBECK, PETER S. (ENG)
MILLER, Lt Col, MIKEL M. (ENG)

Thesis student, K.D. Johnston, received 99 ION best student paper award – he received an all expense paid trip to 99 ION to present the paper. The paper also won the best paper in the session.

MOORE, JAMES T. (ENS)

Expert Associate Editor, Military Operations Research.

MURDOCK, Maj W. PAUL (ENS)

Session chair, 1999 Reliability and Maintainability Symposium (RAMS).


NIXON, Lt Col WM. BRENT (ENV)

Chair, Air and Waste Management Association's Technical Committee on Landfill and Composting.

OXLEY, MARK E. (ENC)

Oxley, M. E., Served as Alumni Board Member for Department of Mathematics, Physics and Geography, Cumberland College, Williamsburg, KY.

PACHTER, MEIR N. (ENG)

Pachter, M., Associate Editor of the Journal of Optimization Theory and Applications.

Pachter, M., Session Chairman at the IEEE Conference on Decision and Control, Tampa FL, 16-18 Dec 98.

Pachter, M., Session Chairman at the IEEE Mediterranean Control Conference, Haifa, Israel, 28-30 Jun 99.

RAINES, Maj RICHARD A. (ENG)

Raines, R.A., received the Meritorious Service Medal.

Raines, R.A., Reviewer for IEEE Communications Newsletter.

Raines, R.A., Reviewer for Computer Simulation.

RAQUET, Capt JOHN F. (ENG)

Raquet, J.F. served as the Program Chair for the Institute of Navigation Annual Meeting and was responsible for putting together the technical program.


WEEKS, DAVID E. (ENP)

Program chairman for fall meeting of Ohio Section of the American Physical Society held in Dayton Ohio on 8-9 Oct 99.
SECTION 4

GRADUATE SCHOOL OF LOGISTICS AND ACQUISITION MANAGEMENT

4.0 OVERVIEW

Since 1992, the mission of the Graduate School of Logistics and Acquisition Management (AFIT/LA) has been to provide uniquely defense-oriented graduate education in logistics and acquisition management to Air Force and DOD leaders. Through high quality graduate instruction, research and consultation, AFIT/LA provided management knowledge and tools to solve defense logistics and acquisition problems. During Fiscal Year 1999 AFIT/LA focused its educational efforts in acquisition logistics, logistics management, contracting management, cost analysis, information resource management, systems management, software systems management, transportation management, and air mobility. A total of 48 masters’ degree students graduated from AFIT/LA programs this fiscal year; they generated 42 theses and graduate research papers addressing issues in core competency areas of logistics processes, improved business practices, software calibration, international logistics, human resources management, operational analysis, and modeling and simulation. Awards for the most outstanding theses went to Captain Gregory Hutson, for his thesis, “Reparable Inventory Reduction Impacts on Air Force Fighter Aircraft Mission Capability,” Captain Robert J. Neal, for his thesis, “Cost/Benefit Analysis of Leasing vs. Buying Air Force General Purpose Vehicles,” and Major Jorge Guarnieri of the Argentine Air Force for his thesis, “Maintenance Resources Evaluation Technique.”

The Master of Mobility program, which was developed at the request of AMC in 1995 to provide Air Mobility Warfare students with a graduate degree in mobility management in conjunction with air warfare concepts, graduated its fifth class of twelve students in June of 1999. The Air Mobility program continued to feature a number of innovations, including the concept of a dual campus operation (Ft Dix NJ and WPAFB), satellite-based distance education, and adjustable course length. Research projects undertaken by the Advanced Studies of Air Mobility (ASAM) students included assessment of cargo and refueling doctrine, more effective scheduling of aircraft, greater cargo visibility, strategic fuel resources, cyberterrorism, transportation of munitions, and reactions to chemical warfare threats in advanced operating locations.

