

The Department of Computer Science
DEPARTMENTAL REPORT
AUGUST 2011

The Up-and-Coming Computer Science Department





Message from the Chair



Hassan Gomaa

Welcome to the Department of Computer Science at George Mason University. We are pleased to present our first departmental report, which describes our achievements since the merger of the Department of Information and Software Engineering with the Department of Computer Science in January 2008.

The Department of Computer Science is now the largest department in the Volgenau School of Engineering, one of the largest departments on campus, and one of the largest computer science departments in Virginia. The department is multidisciplinary in nature, teaching two undergraduate programs, four master of science programs, and two PhD programs. With more than 40 full-time faculty members, more than a thousand students, millions of dollars of research funding, and a state-of-the-art teaching facility, the department continues to thrive. Our faculty of world-renowned researchers brings national and international prestige to the department, the Volgenau School, and the university.

We have a strong partnership with local industry, which includes some of the most respected information technology companies in the world. Our adjunct faculty, who are innovators in industry and government, bring a level of practicality to our programs. As Mason moves into the second decade of this century, the department continues to support the local and international economies with our graduates who apply knowledge gained through their studies at Mason to solve the problems of a computing intensive world.

A Look at George Mason University

George Mason University emerged as a state university in 1972 in the then-sleepy town of Fairfax in Northern Virginia. Mason's arrival coincided with unprecedented growth of the federal government and the private sector community that supported it. By the mid-1970s, Fairfax County schools were booming with thousands of new students each year. Mason grew substantially to meet the need for quality higher education to support the surge in public- and private-sector growth.

Today, Mason has risen to the challenge of educating technology leaders and innovators. Now one of the largest public universities in Virginia, Mason is a residential university with nationally ranked academic programs, Nobel Prize-winning laureates, and international alumni. Mason has been ranked as the number 1 up-and-coming university in the nation and is one of the most diverse universities in the nation with international students from more than 120 countries.



Sanjeev Setia

Hassan Gomaa is the outgoing chair of the Department of Computer Science. He served from January 2008 through August 2011. His successor as chair is Sanjeev Setia.

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Undergraduate Studies Setting a Foundation for Success

Mason is joining the trend in renewed interest in computer science. With more options for study, creativity, and future employment, our enrollment rates are increasing. Our two computer science BS degrees—computer science and applied computer science—help fill the growing need for trained professionals who can continue to develop new applications and solutions for our technology-based society.

From traditionalists to innovators, our program is attracting a diverse group of college students.

BS IN COMPUTER SCIENCE

Students following our traditional computer science degree graduate with a broad understanding of the fundamental concepts, methodologies and tools, and applications of computer science.

During their time at Mason, our students are offered exciting internship and summer job opportunities with companies that directly support the Volgenau School and those seeking the best and brightest talent in their own backyard. In addition, our proximity to the federal government gives our students access to federal jobs and internships for great networking and learning. These practical learning opportunities turn into well-paying professional positions, making our program one of the most attractive in Virginia and the metropolitan Washington, D.C., area.

The BS in Computer Science program is accredited by the Computing Accreditation Commission of ABET.



BS IN APPLIED COMPUTER SCIENCE

Our BS in applied computer science is designed for students who want and need the knowledge and expertise to work in one of the many disciplines that require advanced computing techniques. These fields require more than knowing how to use a computer; they also create new and interesting problems for the computer scientist to solve.

The applied computer science degree is enhanced with four concentrations:

- Bioinformatics
- Computer Game Design
- Geography
- Software Engineering

Nearly 60 students were enrolled in these dynamic application areas during spring semester 2011.

BITS AND BYTES

The growing interest in our applied computer science degree underscores the importance of computer science education in all industries as nearly every job in the country uses computers and relies on technology. In addition to full degree programs, we offer minors in computer science and software engineering, as well as an undergraduate certificate in computer science.

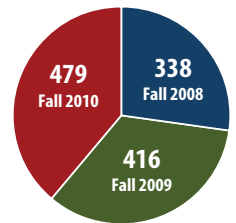
WORLD-CLASS FACULTY

All our undergraduate students benefit from one of the quality hallmarks of our program. World-class faculty teach classes ranging from introductory programming to advanced topics such as robotics and data mining.

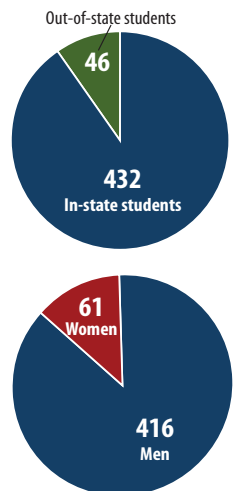
WHO WE ARE

The majority of Mason computer science students are full-time Virginia residents; however, we have a growing number of out-of-state and international students, which speaks volumes about our reputation. We also have part-time students who find our location, flexible schedule, and summer classes fit their personal and professional needs. In addition, we are working hard to encourage women to enter the program. It helps that we have one of the largest number of women faculty in the state.

CS Undergrad Degree Student Enrollment 2008–11



Spring 2011 CS Undergrad Degree Students



Graduate Studies—Groundbreaking Innovations

George Mason University's commitment to graduate studies in computing is shaped by an internationally recognized faculty of educators and researchers, supported by an expert industrial advisory board and administrative leadership who work together to provide competitive graduate programs to prepare students for a variety of academic, industrial, and government career opportunities.

Our nationally ranked master's and PhD programs build on a solid foundation of computing concepts and provide innovative advanced courses, many of which address current industrial needs and trends. The PhD in Computer Science program is nationally ranked. Mason was the first university in the nation to offer an interdisciplinary doctoral degree in information technology, to which the Department of Computer Science is a major contributor. Our 14 graduate certificates and accelerated BS/MS programs allow students to apply advanced-level knowledge to real-world applications.



We offer the following graduate programs:

- Four master's degree programs
 - Computer Science
 - Information Security and Assurance
 - Information Systems
 - Software Engineering
- Two doctoral degree programs
 - PhD in Computer Science
 - Major participants in the schoolwide PhD in Information Technology, with concentrations in information security and assurance, information systems, and software engineering
- Fourteen graduate certificates
 - Biometrics
 - Computer Games Technology
 - Computer Networking
 - Data Mining
 - Database Management
 - E-Commerce
 - Foundations of Information Systems
 - Information Engineering
 - Information Security and Assurance
 - Intelligent Agents
 - Software Architecture
 - Software Engineering
 - Software Engineering for C4I
 - Web-based Software Engineering

Four of our graduate certificates—Computer Games Technology, Computer Networking, Software Architecture, and Software Engineering—are available online through our distance education program.

FROM CLASSROOM TO CAREER

Mason's location just outside Washington, D.C., near a steady and growing technology corridor, attracts students who currently work at technical and management levels in government and industry. These professionals have the ability to immediately apply their education to their jobs. Conversely, they bring industry-based problems and needs to the classroom and work to find innovative solutions. This dynamic exchange of ideas allows our programs to stay truly attuned to the needs of the community and the students.

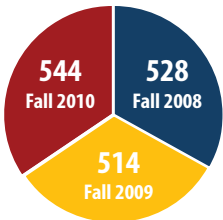
RESEARCH AND RECOGNITION

Research and discovery are at the heart of our graduate programs. Our faculty members regularly receive research grants from industry and government agencies such as the National Science Foundation (NSF), the Defense Advanced Research Projects Agency, and NASA, as well as prestigious NSF CAREER and Air Force Research Awards for young faculty members. Our faculty are regular speakers at national and international conferences, contribute findings to journals, and write some of the most widely used textbooks in the country. Our graduate students are heavily involved with our research projects and are encouraged and mentored by faculty to submit their findings to peer-reviewed journals and conferences.

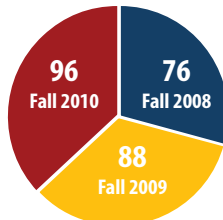
GRADUATES BY THE NUMBERS

Computer Science graduate students come to Mason from across the nation and around the globe. This diverse student population enhances the program with many different perspectives. Our graduates are creating an international network of professionals who continue to support our programs and students.

