

IIACADEME

SEMI-ANNUAL JOURNAL OF INFORMATION TECHNOLOGY

The Information Institute hosted 89 summer research associates this year; the highest participation on record. We had the privilege of welcoming 18 first time faculty and 18 first time students. Some returning students have begun their doctoral studies toward a PhD. Congratulations on successful hard work. We provided opportunities to share individual and collaborative research through poster presentations at various conferences and onsite venues. Additionally we are working to improve the application process, looking for more onsite presentation opportunities, and ways to encourage additional participant interactivity. We look forward to seeing familiar friends and making new acquaintances in the coming program year.

Posters Presented

- AFCEA C4I and Cyber Conference22
- II Technical Interchange and Poster Session.....35
- Other presentations4

Information Institute Spring/ Summer Program Highlights

Summer faculty professor Dr. Jia (Kevin) Liu from the Ohio State University (OSU) and AFRL/RI advisor Dr. Elizabeth Serena Bentley together with their OSU colleagues; received the prestigious 2016 IEEE International Conference on Computer Communications (INFOCOM) Best Paper Award for their work titled "Heavy-Ball: A New Way to Tame Delay and Convergence in Wireless Network Optimization." The award ceremony took place during IEEE INFOCOM 2016 on April 12th in San Francisco, CA.

■ Summer 2017 Visiting Faculty Research Program Applications

New topics are offered in addition to our established areas of research. The topics, application, instructions and program handbooks can be found on our website.

Applications will be accepted beginning November 1, 2016

Questions? Contact the Information Institute office

<http://www.wpafb.af.mil/Welcome/Fact-Sheets/Display/Article/836756>

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Our Mission

Strengthen and Expand Information Technology Research within the Information Directorate.

Develop collaborative relationships among and between the academic members and the Information Directorate.

Increase research emphasis in areas of information technologies critical to the Information Directorate's mission.

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Information Institute Membership

■ Current Membership

- AF Institute of Technology
- AFRL Information Directorate
- Arizona State University
- Auburn University
- Brescia University
- City College of New York
- Clayton State University
- Colorado State University
- Cornell University
- Dartmouth College
- Embry-Riddle Aeronautical University
- Fairleigh Dickinson University
- Florida Atlantic University
- Florida International University
- George Mason University
- Harding University
- Harvard University
- Illinois Institute of Technology
- Indiana University of Pennsylvania
- LaSalle University
- Louisiana State University
- Louisiana Tech University
- Minnesota State University
- Missouri University of Science & Technology
- Mohawk Valley Community College
- Montana State University
- Montclair State University
- Navajo Technical University
- New Jersey Institute of Technology
- Northeastern University
- Oklahoma State University
- Pennsylvania State University
- Purdue University
- Rensselaer Polytechnic Institute
- Rochester Institute of Technology
- Rutgers – Newark College of Arts & Sciences
- San Diego State University
- Southern Illinois University Carbondale
- SUNY Binghamton
- SUNY Buffalo
- SUNY Polytechnic Institute
- Syracuse University
- Temple University
- Tennessee State University
- Texas A&M University
- Tufts University
- Tuskegee University
- University of Alabama
- University of Central Florida
- University of Fairfax
- University of Illinois at Urbana-Champaign
- University of Kansas
- University of Massachusetts
- University of Massachusetts Lowell
- University of Minnesota – Twin Cities
- University of Missouri – Kansas City
- University of Nebraska – Lincoln
- University of Nebraska – Omaha
- University of Oklahoma
- University of South Carolina
- University of South Florida
- University of Texas at San Antonio
- University of Tulsa
- Utica College
- Vanderbilt University
- Villanova University
- Virginia Commonwealth University

■ Membership with the Information Institute

Becoming a member of the Information Institute (II) connects the United States Air Force with academia and fosters collaboration between academic institutions to maximize the benefits received by all. By partnering with the Information Institute, information technology research can better employ the expertise of the Air Force Research Lab, universities, industry, and highly specialized individuals providing a research network to address challenges in Command & Control, Communications, Computers, and Intelligence (C4I) and Cyber. Additionally, the Air Force Research Lab located in Rome, NY provides exceptional world class facilities to address the four core competencies of research–

- Autonomy, Command and Control, and Decision Support
- Connectivity and Dissemination
- Cyber Science and Technology
- Processing and Exploitation

There is no charge for membership with the II. Our goal is to promote exceptional scientific research and development in the world of Information Technology by partnering the United States Air Force with academia.



Mr. Daniel Goddard examines research summary during the 2016 II Technical Interchange Poster Session

■ Partnership Benefits

- Access to Air Force Research Laboratory (AFRL) Information Directorate expertise and exceptional facilities at the Griffiss Business & Technology Park in Rome, NY
- Insight into current and future Air Force and DoD Information Technology needs
- Research programs for faculty and graduate students
- Product commercialization opportunities
- Extension grants competition for continuation of summer research
- Invitation to relevant workshops
- Equipment Loans

■ How to Become an Information Institute Member

For more information to become an Information Institute member contact the Information Institute Director at: rrs.iiweb@us.af.mil



2016 Visiting Faculty Research Program (VFRP) participants and advisors

Highlights continued...