As a result of the decision to close the Graduate School of Logistics and Acquisition Management and merge its programs with those of the Graduate School of Engineering, a decision that had been made during the previous fiscal year, a number of steps were instituted to bring about the necessary downsizing. These included reduction of staff, reassignment of some faculty, and retirements of others. Long-time staff members who left during the year included Ms. Nancy Wiviott, Ms. Mary Ann Klos, Ms. Karen Wyatt, and Ms. Willa Quarmiley. Civilian faculty who retired by the end of the fiscal year included Dr. Anthony D’Angelo, Dr. Leroy Gill, Dr. Freda Stohrer, Dr. Norman Ware, and Dr. Guy Shane. Military faculty who transferred to other locations included Lieutenant Colonels Terry Adler and Karen Currie; Lieutenant Colonel Rick L’heureux retired. Majors Daryl Hauck, Kevin Moore, and William Scott moved on to other assignments. During this difficult time the school continued to provide excellent teaching and research efforts under the strong but caring leadership of Dean Jan Muczyk and Associate Dean Lieutenant Colonel Karen Currie. At the end of the fiscal year, his job at AFIT concluded, Dr. Muczyk continued on to new challenges by accepting a position as Dean of the College of Commerce and Economics at Sultan Qaboos University, in the Sultanate of Oman. New faculty members included Major Stephan Brady and Lieutenant Colonels William Stockman and Brad Ayers.

Faculty research productivity in the school declined as downsizing occurred. However, important faculty research was conducted in the areas of operations and productions management, transportation processes, software development processes, purchasing, and education and training. In spite of the austere environment, the 22 faculty members assigned to the school generated thirteen refereed journal articles and twelve other publications, and they participated in twenty academic and professional presentations. Those sixteen faculty members who were transferred to the new Graduate School of Engineering and Management faced a new challenge of ensuring continuity and responsiveness to Air Force needs in the programs they brought with them in the new school.
## 4.1 DEPARTMENT SYMBOLS AND LOCATIONS

The Graduate School of Logistics and Acquisition Management (LA) was located in Building 641, 2950 P Street, Wright-Patterson AFB OH, 45433-7765. For the final year of its operation, these personnel were associated with the offices and departments indicated:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>School Office/Department</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA</td>
<td>Office of the Dean</td>
<td>328</td>
</tr>
<tr>
<td></td>
<td>Dr. Jan P. Muczyk, Dean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lt Col Karen Currie, Associate Dean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Sep-Aug)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lt Col David Petrillo (Aug-Sep)</td>
<td></td>
</tr>
<tr>
<td>LAA</td>
<td>Graduate Program Office</td>
<td>316</td>
</tr>
<tr>
<td></td>
<td>MSgt Jimmie Johnson (Oct-Jan)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSgt Kelly L. Schell (Jan-Sep)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mr. Harry Peterman, Resource Advisor</td>
<td></td>
</tr>
<tr>
<td>LAC</td>
<td>Assistant Dean for Research and Consulting</td>
<td>324</td>
</tr>
<tr>
<td></td>
<td>Dr. David K. Vaughan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ms. Nancy I. Wiviott, Thesis Program Assistant (Oct-Mar)</td>
<td></td>
</tr>
<tr>
<td>LAL</td>
<td>Department of Graduate Logistics Management</td>
<td>324</td>
</tr>
<tr>
<td></td>
<td>Dr. William A. Cunningham</td>
<td></td>
</tr>
<tr>
<td>LAS</td>
<td>Department of Graduate Acquisition Management</td>
<td>302</td>
</tr>
<tr>
<td></td>
<td>Lt Col Richard L’heureux (Sep-July)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lt Col David Petrillo (July-Aug)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lt Col William Stockman (Aug-Sep)</td>
<td></td>
</tr>
</tbody>
</table>
4.2 AREAS OF PROFESSIONAL COMPETENCE