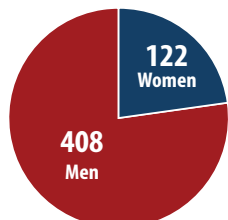
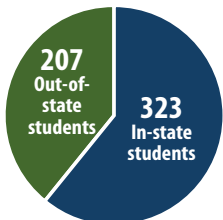
**CS Graduate Degree
MS Student Enrollment
2008–11**



**CS Graduate Degree
PhD Student Enrollment
2008–11**



Spring 2011 CS Graduate Degree Students



PhD GRADUATES 2008–11

PhD Computer Science

2008

Leijun Huang

Dissertation Title: Reliable Bulk Data Dissemination in Sensor Networks

Director: Sanjeev Setia, PhD

Pavel Rabinovich

Dissertation Title: Service Assurance in Insecure Networks with Byzantine Adversaries

Director: Robert Simon, PhD

Zbigniew Maciej Skolicki

Dissertation Title: An Analysis of Island Models in Evolutionary Computation

Director: Kenneth A. De Jong, PhD

2009

Muhammad Abdulla

Dissertation Title: Routing in Delay Tolerant Networks

Director: Robert P. Simon, PhD

Aybar C. Acar

Dissertation Title: Query Consolidation: Interpreting Queries Sent to Independent Heterogeneous Databases

Director: Amihai Motro, PhD

Ghada M. Alnife

Dissertation Title: A Multi-Channel Defense against Communication Denial-of-Service Attacks in Wireless Networks

Director: Robert P. Simon, PhD

Younhee Kim

Dissertation Title: Towards Lower Bounds on Distortion in Information Hiding

Codirector: Zoran Duric, PhD

Codirector: Dana S. Richards, PhD

Yanling Liu

Dissertation Title: Virtual Human Anatomy and Surgery System

Director: Jim X. Chen, PhD

Dorin Marcu

Dissertation Title: Learning of Mixed-Initiative Human-Computer Interaction Models

Codirector: Gheorghe D. Tecuci, PhD

Codirector: Mihai Boicu, PhD

2010

Loulwah S. Al-Sumait

Dissertation Title: Online Topic Detection, Tracking, and Significance Ranking Using Generative Models

Codirector: Daniel Barbará, PhD

Codirector: Carlotta Domeniconi, PhD

Gabriel Catalin Balan

Dissertation Title: Computational Issues in Long-Term Fairness among Groups of Agents

Director: Sean Luke, PhD

Dongyu Liu

Dissertation Title: Efficient Resource Management for Heterogeneous Devices Accessing Internet Streaming Content

Director: Songqing Chen, PhD

Sahar S. Shabanah

Dissertation Title: Simplifying Algorithm Learning Using Serious Games

Director: Jim X. Chen, PhD

2011

Gerald S. Doyle

Dissertation Title: A Methodology for Making Comparative Architecture-Based Performance Potential Evaluations

Director: Elizabeth L. White, PhD

Daniel P. Fleck

Dissertation Title: Efficient Affine Image Matching for Building and Maintaining 3D Models

Director: Zoran Duric, PhD

Wallace E. Lawson

Dissertation Title: Analyzing Human Gait by Modeling the Motion of Superpixels

Director: Zoran Duric, PhD

Lei Liu

Dissertation Title: Multi-Level Sandboxing Techniques for Execution-Based Stealthy Malware Detection

Director: Songqing Chen, PhD

Pu Wang

Dissertation Title: Nonparametric Bayesian Models for Unsupervised Learning

Director: Carlotta Domeniconi, PhD

Vinay Devadas (Summer 2011)

Dissertation Title: System-Level Energy Management for Real-Time Systems

Director: Hakan Aydin, PhD

PhD Information Technology

2008

Ricci Heishman

Dissertation Title: Deducing Fatigue and Cognitive Engagement from Eye Region Biometrics

Director: Zoran Duric, PhD

Saket Kaushik

Dissertation Title: Policy Controlled Email Services

Codirector: Paul Ammann, PhD

Codirector: Duminda Wijesekera, PhD

Vu T. Le

Dissertation Title: Abstraction of Reasoning for Problem Solving and Tutoring Assistants

Codirector: Mihai Boicu, PhD

Codirector: Gheorghe D. Tecuci, PhD

Saravanan Muthaiyah

Dissertation Title: A Framework and Methodology for Ontology Mediation through Semantic and Syntactic Mapping

Director: Larry Kerschberg, PhD

Erika Mir Olimpiew

Dissertation Title: Model-Based Testing for Software Product Lines

Director: Hassan Gomaa, PhD

Jaeyong Park

Dissertation Title: Perfective and Corrective UML Pattern-Based Design Maintenance with Design Constraints for Information Systems

Codirector: David C. Rine, PhD

Codirector: Elizabeth L. White, PhD

Hemant Kumar Singh Sengar

Dissertation Title: Securing Public and IP Telephone Networks

Codirector: Sushil Jajodia, PhD

Codirector: Duminda Wijesekera, PhD

Zhixion Zhang

Dissertation Title: Scalable Role and Organization-Based Access Control and Its Administration

Codirector: Daniel Menascé, PhD

Codirector: Ravi S. Sandhu, PhD

Tianshu Zhou

Dissertation Title: Accurate Depth-Based Post-Processing for Perception Enhancement in Real Time 3D Graphics

Director: Jim X. Chen, PhD

2009

Malak Talal Al-Nory

Dissertation Title: Service Composition Framework to Unify Simulation and Organization in Supply Chains
Director: Alexander Brodsky, PhD

Muna Saleh Al-Razgan

Dissertation Title: Weighted Clustering Ensembles
Director: Carlotta Domeniconi, PhD

Venkata R. Bhamidipati

Dissertation Title: Architecture and Models for Administration of User-Role Assignment in Role-Based Access Control
Codirector: Daniel A. Menascé, PhD
Codirector: Ravi S. Sandhu, PhD

Mark W. Hartong

Dissertation Title: Secure Communications-Based Train Control (CBTC) Operations
Director: Duminda Wijesekera, PhD

Sankardas Roy

Dissertation Title: Secure Data Aggregation in Wireless Sensor Networks
Codirector: Sanjeev Setia, PhD
Codirector: Sushil Jajodia, PhD

2010

Vinod K. Dubey

Dissertation Title: Quality of Service Management of Business Process in Service-Oriented Architectures
Director: Daniel A. Menascé, PhD

Murat Gunestas

Dissertation Title: An Evidence Management Model for Web Services Behavior
Director: Duminda Wijesekera, PhD

Ghassan Jabbour

Dissertation Title: The Insider Threat Security Architecture: An Integrated Inseparable and Uninterrupted Self-Protection Autonomic Framework
Director: Daniel A. Menascé, PhD

David M. Kapfhammer

Dissertation Title: Use of a Decision Rights Governance Model for Aid in the Delivery of Globally Distributed Information Technology Projects
Director: Edgar H. Sibley, ScD

David A. Wheeler

Dissertation Title: Fully Countering Trusting Trust through Diverse Double Compiling
Codirector: Daniel A. Menascé, PhD
Codirector: Ravi S. Sandhu, PhD

Min Xu

Dissertation Title: Session-Aware RBAC Administration, Delegation and Enforcement with XACML
Director: Duminda Wijesekera, PhD

2011

Eiman Al-Shammari

Dissertation Title: Improving Arabic Text Processing via Stemming with Application to Text Mining and Web Retrieval
Director: Jessica Lin, PhD

Hanjo Jeong

Dissertation Title: Semantic Query Processing in Knowledge Sifter via Emergent Semantics and Collaborative Filtering
Director: Larry Kerschberg, PhD

Garrett K. Kaminski

Dissertation Title: Applications of Logic Coverage Criteria and Logic Mutation to Software Testing
Director: Paul Ammann, PhD

James P. Rogers

Dissertation Title: Detection of Outliers in Spatial-Temporal Data
Codirector: Daniel Barbará, PhD
Codirector: Carlotta Domeniconi, PhD

Lei Zhang

Dissertation Title: Securing the Information Disclosure Process
Codirector: Alexander Brodsky, PhD
Codirector: Sushil Jajodia, PhD

Khalid I. Alodhaibi (Summer 2011)

Dissertation Title: Decision-Guided Recommenders with Composite Alternatives
Director: Alexander Brodsky, PhD

Julie Fant (Summer 2011)

Dissertation Title: A Partially Automated Approach to Building Domain Specific Software Architectures Using Software Architectural Design Patterns
Director: Hassan Gomaa, PhD

Jiang Wang (Summer 2011)

Dissertation Title: Hardware-Assisted Protection and Isolation
Director: Angelos Stavrou, PhD

Engineer Degree in Information Technology

2008

Ning Kang

Dissertation Title: Categorization and Clustering for Unlabeled Documents
Director: Carlotta Domeniconi, PhD

2009

Nagesh S. Kakarlamudi

Dissertation Title: Performance Characterization of IPV6 in the Context of QOS
Director: J. Mark Pullen, PhD

EXTERNAL RANKINGS OF COMPUTER SCIENCE AT MASON

Ranking by Research Expenditures: The National Science Foundation (NSF), in its report for fiscal year 2009 (the most recent available) on total research and development expenditures in computer science (by the Computer Science Department and research centers in computing), ranked Mason as 46th of 400 institutions with total research and development expenditures of \$8.58 million—an objective indication of our strength in attracting research funding.