Under the guidance of Mr. Mark G. Alford and Dr. Erik P. Blasch of the AFRL/Information Directorate; Dr. Soundararajan Ezekiel of Indiana University of Pennsylvania and his students Michael Giansiracusa and Adam Lutz collaboratively published four papers, three planned conference papers, prepared and executed seven presentations, and submitted one journal paper currently in review.

A representative from the AFRL Information Directorate will be speaking by invitation at the Information Assurance Day hosted by the Indiana University of Pennsylvania in November.

Dr. David Last of the AFRL/Information Directorate hosted two summer faculty researchers; Dr. Guanhua Yan of The State University of New York at Binghamton, and Dr. Wei-Shinn "Jeff" Ku of Auburn University.

A year prior, Dr. Last and Dr. Yan collaborated on research in the area of software security metrics, publishing a paper on their novel Bayesian Belief Nets-based approach at the International Security Conference in September.

This year they've focused more narrowly on the area of cyber deception; investigating techniques for cyber deception in software construction, as well as the basic science of a measure of quality for cyber deception techniques. Dr. Yan plans to continue this research at his university and seeks funding for research in this area.

Dr. Last and Dr. Ku focused their efforts on extending an AFRL-developed attack surface metric to incorporate information regarding forecasted future software vulnerabilities. These vulnerability forecasts are provided by Dr. Last's research. Dr. Ku plans to continue this research at his university with assistance from his graduate student.

■ Professor and Student Highlights

In May of 2016, Dr. Yang Yi received The Miller Professional Development Award for Distinguished Research from the University of Kansas.

Shannon Ray, the PhD student of Dr. Warner Miller, Florida Atlantic University, defended his thesis in October of 2016.

Information Institute Contacts



■ Director

Dr. Andrew J. Noga

Dr. Noga became the Information Institute Director in June of 2016. Andy recently retired from civil service after 33 years in various positions of engineering and management. He brings a technical background with an understanding of government and academia needs. His goal for the Information Institute is to expand its academic outreach while increasing the participant base.

Welcome Dr. Noga.

■ Program Coordinator

Elizabeth A. Kelly

Ms. Kelly manages all applicant and staff needs for programs through the Information Institute. She provides the on-site personal contact for these programs. Elizabeth has served with the Information Institute since 2011.

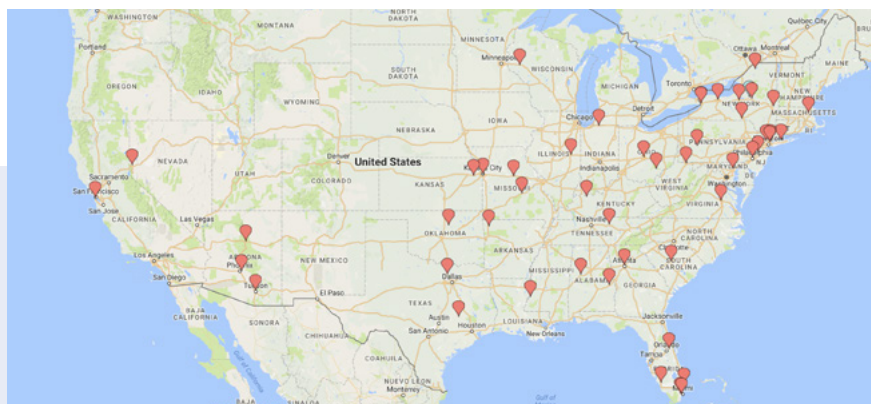
■ Deputy Director

Duane A. Gilmour

Mr. Gilmour became the Information Institute Deputy Director providing government oversight and program management. Duane has been employed in civil service for 31 years, serving in various engineering and management positions.



2016 Visiting Faculty Research Program (VFRP) & Mentors



2016 Representative Universities

2016 Program Statistics

Faculty	64
Students	25
Represented Universities	50
Extension Grants	25
Publications	>60

2016

- September 8
- November 1
- November 30

Upcoming Programs

- Accepting Summer Faculty Fellowship (SFFP) applications (<http://afsffp.sysplus.com>)
- Accepting Visiting Faculty Research Program (VFRP) applications from general public
- Summer Faculty Fellowship Program (SFFP) application process closed 2017

2017

- January 20
- Mid-March
- May 8
- June 13-15
- July 11

Upcoming Events

- VFRP application competition closed
- VFRP selection notification
- VFRP and SFFP begin
- AFCEA Conference (tentative)
- Information Institute Technical Networking Interchange & Poster Session



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