Acquisition Management: Ware, Moore, Petrillo
Acquisition Reform: L’heureux, Petrillo
Activity-Based Costing: Caudle
Application of Technology: Heminger, Morris, Srivastava
Acquisition Logistics: Currie, Scott
Budgeting: D’Angelo, Caudle, Stockman
Business Policy: Muczyk, Adler
Buyer-Seller Relationships: L’heureux, Moore
Commercial Business Practices: Petrillo
Computer Graphics: Heminger, Morris, Biros
Computer Infrastructure Design: Heminger, Morris, Biros
Computer Networking: Heminger, Morris, Biros
Contract Management: Petrillo
Contract Negotiation: L’heureux, Petrillo, Stockman
Contracting: L’heureux, Moore, Petrillo, Stockman
Cost Accounting: Caudle, Stockman
Cost Analysis: Cunningham, Stockman
Cost Estimating: Stockman, Caudle
Data Communications: Heminger, Morris, Biros
Database Applications: Heminger, Morris, Biros
Database Theory: Heminger, Morris, Biros
Depot Management: Arostegui, Swartz
Earned Value Methods: Caudle, Stockman
Economic Analysis: Cunningham
Electronic Commerce: Currie, Scott, Heminger
Ergonomics/Human Factors: Shane
Ethics: Vaughan
Expert Systems: Heminger, Morris, Biros
Federal Financial Management Systems: D’Angelo, Caudle
Forecasting: Ware, Moore, Stockman
Foreign Military Sales: Cunningham
Group Support Systems: Heminger, Morris, Biros
Human Resources Management: Steel, Muczyk, Shane
Industrial Engineering: Johnson
Information Management: Heminger, Morris, Biros
Information Resource Management: Heminger, Morris, Biros
International Logistics: Currie, Cunningham
Inventory Management: Currie, Cunningham, Srivastava, Swartz, Johnson
Just-in-Time Manufacturing: Cunningham, Srivastava
Leadership: Shane, Thurston, Rehg, Ward
Learning Curves: Ware, Stockman, Caudle
Logistics Financial Management: Moore
Logistics Management: Currie, Cunningham, Srivastava, Moore, Swartz, Arostegui, Johnson
Maintainability and Supportability: Srivastava, Swartz, Johnson, Arostegui
Management Information Systems: Scott, Heminger, Morris, Biros
Manufacturing Management: Swartz, Arostegui, Johnson
Modeling: Johnson, Arostegui, Swartz
Operations/Production Management: Currie, Srivastava, Ware, Swartz, Johnson, Arostegui
Operations Research: Johnson, Brady, Swartz, Arostegui
Organizational Behavior: Steel, Muczyk, Shane, Thurston, Rehg, Ward
Organizational Learning: Thurston, Rehg, Ward
Performance Measurement: Shane, Thurston, Rehg, Ward
Program Evaluation: Rehg, Thurston, Ward
Project Management: Caudle, Petrillo
Psychometric Theory: Thurston, Rehg
Public Policy Analysis: Cunningham
Quality Management: Ware, Caudle
Regression Modeling: Cunningham, Shane, Rehg, Thurston, Ward
Reliability: Rehg, Thurston, Ward
Research Methods: Shane, Steel, Vaughan, Thurston, Ward, Rehg
Risk Analysis: Caudle, Stockman
Scheduling: Rehg, Ward, Thurston
Simulation: Johnson, Arostegui, Swartz
Software Management: Ayers
Software Measurement: Ayers
Software Product Assurance: Ayers
Software Size and Cost Estimation: Ayers
Strategic Management: Muczyk, Rehg, Thurston, Ward
Strategic Planning: Heminger
Technical Communication: Stohrer, Vaughan
Technology in Education: Heminger, Morris, Biros
Technology Management: Stockman
Technology Transfer: Stockman
Test and Survey Development: Shane, Steel, Rehg, Ward, Thurston
Theory of Constraints: Johnson
Time Series Analysis: Johnson, Rehg
Training and Education: Vaughan, Muczyk
Vocational Placement: Rehg, Ward, Thurston
Warehousing: Swartz, Arostegui
4.3 FACULTY CREDENTIALS


AROSTEGUI, MARVIN A., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Applied Mathematics, University of California at Berkeley, 1987; M.S., Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration, University of Houston, 1997. Research interests include reparable inventory management, supply chain management, meta-heuristics (tabu search, simulated annealing, and genetic algorithms). Reassigned to the Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4333. E-mail: marvin.arostegui@afit.af.mil