Ranking in *U.S. News & World Report*: *U.S. News & World Report* is an established source of extensive surveys regarding academic rankings. Its 2010 survey of departments that grant PhD degrees in computer science included 156 departments, and Mason's Computer Science Department tied for 63rd position.

Beyond Academics



Student life at George Mason University reflects the interests and aspirations of our students. There are close to 200 social and academic clubs and organizations from which to choose. Mason students are encouraged to seek out new opportunities for growth to enhance their education and form social connections that will last a lifetime.

For students in the Department of Computer Science, there are many organizations that appeal to their studies and interests:

Game Analysis and Design Interest Group is for students interested in playing or developing video games. Computer game design is an interdisciplinary program at Mason, and this club welcomes students in computer science and game design.



George Mason University Computer Science Graduate Student Association provides graduate students with a voice in departmental affairs and a way to increase interaction among the student and the faculty body.

Information Security Association provides educational forums, information resources, and peer interaction opportunities that enhance the knowledge, skill, and professional growth of its members.

The Information Society Movement is a multidisciplinary student organization focused on exploring the technologies, concepts, effects, and social implications of living and working in an information society.

The Society of Women Engineers' mission is to stimulate women to achieve their full potential in careers as engineers and leaders, expand the image of the engineering profession as a positive force in improving the quality of life, and demonstrate the value of diversity.

The National Society of Black Engineers' mission is to increase the number of culturally responsible black engineers who excel academically, succeed professionally, and positively impact the community.

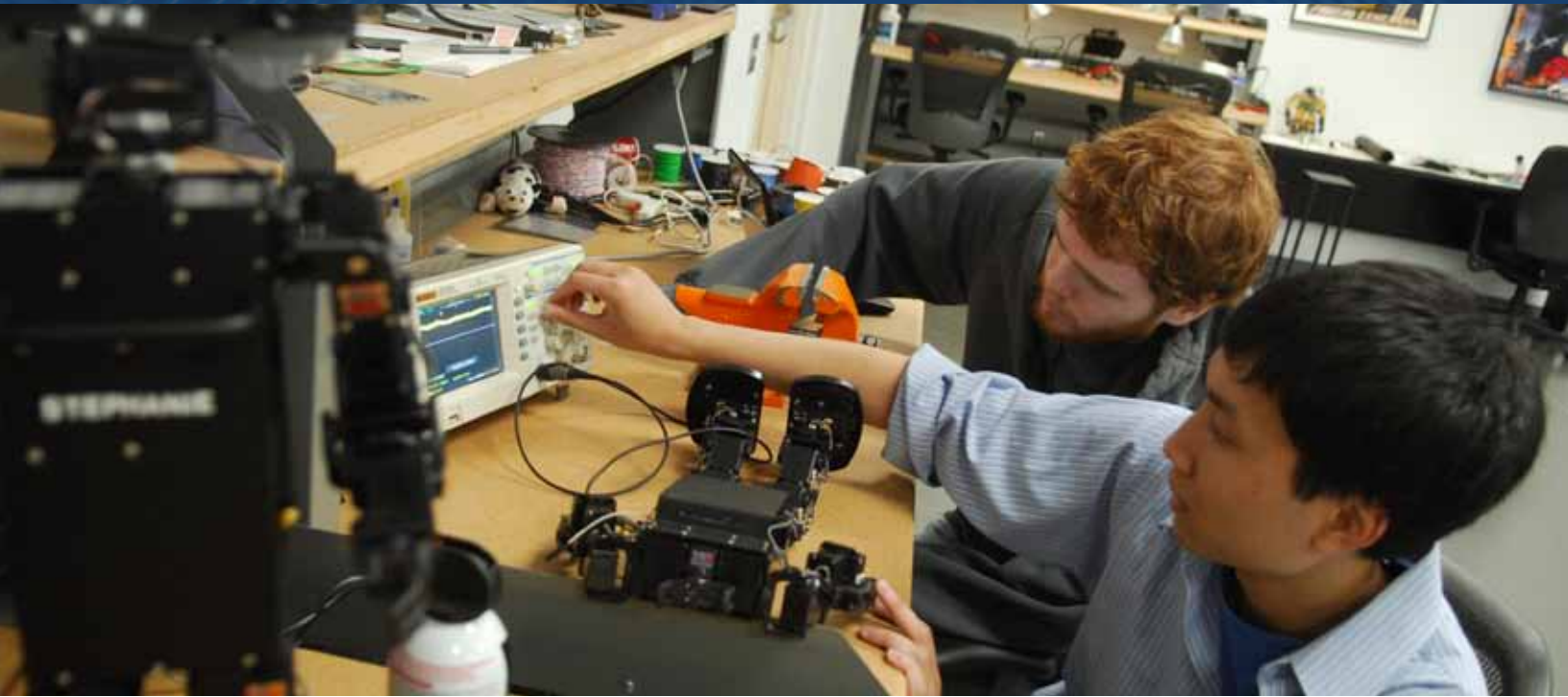
The Electrical and Computer Hacking Organization provides an understanding of computer network infrastructure and computer architecture, along with their vulnerabilities to ensure all members have an understanding of how exploits occur and how they can be prevented.

Mason Information Systems and Operations Management Association is for students who have an interest in information technology and its applications in business.

ACTIVITY SPOTLIGHT

Applied Robotics Club

Teaching a robot to play soccer is not an easy task, but it is one gladly taken on by members of the Applied Robotics Club (ARC). Mason ARC members are responsible for the creation of the RoboPatriots, a fully functioning robotic team that competes in the international RoboCup.



Students, led by graduate student advisor Christopher Vo, learn the nuances of robotic design such as localization, computer vision (being able to sense the ball, goal, and other players), and motion.

“For the robot to sense, think, and act intelligently,” says Vo, “all of these elements must work together robustly, in both software and hardware.”

A typical robot is built with a sensor that uses sound waves or a laser scanner to “sense” distance. Using the pan/tilt head and camera for sensing, a humanoid robot processes information differently, taking pictures every few seconds and deciding what to do next based on where the robot is in the game. To do that, the robot has to be programmed to act in every single scenario the students could possibly imagine.

“As we participated in RoboCup, we found that the struggles we faced in all of these aspects of the competition are shared by even the most experienced and well-funded teams. For us, this perspective is profound because it highlights the need for more intelligent and robust approaches and provides us with the sense that we belong in the competition,” says Vo.

ASSOCIATION FOR COMPUTING MACHINERY STUDENT CHAPTER

Computer science at Mason is more than a course of study, it is also a competitive sport. The Mason student chapter of the Association for Computing Machinery (ACM) is the most active computer science-related club on campus.

Throughout the year, students led by faculty member Jyh-Ming Lien and graduate student advisor Christopher Vo, prepare for ACM competitions.

Teams of student programmers compete against each other in regional meets. During the practices and mock competitions, students learn strategies to identify the categories and types of algorithms needed to solve the problems that will be given during competition. All five teams participating in the 2010 Mid-Atlantic USA Competition received an honorable mention and ranked second of the participating universities.

Research Centers Set the Pace for 21st-Century Research

Four research centers in Mason's Department of Computer Science investigate the latest research topics in information technology (IT). Mason's location in metropolitan Washington, D.C., provides the advantage of proximity to a range of industry and government partners for research and development. The C4I and LAC centers are long established, while the SPG and HIT centers are new.