BIROS, DAVID P., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., History and Secondary Education, Flagler College, 1985; M.A., Public Administration, Troy State University, M.S., Information Resource Management, Air Force Institute of Technology, 1992; Ph.D., Information and Management Sciences (minor concentration in Strategy), Florida State University, 1998. Research interests include deception via information artifacts, deception detection, information assurance, and the diffusion of technology. Reassigned to the Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4826. E-mail: david.biros@afit.af.mil

BRADY, STEPHAN P., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Political Science, Western Maryland College, 1985; M.P.A., Public Administration, New Hampshire University, 1994; M.S., Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration, Pennsylvania State University, 1999. Research interests include transportation, logistics and supply chain management, consumable and reparable inventory management, simulation, and modeling. Reassigned to the Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4367. E-mail: stephan.brady@afit.af.mil


CAUDLE, MARK D., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Mathematics, University of North Carolina at Chapel Hill, 1984; M.S., Systems Management, Air Force Institute of Technology, 1991; M.A., Business Administration, Ohio State University, 1996; PhD, Ohio State University, 1999. Specialties include total quality management, financial management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4316. E-mail: mark.caudle@afit.af.mil

CUNNINGHAM, WILLIAM A. III, Professor and Head, Department of Graduate Logistics Management (AFIT/LAL). B.S., Business Administration, Missouri Southern State College, 1976; M.S., Economics, Oklahoma State University, 1979; Ph.D., Economics, University of Arkansas, 1986. Areas of interest: transportation, strategic mobility, ABC costing, logistics management, public policy analysis, privatization, third-party logistics, international logistics, and international trade. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-6565 (DSN 785-6565), ext. 4283. E-mail: william.cunningham@afit.af.mil


HEMINGER, ALAN R., Associate Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Philosophy, University of Michigan, 1966; M.S., Educational Psychology, California State University at Hayward, 1978; Ph.D., Management Information Systems, University of Arizona, 1988. Information resource management, computers and group problem-solving, reengineering, long-term access to information. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4797. E-mail: alan.hemingger@afit.af.mil

JOHNSON ALAN W., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.S.M.E., Montana State University, 1982; M.S., Systems Management, Air Force Institute of Technology, 1989; Ph.D., Industrial and Systems Engineering (Operations Research), Virginia Polytechnic Institute and State University, 1996. Industrial engineering, modeling, operations research, quantitative analysis, simulation, acquisition management. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4284. E-mail: alan.johnson@afit.af.mil

KANKEY, RONALD D., Associate Professor and Head, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Mathematics, Wichita State University, 1968; M.S., Mathematics, Oklahoma State University, 1970; M.A., Business (Management Science), Ohio State University, 1985; Ph.D., Business (Management Science), Ohio State University, 1988. Transferred to AFIT/LS, 1998.


MOORE, KEVIN R., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.S., Biology Science, University of Massachusetts at Amherst, 1982; M.S., Logistics Management, Air Force Institute of Technology, 1990; Ph.D., Business Administration, Arizona State University, 1996. Reassigned, 1999.
MORRIS, MICHAEL G., Maj, Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Bowling Green State University, 1985; M.S., Information Resource Management, Air Force Institute of Technology, 1990; Ph.D., Indiana University, 1996. His research interests include technology acceptance, human-computer interaction, systems analysis and design, and decision-making. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4578. E-mail: michael.morris@afit.af.mil

MUCZYK, JAN P., Professor of Management and Dean, Graduate School of Logistics and Acquisition Management (AFIT/LA). B.S., Management, 1964; M.S., Management, 1967; D.B.A., Organizational Behavior, 1972; all degrees from the University of Maryland. Accepted new position as Dean, College of Commerce and Economics, Sultan Qaboos University, Muscat, Oman, 1999.

PETRILLO, DAVID, Lt Col, Assistant Professor of Contracting and Acquisition Management, Department of Graduate Acquisition Management (AFIT/LAS). B.A., Government and International Relations, University of Notre Dame, 1982; M.S., Contracting Management, Air Force Institute of Technology, 1992; Ph.D., Business Logistics, Pennsylvania State University, 1998. Research interests include strategic purchasing, purchasing of services, best commercial purchasing practices, and integrated supply chain management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4799. E-mail: david.petrillo@afit.af.mil

REHG, MICHAEL, Maj, Assistant Professor of Management, Department of Graduate Logistics Management (AFIT/LAL). B.S., Wildlife Management, University of Wyoming, 1980; M.S., Logistics Management, Air Force Institute of Technology, 1990; Ph.D., Strategic Management, Indiana University, 1998. Research interests include strategic management, organizational change, whistle blowing, organizational structure, ethics, turnover and retention, regression analysis, aerospace defense industry, and international management. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4711. E-mail: michael.rehg@afit.af.mil


SRIVASTAVA, RAJESH, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). B.Tech.E.E., Indian Institute of Technology, 1977; M.B.A., Business Administration, University of Wisconsin at Whitewater, 1980; Ph.D., Business Administration, Ohio State University, 1986. Accepted new position at HQ AFMC, 1999.

STEEL, ROBERT P., Professor, Department of Graduate Logistics Management (AFIT/LAL). B.A., Psychology, University of Cincinnati, 1974; Ph.D., Industrial Organizational Psychology, University of Tennessee, 1980. Accepted new position at Wright State University, Fairborn OH, 1999.
STOCKMAN, WILLIAM K., Assistant Professor, Department of Graduate Acquisition Management (AFIT/LAS). B.S., Mathematics, Southeast Missouri University, 1977; B.S., Business Administration, Southeast Missouri University, 1977; B.S., Astronautical Engineering, Air Force Institute of Technology, 1984; M.S., Engineering Management, West Coast University, 1986; M.S., Operations Research, Air Force Institute of Technology, 1988; M.A., Economics, George Mason University, 1995; Ph.D., Economics, George Mason University, 1996. Research interests include public choice, source selection evaluation techniques, economic analysis, program evaluation, and general aviation. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4796. E-mail: william.stockman@afit.af.mil


SWARTZ, STEPHEN M., Maj, Assistant Professor, Department of Graduate Logistics Management (AFIT/LAL). A.A.S., Aviation Maintenance Management, Community College of the Air Force, 1984; A.S., Airport Management, Western Oklahoma State College, 1989; B.P.A., Professional Aeronautics (Aviation Maintenance Management), Embry-Riddle Aeronautical University, 1985; M.A., Human Resources Development, Webster University, 1988; M.S., Logistics Management, Air Force Institute of Technology, 1991; Ph.D., Business Administration, Michigan State University, 1999. Research specialties and interests include aviation maintenance systems management, optimization of production systems, Production management and scheduling, project management and scheduling, dynamic and static modeling, and theory of constraints education. Reassigned to Department of Operational Sciences, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4285. E-mail: stephen.swartz@afit.af.mil

THURSTON, PAUL W., Maj, Instructor of Management and Organizational Behavior, Department of Graduate Logistics Management (AFIT/LAL). B.S., Mechanical Engineering, Worcester Polytechnic Institute, 1984; M.S., Systems Management, Air Force Institute of Technology, 1989; Ph.D. Candidate, Organizational Studies, State University of New York, Albany. Major Thurston’s research interests include decision-making, organizational justice, motivation, small group performance, performance measurement, mentoring, and experimental design/research methods. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel (937) 255-6565 (DSN 785-6565), ext. 4316. E-mail: paul.thurston@afit.af.mil

VAUGHAN, DAVID K., Professor of Technical Communication and Assistant Dean for Research and Consulting (AFIT/LAC). B.S., Engineering Sciences, U. S. Air Force Academy, 1962; M.A., English, University of Michigan, 1969; Ph.D., English, University of Washington, 1974. Technical communications, education and training, military history and literature, operational cockpit environment, doctrine. Reassigned to Dean’s Office, Graduate School of Engineering and Management, 1999. Tel (937) 255-3636 (DSN 785-3636), ext. 4557. E-mail: david.vaughan@afit.af.mil