The Center of Excellence in Command, Control, Communications, Computing, and Intelligence (C4I) is the nation's first and only civilian, university-based entity offering an academic and research program in military applications of IT. A multi-disciplinary group of faculty, researchers, and fellows-in-residence from industry and government collaborate on C4I's research in sensing and fusion, C3 architectures, communications and signal processing, command support and intelligent systems, modeling and simulation, and information systems. The C4I center includes faculty from several departments in the Volgenau School, including a strong component from the Department of Computer Science.

Mark Pullen, C4I's director since 2005, has continued the center's focus on bringing academic expertise to the needs of the U.S. military and related government and commercial applications of IT.



"The center's role is to bring the expertise of the Volgenau School faculty, students, and supporting staff to bear on problems faced by the military," Pullen says. "To do that, we must span the culture gap between the faculty and our government/military/defense industry customers."

One of C4I's current projects is research into the single greatest threat to U.S. forces in the global war on terrorism, the improvised explosive device. The center's researchers analyze, predict, and develop countermeasures to this threat. Pullen says, "We have an opportunity to greatly improve the effectiveness of technologies used by the U.S. military and its coalition partners in waging war and peace."

Many C4I technologies have practical use beyond their military purposes. Among these diverse applications are noisy speech reduction for hearing aids and a computer-based educational game that uses artificial intelligence technology to teach statistics to junior high school students. Closer to home, several Mason programs are using real-time delivery technology that C4I has developed for distance education.

The Center for Smart Power Grids (SPG) works to advance the knowledge frontiers of decision guidance systems, economic and market models, and public policy strategies to bring the nation's power grid into the 21st century.

Alex Brodsky, SPG director, outlines three major research areas. One is on optimal energy management and sustainability for power microgrids to reduce energy consumption, cost, and carbon emissions. Another is on improving recovery from energy supply disruptions to minimize negative economic impact, improve near-real-time energy market pricing, and provide optimal power consumption scheduling. The last is on the enhancement of the electric grid infrastructure to strengthen it against natural and human-induced disasters and improve smart grid interoperability.

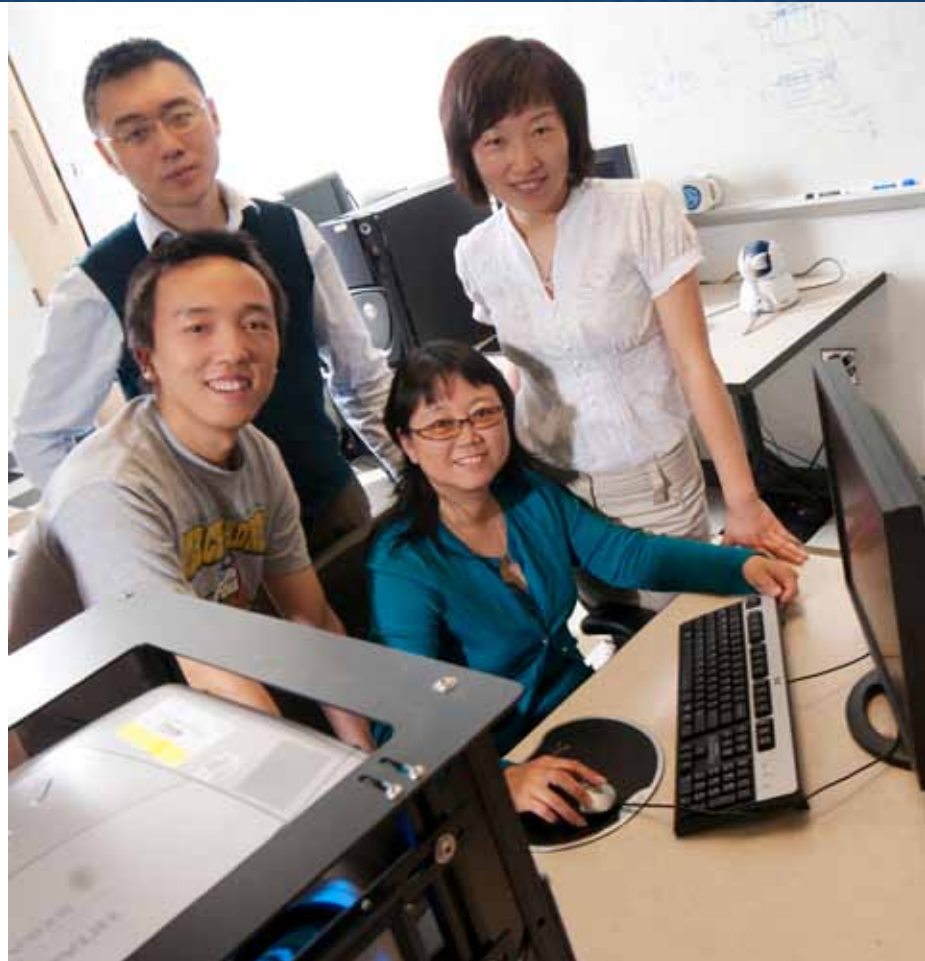
SPG is developing a system for Mason to analyze power consumption patterns and recommend operational and planning decisions on how to best use smart grid and renewable resources to reduce energy consumption, costs, and carbon emissions.

The Learning Agents Center (LAC) researches the development of cognitive assistants that learn complex problem-solving expertise directly from human experts, support experts and nonexperts in problem solving and decision making, and teach their problem-solving expertise to students. Because reasoning with evidence is at the core of many tasks in a wide variety of domains, LAC is developing a computational theory of evidence-based reasoning, which is viewed as ceaseless discovery in a nonstationary world, involving evidence in search of hypotheses (through abductive reasoning), hypotheses in search of evidence (through deductive reasoning), and evidential tests of hypotheses (through inductive reasoning), all occurring simultaneously. This theory is embedded in the learning agents, which are then taught by subject matter experts to solve problems in ways that are similar to how students are taught, through examples and explanations, and by supervising and correcting their problem-solving attempts.

“A main objective of our research is the development of artificial intelligence methods that will change the way intelligent agents are built, from being programmed by knowledge engineers to being taught by computer users who do not have prior knowledge engineering experience,” says Gheorghe Tecuci, LAC director. “These methods should allow typical users to develop their own intelligent assistants as easily as they now use a word processor.”

LAC has developed cognitive assistants for many domains, including intelligence analysis, military center of gravity determination, course of action critiquing, emergency response planning, financial services, medicine, and personalized training. These agents have been used successfully for education and training at Mason, as well as with the U.S. Army War College, Air War College, Joint Forces Staff College, and other institutions.

The Mason Center for Health Information Technology (HIT), an interdisciplinary center, addresses the critical need to transform the current health care system to meet the needs of all its stakeholders—patients, physicians, laboratories, insurance companies, and state and federal agencies and governments—in providing high-quality care while containing costs.



Larry Kerschberg, codirector of the HIT center along with P. J. Maddox of the College of Health and Human Services, indicated that “the HIT center is forming strategic partnerships with industry to leverage Mason’s advanced R&D with industry’s existing relationships with federal and state agencies to effect meaningful technology transfer.”

These researchers and practitioners are working toward HIT’s major goal of creating an evolutionary architectural framework that provides an open-source, patient-oriented, standards-based data, and knowledge-sharing environment. Among the many challenges—proprietary data formats, conflicting standards for electronic health records, heterogeneous data elements among health records—is the need for trusted and secure data exchange.

HIT researchers envision a modular approach that uses standards-based tools and architecture to support data sharing and interoperability, which in turn will promote greater interaction among health care providers and patients.

Research Labs Provide Environment for Intensive Focus on Technologies

Research laboratories in the Department of Computer Science offer a unique opportunity for faculty and graduate students to work together on research projects. Such research and collaboration outside the classroom setting benefit students and faculty alike. Students can apply traditional knowledge to hands-on research and learn from the experience of accomplished mentors in their fields of interest. Faculty members gain research partners who make discoveries of their own, help bring projects to fruition, and help publish their findings in journals and conferences. These labs exemplify the atmosphere of in-depth exploration that the department fosters.

The Artificial Intelligence and Databases Laboratory is headed by Jana Košecká and Kenneth De Jong with Amarda Shehu. Three professors currently work with several graduate students. De Jong's focus is complex adaptive agent-based systems, and his team uses simulation, modeling, artificial intelligence (AI), machine learning, and evolutionary

computation to understand the complex, nonlinear dynamics of systems of intelligent interacting agents. De Jong was recently awarded two grants from the Office of Naval Research (ONR), including one for agent-based modeling of a conflict region using sociocultural and evolutionary dynamics, and two from the National Science Foundation (NSF), including one for an integrated high-performance metaheuristics library.

Shehu and her students investigate computational structural biology and bioinformatics as a bridge between computer science and the life sciences. Her focus combines AI, robotics, computational geometry, statistical mechanics, and distributed computing. Among Shehu's grants is an NSF grant for a computational framework to enhance the ab-initio sampling of nativelike protein conformations.

"This framework is an important step toward using computation in molecular design either for designing therapeutics and drug-delivery templates or constructing novel functional materials," explains Shehu.



Košecká is researching computer vision, machine learning, and robotics with her students. She notes, “We’re interested in ‘seeing’ systems engaged in autonomous tasks, using visual sensing to acquire static and dynamic models of environments, and exploring human-computer interaction.” Her recent grants include an NSF grant for geometric and appearance-based methods for model acquisition, a Google grant for the semantic parsing of street scenes, and a National Geospatial-Intelligence Agency grant for enhancing virtual environments through motion imagery analysis.

The Visual Computing Laboratory is a focal point for graphics-related research, providing a well-equipped research environment for faculty and graduate students, including those who are members of Mason’s Graphics Group. Jim X. Chen oversees the lab, and his research interests include medical imaging, virtual reality, and real-time simulation. He and the graduate students in the lab are researching knee surgery simulation, virtual reality golf swing tracking and analysis, and real-time communication and security in GPS-based tracking and communication.

Recent grants awarded to Chen have come from NSF and Inova Fairfax Hospital, and the lab has a National Institutes of Health (NIH) proposal under review.

“The Visual Computing Lab has faculty and students who are experts in medical imaging, face recognition, virtual reality, 3D graphics, and real-time simulation,” Chen points out. “We’re interested in research projects and collaborations in these and other related areas.”

The Visual Computing Laboratory is also involved in cutting-edge research related to biometrics—essential for homeland security—and graduate education, with Harry Wechsler and five doctoral students. The range of research and development activities involves smart identity management, information retrieval from large heterogeneous databases, adversarial and counter-biometrics, surveillance, re-identification, smart camera networks, security versus privacy/anonymity and public policy, and data fusion and multisensory data integration.

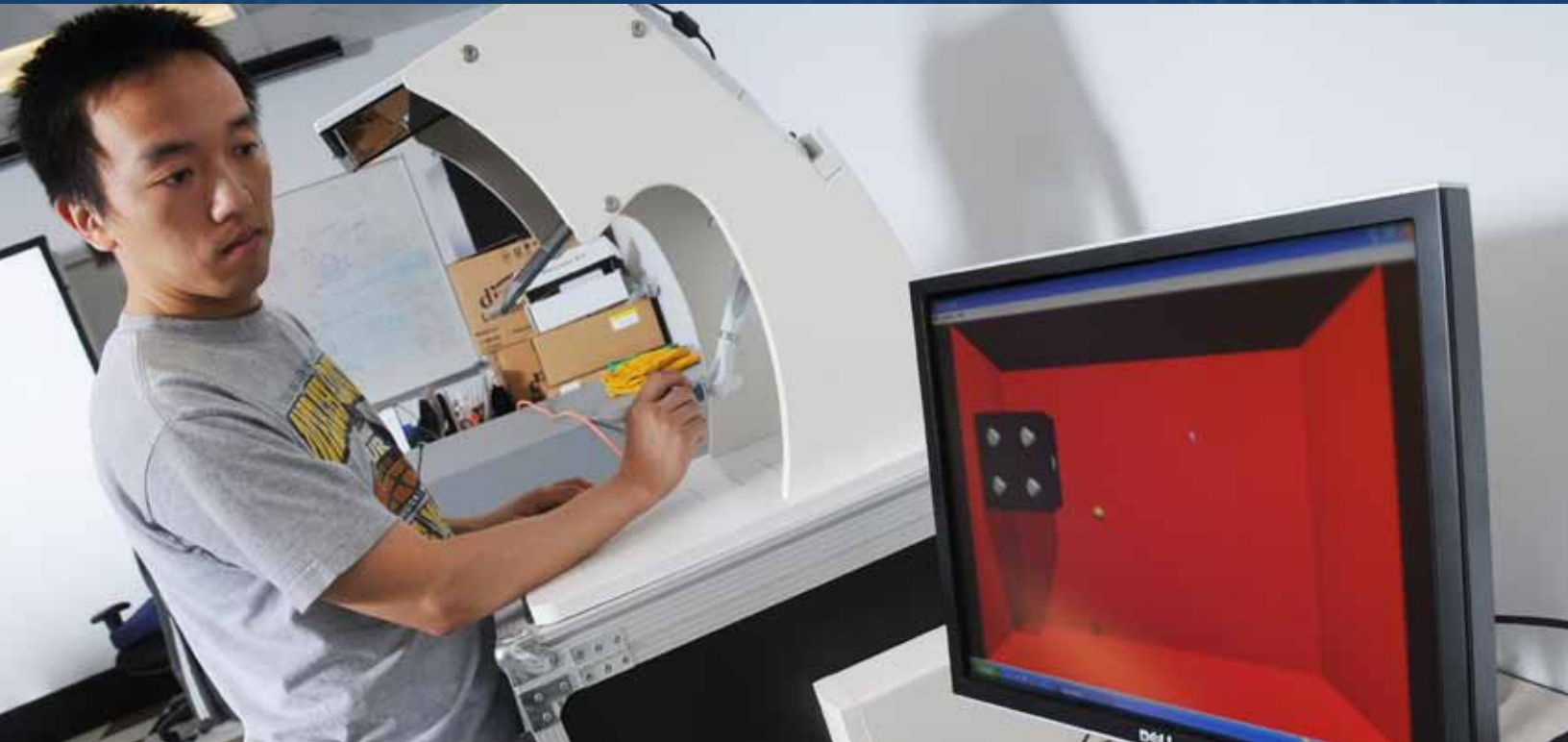


In the **Autonomous Robotics Laboratory**, faculty and graduate students study how robotics can interact with the world, learn from their environment, and work together to collectively achieve tasks. Research subjects include computer vision, kinematics, multi-agent systems, machine learning from demonstration, and stochastic optimization.

Sean Luke directs the lab and collaborates with Zoran Duric, Jana Košeká, and Jyh-Ming Lien, as well as 10 graduate students. Luke says, “Autonomous robotics is a highly multidisciplinary field, involving topics in electrical and mechanical engineering, computer science, psychology and cognitive science, and AI.”

Current research projects include path planning, multi-robot learning from demonstration, swarm robotics architectures, multiagent learning, vision-based localization, human kinematics and 3D tracking, and haptic technology and its application to rehabilitation. Several awards, including ONR Multidisciplinary University Research Initiative grants, NSF grants, and NIH awards, support the lab.

“The lab has state-of-the-art equipment for experimental work with multiple humanoid, indoor-wheeled, and outdoor-wheeled robots,” Luke says. “The lab also has long sponsored Mason’s Applied Robotics Club and the RoboPatriots [soccer-playing humanoid robots] team, and these groups are given full access to the lab’s facilities.” The lab also is intimately involved in several computer science courses, including CS 101, the department’s introductory course.



The Data Mining Laboratory focuses on the discovery of patterns and trends in data. Four faculty members—Daniel Barbará (director), Carlotta Domeniconi, Jessica Lin, and Huzefa Rangwala—work with nine graduate students in the lab. Their research interests include text mining, genomic data mining, time-series analysis, and anomaly detection.

Researchers in the lab have recently been awarded grants from NSF, NIH, the U.S. Army, Inova, and NVIDIA for a variety of projects. One is to develop methods to detect anomalous trajectories, which can be used in surveillance (to capture suspicious

activities) and bioengineering (to measure deviations of functional activity in motor tasks such as handwriting). Another is to improve outcomes for patients with severe traumatic brain injury by adapting representations and algorithms developed for statistical language processing to time-series data mining. A third is to improve coclustering models to discover structure in relational data using ensembles and graphical models, which can be applied in genomics (microarray data), intelligence analysis, and text mining.