WARD, MARK, Maj, Assistant Professor of Management and Organizational Behavior, Department of Graduate Logistics Management (AFIT/LAL). B.S., Political Science, Texas A&M University, 1986; M.S., Acquisition Logistics Management, Air Force Institute of Technology, 1992; Ph.D., Business Administration (Organizational Studies), Southern Illinois University, 1998. Research interests include organizational structure and design, organizational culture, research methods. Reassigned to Department of Systems and Engineering Management, Graduate School of Engineering and Management, 1999. Tel. (937) 255-3636 (DSN 785-3636), ext. 4742. E-mail: mark.ward@afit.af.mil

4.4 MASTERS THESES BY PROGRAMS

ACQUISITION LOGISTICS

Capt Tonya M. Luther, “Moderating Effects of Station Isolation on Antecedents and Consequences of Fraternization” (AFIT/GAL/LAL/99S-1). Sponsor: USAF/JAG

COST ANALYSIS


CONTRACT MANAGEMENT


INVENTORY MANAGEMENT

Capt Andrew W. Hunt, “An Examination of the United States Air Service’s Logistics Operations” (AFIT/GIM/LAC/99S-1).


1st Lt Gregory S. Webb, “Pollution Prevention Cost Savings Using Supply Chain Reengineering” (AFIT/GIM/LAL/99S-3). Sponsor: AMC/LGSS

INFORMATION RESOURCE MANAGEMENT

Maj Ricardo F. G. Santos, “A Methodology to Apply Business Process Reengineering within the Brazilian Air Ministry” (AFIT/GIR/LAS/99M-9).

LOGISTICS MANAGEMENT

Maj Jorge Guarnieri, “Maintenance Resources Evaluation Technique” (AFIT/GLM/LAL/99M-1).


Capt Lawrence J. Stetz, “An Ex Post Facto Analysis of E-3 Maintenance Indicators in the 552nd Air Control Wing since Reorganization under an Aircraft Generation Squadron Concept” (AFIT/GLM/LAL/99S-10).

TRANSPORTATION MANAGEMENT


ADVANCED STUDIES IN AIR MOBILITY

(Note: The Air Mobility graduate program is designed specifically for personnel of the Air Mobility Command; students in the Air Mobility program write graduate research papers supporting topics of interest to AMC; the results of their papers are not included in the research summaries presented in Section 2 of this report.)

Maj Philip M. Calvano, “Joint Task Force J3/J4: Directorate of Mobility Forces” (AFIT/GMO/LAL/99E-1)

Capt Karn L. Carlson, “Reducing Aircraft Quick-Turn Ground Times in the European Environment” (AFIT/GMO/LAL/99E-2)


Maj Jeffrey L. Hupy, “Command and Control of Mobility Forces: Analysis of the Organizational Structure” (AFIT/GMO/LAL/99E-6).


Maj Paul R. Murphy, “The Availability of Container Shipping Needed to Meet Wartime Ammunition Sustainment Requirements” (AFIT/GMO/LAL/99E-10).


4.5 JOURNAL PUBLICATIONS

[* Denotes duplicate entry, multiple faculty authors.]

BRANDT, CRAIG M. (LAL)


CUNNINGHAM, WILLIAM A. (LAL)


CURRIE, LT COL KAREN W. (LA)


HAUCK, MAJ DARYL J. (LAS)


JOHNSON, MAJ ALAN W. (LAL)


MOORE, MAJ KEVIN R. (LAL)

MORRIS, MAJ MICHAEL G. (LAS)


REHG, MAJ MICHAEL (LAL)


SWARTZ, MAJ STEPHEN M. (LAL)


VAUGHAN, DAVID K. (LAC)

4.6 OTHER PUBLICATIONS

[* Denotes duplicate entry, multiple faculty authors.]