“Given the explosion in data accumulation that is occurring in every human endeavor, data mining is rapidly becoming a crucial component in diverse domains such as health care and medicine, genomics, intelligence analysis, web commerce, and astronomy, to name a few,” says Barbará. “The faculty and students with Mason’s Data Mining Lab are a vibrant group performing world-class research in many aspects of the field, as evidenced by the strong funding of the lab, and the recent awards and recognitions they have won.”

The Systems and Networking Group (SANG)

focuses on the design and implementation of computer systems and the networks that connect them. Faculty members Hakan Aydin, Songqing Chen, Fei Li, Sanjeev Setia, Robert Simon, and Pearl Wang, along with several graduate students, lead the lab. These students actively participate in SANG seminars and have frequent summer internship opportunities.

SANG faculty and students actively research and publish in a variety of topics in the broad field of systems. These topics include content delivery systems, security and malware analysis for mobile devices, network modeling and performance analysis, group communication, high performance computing, power-aware computing, energy harvesting systems, fault tolerance, real-time systems, wireless sensor network design, and wireless security.

SANG research efforts are supported by several grants from agencies such as NSF, Air Force Office of Scientific Research, Defense Advanced Research Projects Agency (DARPA), National Security Agency, the Department of Defense, Hewlett-Packard, and local industry. Current grants provide support for research in wireless sensor network protocol analysis, reliability and power management for real-time embedded systems, performance sensitive protocol design for energy-harvesting sensor systems, Internet content delivery systems, malware detection, and high-performance computing for real-time dust storm forecasting.

The Software Engineering Laboratory is dedicated to finding ways to build better quality software. Researchers in this lab look at many aspects of software development, including architecture, modeling, construction, and testing, while keeping in mind quality considerations, such as reliability, maintainability, adaptability, and usability. Software applications include embedded software, distributed software, web applications, mobile computing, ubiquitous computing, and software product lines.

One major project is the Self-Architecting Software Systems project, in which researchers are building an

infrastructure that automatically generates several candidate software architectures and selects the one that best satisfies functional and Quality of Service requirements, such as response time, availability, and security. This research also investigates self-adaptive software systems, which are highly dynamic and unpredictable, so that decisions traditionally made manually by the engineers at design time must be made automatically during the system's operation at run-time. Investigated application domains include disaster response, energy management in buildings, smart phones, transportation, health care, assisted living, home automation, and surveillance.

The Software Engineering Laboratory is a world-class leader in software testing. Every day we hear of software failures that lead to security breaches, monetary losses of millions of dollars, and even loss of life. The faculty of the Software Engineering Laboratory, along with numerous visitors and students, have invented, developed, validated, and disseminated dozens of testing criteria and techniques to test software. This research has focused on object-oriented software, web applications, service-oriented computing, real-time embedded software, model-based software, and safety-critical software. This effort includes seminal work in mutation testing and model-based testing,





and major advances in logic-based testing, graph criteria, input space partitioning, grammar-based testing, and test automation that are widely used in the software industry. Our goal is to develop useful techniques to create better software by finding software faults before releasing the software to users, preferably as early in design and development as possible.

In addition to more than 100 refereed publications, the most widely used software testing textbook in the world is *Introduction to Software Testing*, by Ammann and Offutt (2008). The authors donate all royalties from book sales to the Software Engineering Scholarship Fund, which is used to support software engineering graduate students.

Paul Ammann, Hassan Gomaa, Sam Malek, Daniel Menascé, Jeff Offutt, and João Pedro Sousa direct projects in this lab, with funding for current and former projects provided by NSF, DARPA, NASA, and SAIC.

The Security Laboratory addresses security concerns in networks and systems, mobile devices, railroads, health care policies, and power distribution and automation systems.

Duminda Wijesekera and his collaborators research railroad safety, security, and risk assessment, investigating the security of devices, signal systems, and protocols to ensure train safety. Other projects include the applicability and enforceability of security policies to modular compositions, access control policies, and distributed systems; a novel risk management framework; security policies for electronic health care applications; and the investigation of security guarantees provided by protocols for power distribution and automation systems. The Federal Railroad Administration, National Institute of Standards and Technology (NIST), and Syracuse Research Corporation fund the lab's research.

Recent advances in the hardware capabilities of mobile handheld devices have fostered the development of open-source operating systems for mobile phones, including the new generation of smart phones. Angelos Stavrou, with his research students, studies the cyber threats that stem from these new smart device capabilities and the online application market for mobile devices including malware, data exfiltration, exploitation through USB, and user and data tracking. An ongoing effort to defend mobile devices against the effect of attacks analyzes the source code and binaries of mobile applications, hardening the Android kernel, using kernel network and data encryption, and controlling the communication mechanism for synchronizing the user contents with computers and other phones. Funding for this research is provided by NIST and DARPA.

The Network and System Security Laboratory focuses on real-world network and system security problems, which include malware analysis and defense, attack attribution, privacy and anonymity, VoIP security, steganography, and digital forensics. The goal is to investigate those important network and system security problems in search of fundamental findings and practical solutions that will have a real impact on the discipline and society. Xinyuan (Frank) Wang oversees the lab and advises several PhD students. In the past few years, Wang's group has made original contributions to the security research field and obtained several novel results that are either the first or are surprising in that they contradict some long-held beliefs or intuitions. The research has been widely reported by the media and has resulted in three recent U.S. patents. Several NSF (including CAREER) and Advanced Research and Development Activity/Disruptive Technology Office awards have funded the research in Wang's group.

Awards to Department of Computer Science Faculty

Faculty members of the Department of Computer Science have received numerous awards and other marks of recognition. They are editors-in-chief; they are on the editorial boards of journals; they have received numerous best paper awards at professional conferences; they have organized many conferences and workshops; they have made keynote presentations at international conferences; they are fellows of professional societies; and they have been awarded multiple patents.

Of these marks of recognition, we note the following in particular:

National Science Foundation (NSF) CAREER Awards. The Department of Computer Science counts seven recipients of NSF's CAREER awards. CAREER awards are NSF's "most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations." Recent NSF CAREER award recipients are Hakan Aydin, Songqing Chen, Carlotta Domeniconi, Jana Košecká, and Xinyuan (Frank) Wang. Previous awardees are Alexander Brodsky and Elizabeth White.

Air Force Office of Scientific Research Young Investigator Award. Songqing Chen won this prestigious research award in 2008.

Mason's Emerging Researcher, Scholar, Creator Award. This recently instituted award is given to three young Mason faculty members each year. Two of these awards were given to Computer Science faculty members: Carlotta Domeniconi in 2008 and Songqing Chen in 2009.

Volgenau School of Engineering Outstanding Research Award. This award is given each year to a Volgenau School faculty member. In recent years, Department of Computer Science faculty members have received four of these awards: Kenneth De Jong, Daniel Menascé, Gheorghe Tecuci, and Harry Wechsler.

Volgenau School of Engineering Outstanding Teaching Award. This award is given annually to a Volgenau School faculty member. In recent years, six of these awards have gone to Department of

Computer Science faculty members Paul Ammann, Richard Carver, Sean Luke, Tamara Maddox, Jeff Offutt, and Elizabeth White.

Volgenau School of Engineering Rising Star Award.

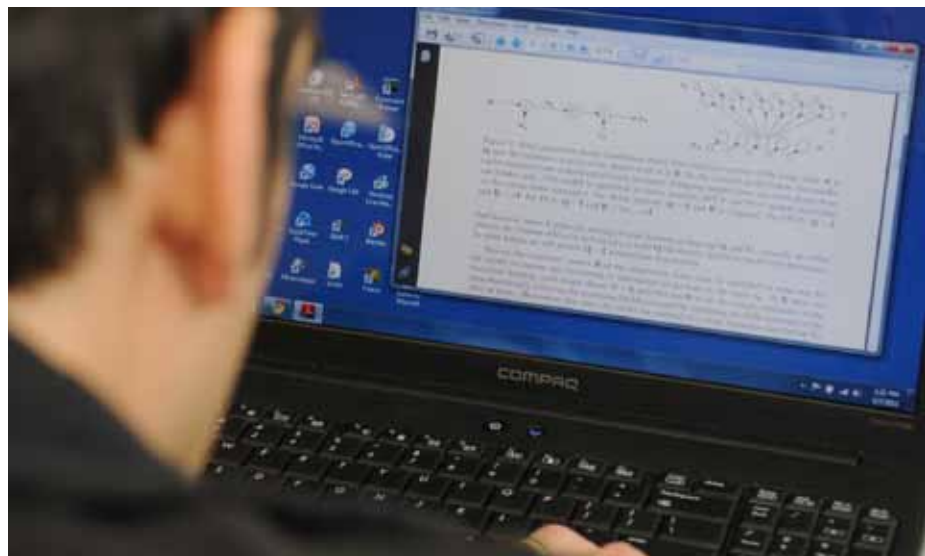
This award is given to a Volgenau School assistant professor in recognition of outstanding research. Awards were given in 2008 to Songqing Chen and 2009 to Xinyuan (Frank) Wang, both junior faculty of the Department of Computer Science.

Career-long Achievement Awards. Whereas the above awards are for promising young faculty, our senior faculty have garnered many awards for career-long achievements. Among our faculty we count

- Three fellows and three senior members of the Institute of Electrical and Electronics Engineers
- Two fellows and one associate member of the Association for Computing Machinery
- A senior fellow of the International Society for Genetic and Evolutionary Computation
- A fellow of the International Association for Pattern Recognition
- A recipient of the Computer Measurement Group Lifetime Achievement Award

Patents. Members of our faculty have been issued at least 12 patents, with several others pending.

Editorships. Members of our faculty hold 16 editorial positions in international journals (editor-in-chief, editor, or member of the editorial board).



Grants and Awards



The Department of Computer Science is an active research department. Our faculty and students are currently working on government and commercial research projects that have received almost \$28 million in awards and grants.

Our commitment to research and innovation will continue to move the industry forward and provide students with relevant experience and attract the strongest faculty available.

We thank our sponsors for their support and proudly list our most current projects.

<i>Sponsor</i>	<i>Total</i>	<i>Sponsor</i>	<i>Total</i>
AFRL.....	\$103,771	U.S. Navy/STTR.....	\$28,000
ARINC/DOT/FRA.....	\$172,608	NBM/U.S. Army.....	\$325,339
Ascend Intel/Defense Advanced Research Projects Agency.....	\$220,134	NG/DOD.....	\$1,550,340
Booz Allen Hamilton/Department of Defense (DOD).....	\$148,130	NGIA/DOD.....	\$300,000
Center for Consciousness and Transformation.....	\$25,015	NIST/Commerce.....	\$504,170
CIT.....	\$86,013	Northrup Grumman (NGIT).....	\$299,999
Columbia University/DOD/Intelligence Advanced Research Projects Activity.....	\$393,586	NRO.....	\$395,083
Dartmouth College.....	\$150,000	National Science Foundation.....	\$5,264,702
Decisive Analytics Corp./AFRL.....	\$40,000	Office of Naval Research (ONR).....	\$129,245
Exprentis/National Science Foundation (NSF).....	\$170,336	ONR/KAIS.....	\$73,000
George Mason University Foundation.....	\$391,200	RTA NATO.....	\$38,843
Howard University.....	\$255,920	RTSYNCH Corp./Northrop Grumman ...	\$130,760
iMC.....	\$25,000	SAIC/DOD/U.S. Navy.....	\$367,154
Inova.....	\$99,770	Semiconductor Research Corp.....	\$80,000
Invincea Labs/DOD.....	\$370,264	Syracuse Research Corp.....	\$49,162
L3 Communications/DOD.....	\$279,999	Therax Inc.....	\$40,000
Lockheed Martin.....	\$499,681	University of Pennsylvania.....	\$200,000
MTCSC/DOD.....	\$300,000	U.S. Air Force.....	\$806,202
		U.S. Army.....	\$6,121,326
		U.S. Department of Defense.....	\$553,989
		U.S. Department of the Interior.....	\$99,285
		U.S. Navy.....	\$1,095,082

Computer Science faculty members are also co-PIs on grants and contracts that total to an additional \$5,757,688. These grants and contracts are located in other schools within George Mason University.

Faculty



JAN M. ALLBECK

Assistant Professor

PhD Computer and Information Science, University of Pennsylvania, 2009

Allbeck is the faculty advisor for the ACS

Game Design degree and coordinator for the Computer Game Technology graduate certificate. She has taught at Mason since 2009. She has explored many aspects of computer graphics but is most drawn to research at the crossroads of animation, artificial intelligence, and psychology in the simulation of virtual humans.

Selected Publications

Allbeck, J. M. "CAROSA: A Tool for Authoring NPCs." In *Proceedings of Motion in Games*, Springer, 2010.

Allbeck, J. M., and H. Kress-Gazit. "Constraints-based Complex Behavior in Rich Environments." In *Proceedings of the 10th International Conference on Intelligent Virtual Agents*, Springer, 2010.

Allbeck, J. M., and N. I. Badler. "Simulating Human Activities for Synthetic Inputs to Sensor Systems." *Distributed Video Sensor Networks*.

B. Bhanu, C. V. Ravishankar, A. K. Roy-Chowdhury, H. Aghajan, and D. Terzopoulos, eds. (2011): 193–206.

Durupinar, F., N. Pelechano, J. Allbeck, U. Gudukbay, and N. Badler. "The Impact of the OCEAN Personality Model on the Perception of Crowds." *IEEE Computer Graphics and Applications* 31, no. 3 (2011): 22–31.



PAUL AMMANN

Associate Professor

PhD Computer Science, University of Virginia, 1988

Ammann has taught at Mason since 1989. His areas of interest

and expertise are software testing and secure information systems. He received the Volgenau School Outstanding Teaching Award in 2007.

Selected Publications

Ammann, Paul, and Jeff Offutt. *Introduction to Software Testing*. Cambridge, U.K.: Cambridge University Press, 2008.

Fraser, Gordon, Paul Ammann, and Franz Wotawa. "Testing with Model Checkers: A Survey." *Software Testing, Verification, and Reliability* 19, no. 3 (2009): 215–261.

Kaminski, Garrett, Gregory Williams, and Paul Ammann. "Reconciling Perspectives of Software Logic Testing." *Software Testing, Verification, and Reliability* 18, no. 3 (2008): 149–188.

Kaminski, Garrett, and Paul Ammann. "Using a Fault Hierarchy to Improve the Efficiency of DNF Logic Mutation Testing." In *Proceedings of the Second IEEE International Conference on Software Testing, Verification, and Validation*, Denver, Colorado, 2009.



HAKAN AYDIN

Associate Professor

PhD Computer Science, University of Pittsburgh, 2001

Aydin has taught at Mason since 2001. His research interests

include real-time embedded systems, low-power computing, and fault tolerance. He received the National Science Foundation CAREER award in 2006. He currently serves as the technical program committee chair of the Institute of Electrical and Electronics Engineers Real-Time and Embedded Technology and Applications Symposium.

Selected Publications

Devadas, V., F. Li, and H. Aydin. "Competitive Analysis of Online Real-Time Scheduling Algorithms under Hard Energy Constraint." *Journal of Real-Time Systems* 46, no. 1 (2010): 88–120.

Devadas, V., and H. Aydin. "DFR-EDF: A Unified Energy Management Framework for Real-Time Systems." In *Proceedings of the 16th IEEE Real-Time and Embedded Technology and Applications Symposium*, Stockholm, Sweden, April 2010.

Zhu, D., and H. Aydin. "Reliability-Aware Energy Management for Periodic Real-Time Tasks." *IEEE Transactions on Computers* 58, no. 10 (2009): 1382–1397.

Zhu, D., H. Aydin, and J. J. Chen. "Optimistic Reliability-Aware Energy Management for Real-Time Tasks with Probabilistic Execution Times." In *Proceedings of the 29th IEEE Real-Time Systems Symposium*, Barcelona, Spain, December 2008.



DANIEL BARBARÁ
Professor

PhD Computer Science, Princeton University, 1985

Barbará has taught at Mason since 1997. His areas of expertise

are data mining and machine learning. He served as program chair of the SIAM International Conference on Data Mining in 2003. He has received numerous grants from the National Science Foundation, the U.S. Army, and other federal and state institutions.

Selected Publications

AlSumait, Loulwah, Daniel Barbará, James Gentle, and Carlotta Domeniconi. "Topic Significance Ranking of LDA Generative Models." In Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, 2010.

AlSumait, Loulwah, Daniel Barbará, and Carlotta Domeniconi. "The Role of Semantic History on Online Generative Topic Modeling." In Proceedings of the Workshop on Text Mining, SIAM International Conference on Data Mining, SIAM, 2009.