CAUDLE, MAJ MARK D.  (LAS)


JOHNSON, MAJ ALAN W.  (LAL)


MORRIS, MAJ MICHAEL G.  (LAS)


MUCZYK, JAN P.  (LA)


SWARTZ, MAJ STEPHEN M.  (LAL)


VAUGHAN, DAVID K.  (LAC)


4.7 SUBSTANTIAL CONSULTATIONS

BIROS, MAJ DAVID  (LAS)


SWARTZ, MAJ STEPHEN M.  (LAL)


VAUGHAN, DAVID K.  (LAC)

Vaughan, David K., Project Management Assistance, AFMC/LGI, December 1998. POC: Mr. Mark Fryman.
4.8 PRESENTATIONS

[* Denotes duplicate entry, multiple faculty authors.]

AROSTEGUI, MAJ MARYIN A. (LAL)


CUNNINGHAM, WILLIAM A. (LAL)


CURRIE, LT COL KAREN W. (LA)


JOHNSON, MAJ ALAN W.  (LAL)


SCOTT, MAJ WILLIAM L.  (LAL)


VAUGHAN, DAVID K.  (LAC)


Appendix: Abbreviations for Organizations

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing will only include selected organizations. The Air Force Address Directory has a more comprehensive listing of abbreviations for organizations at its web site at [http://afdir.hq.af.mil](http://afdir.hq.af.mil), additionally, the Defense Technical Information Center has an acronym listing at [http://www.dtic.mil/dtic/dtic-acronyms.html](http://www.dtic.mil/dtic/dtic-acronyms.html). The department symbols for the Graduate School of Engineering are found at Section 3.1 while those of the Graduate School of Logistics and Acquisition Management are depicted in Section 4.1.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
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<tbody>
<tr>
<td>ACC</td>
<td>Air Combat Command</td>
</tr>
<tr>
<td>AETC</td>
<td>Air Education and Training Command</td>
</tr>
<tr>
<td>AFCEE</td>
<td>Air Force Center For Environmental Excellence</td>
</tr>
<tr>
<td>AFCESA</td>
<td>Air Force Civil Engineer Support Agency</td>
</tr>
<tr>
<td>AFIT</td>
<td>Air Force Institute of Technology</td>
</tr>
<tr>
<td>AFMC</td>
<td>Air Force Materiel Command</td>
</tr>
<tr>
<td>AFOSR</td>
<td>Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFOTEC</td>
<td>Air Force Operational Test and Evaluation Center</td>
</tr>
<tr>
<td>AFRL</td>
<td>Air Force Research Laboratory</td>
</tr>
<tr>
<td>AFSPC</td>
<td>Air Force Space Command</td>
</tr>
<tr>
<td>AFTAC</td>
<td>Air Force Technical Applications Center</td>
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<tr>
<td>AIA</td>
<td>Air Intelligence Agency</td>
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<tr>
<td>AMC</td>
<td>Air Mobility Command</td>
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<tr>
<td>ASC</td>
<td>Aeronautical Systems Center</td>
</tr>
<tr>
<td>AU</td>
<td>Air University</td>
</tr>
<tr>
<td>DISA</td>
<td>Defense Information Systems Agency</td>
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<tr>
<td>DoD</td>
<td>Department of Defense</td>
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<tr>
<td>DOE</td>
<td>Department of Energy</td>
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<tr>
<td>HQ AU</td>
<td>Headquarters, Air University</td>
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<tr>
<td>PACAF</td>
<td>Pacific Air Forces</td>
</tr>
<tr>
<td>SAF</td>
<td>Secretary of the Air Force</td>
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<tr>
<td>USAF</td>
<td>United States Air Force</td>
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The views expressed in this report are those of the authors and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

14. ABSTRACT

This report summarizes the research activities of the Air Force Institute of Technology's Graduate School of Engineering and Graduate School of Logistics and Acquisition Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting either school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Engineering Physics and Logistics and Acquisition Management.

15. SUBJECT TERMS

Air Force Institute of Technology, Research Report 1999

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<th>SECURITY CLASSIFICATION OF:</th>
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<th>NUMBER OF PAGES</th>
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<tr>
<td>Dr. Heidi R. Ries, ENR</td>
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</tr>
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