Barbará, Daniel, Carlotta Domeniconi, Zoran Duric, Maurizio Filippone, Richard Mansfield, and Wallace Lawson. "Detecting Suspicious Behavior in Surveillance Images." In Proceedings of the First International Workshop on Video Mining, IEEE International Conference on Data Mining, 2008.

AlSumait, Loulwah, Daniel Barbará, and Carlotta Domeniconi. "On-line LDA: Adaptive Topic Models for Mining Text Streams with Applications to Topic Detection and Tracking." In Proceedings of IEEE International Conference on Data Mining, 2008.



ALEXANDER BRODSKY

Associate Professor

PhD Computer Science, Hebrew University of Jerusalem, Israel, 1991

Brodsky is the director of the Center for Smart Power Grids. He has taught at Mason since 1993. His research interests include decision-guidance systems, constraint programming and databases, secure information sharing, and smart power grids. He was the conference chair of the fifth International Conference on Principles and Practice of Constraint Programming (CP99), cochair of CP96 workshop on constraints and databases, and co-organizer of CDB98 and ILPS95 workshops on constraints, databases, and logic programming.

Selected Publications

Brodsky, Alexander, Malak Al-Nory, and Hadon Nash. "Service Composition Language to Unify Simulation and Optimization of Supply Chains." In Proceedings of the 41st Hawaii International Conference on Systems Science, IEEE Computer Society, Waikoloa, Hawaii, January 7–10, 2008.

Brodsky, Alexander, Mayur M. Bhot, Manasa Chandrashekar, Nathan E. Egge, and Xiaoyang Sean Wang. "A Decisions Query Language (DQL): High-Level Abstraction for Mathematical Programming over Databases." In Proceedings of the ACM SIGMOD International Conference on Management of Data, Providence, Rhode Island, June 29–July 2, 2009.

Brodsky, Alexander, Nathan E. Egge, and Xiaoyang Sean Wang. "Reusing Relational Queries for Intuitive Decision Optimization." In Proceedings of the 44th Hawaii International Conference on Systems

Science, IEEE Computer Society, Koloa, Kauai, Hawaii, January 4–7, 2011.

Ngan, Chun-Kit, Alexander Brodsky, and Jessica Lin. "A Service Framework for Learning, Querying, and Monitoring Multivariate Time Series." In Proceedings of the 13th International Conference on Enterprise Information Systems, Beijing, China, June 8–10, 2011.



RICHARD CARVER
Associate Professor

PhD Computer Engineering, North Carolina State University, 1989

Carver has taught at Mason since 1990.

His areas of interest and expertise are in the specification, testing, and verification of concurrent programs. He won the Volgenau School Outstanding Teacher Award in March 2007.

Selected Publications

Carver, Richard H., and Yu Lei. "A Class Library for Implementing, Testing, and Debugging Concurrent Programs." *International Journal on Software Tools for Technology Transfer* 12, no. 1 (2010): 69–88.

Carver, Richard H., and Yu Lei. "A Stateful Approach to Testing Monitors in Multithreaded Programs." In Proceedings of the 12th IEEE International Symposium on High-Assurance Systems Engineering, 2010.

Carver, Richard H., and Yu Lei. "Distributed Reachability Testing of Concurrent Programs." *Concurrency and Computation: Practice and Experience* 22, no. 18 (2010): 2381–2513.



JIM X. CHEN
Professor

PhD Computer Science, University of Central Florida, 1995
Chen is the director of the Visual Computing and Graphics Lab. He

has taught at Mason since 1995. He is a senior member of the Institute of Electrical and Electronics Engineers and an associate member of the Association for Computing Machinery. He has written four books, edited two conference proceedings, published more than 100 research papers, and acquired three patents.

Selected Publications

Chen, J. X. *Guide to Graphics Software Tools*, 2nd ed. New York: Springer Verlag, 2009.

Fan, J., J. X. Chen, B. Tian, and D. Yan. "Rapid Assessment of Secondary Disasters Induced by the Wenchuan Earthquake." *Computing in Science and Engineering* 12, no. 1 (2010): 10–19.

Jiang, Y., L. Chen, Q. Chen, P. Qiang, and J. X. Chen. "Computing Discrete Minimal Surfaces Using a Nonlinear Spring Model." *Computing in Science and Engineering* 12, no. 6 (2010): 74–79.

Liu, Y., J. X. Chen, and L. Yang. "Real-Time Photorealistic Virtual Human Anatomy." *IEEE Computing in Science and Engineering* 10, no. 2 (2008): 41–47.



SONGQING CHEN
Associate Professor

PhD Computer Science, College of William and Mary, 2004

Chen has taught at Mason since 2004. His areas of interest and expertise are Internet content delivery systems, Internet measurements and modeling, operating systems and system security, distributed systems, and high-performance computing. In addition to the National Science Foundation CAREER and AFOSR Young Investigator Awards, he has also received the George Mason University Emerging Researcher, Scholar, Creator Award and the Department of Computer Science Outstanding Research Award in 2009.

Selected Publications

Chen, Songqing, Shiping Chen, Xinyuan Wang, Zhao Zhang, and Sushil Jajodia. "An Application-Level Data Transparent Authentication Scheme without Communication Overhead." *IEEE Transactions on Computers* 59, no. 7 (2010): 943–954.

Guo, Lei, Enhua Tan, Songqing Chen, Xiaodong Zhang, and Yihong (Eric) Zhao. "Analyzing Patterns of User Content Generation in Online Social Networks." In Proceedings of the 15th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Paris, France, June 28–July 1, 2009.

Liu, Lei, Guanhua Yan, Xinwen Zhang, and Songqing Chen. "VirusMeter: Preventing Your Cellphone from Spies." In Proceedings of the 12th International Symposium on Recent Advances in Intrusion Detection, Saint-Malo, Brittany, France, September 23–25, 2009.

Liu, Yao, Lei Guo, Fei Li, and Songqing Chen. "A Case Study of Traffic Locality in Internet P2P Live Streaming Systems." In

Proceedings of the 29th IEEE International Conference on Distributed Computing Systems, Montreal, Canada, June 22–26, 2009.



KENNETH DE JONG
University Professor

PhD Computer Science, University of Michigan, 1975

De Jong is the associate director of the Krasnow Institute at Mason. He has taught at Mason since 1984. His research interests include evolutionary computation, complex adaptive systems, and machine learning. He is the founding editor-in-chief of the MIT Press journal *Evolutionary Computation*, a board member of the Association for Computing Machinery Special Interest Group on Genetic and Evolutional Computation, and the recipient of the Institute of Electrical and Electronics Engineers Pioneer Award in Evolutionary Computation.

Selected Publications

Bassett, J., and K. De Jong. "Using Multivariate Quantitative Genetics Theory to Assist EA Customization." In Proceedings of the Foundations of Genetic Algorithms, Schwarzenberg, Austria, January 2011.

De Jong, K., "Evolutionary Computation." *WIREs Computational Statistics* 1, no. 1 (2009).

Kamath, U., A. Shehu, and K. De Jong. "A Two-Stage Evolutionary Approach for Effective Classification of Hypersensitive DNA Sequences." *Journal of Bioinformatics and Computational Biology* 9, no. 3 (2011): 1–15.

Samsonovich, A. V., K. A. De Jong, and A. Kitsantas. "The Mental State Formalism of GMU-BICA." *International Journal of Machine Consciousness* 1, no. 1 (2009): 111–130.



KINGA DOBOLYI

Term Assistant Professor

PhD Computer Science, University of Virginia, 2010

Dobolyi has taught at Mason since 2010.

Her research focuses

on software engineering, testing, and web applications.

Selected Publications

Dobolyi, Kinga, Elizabeth Soechting, and Westley Weimer. "Automating Regression Testing Using Web-based Application Similarities." *International Journal on Software Tools for Technology Transfer*.

Dobolyi, Kinga, and Westley Weimer. "Modeling Consumer-Perceived Web Application Fault Severities for Testing." In Proceedings of the International Symposium on Software Testing and Analysis, July 2010.

Dobolyi, Kinga, and Westley Weimer. "Harnessing Web-based Application Similarities to Aid in Regression Testing." In Proceedings of the 20th IEEE International Symposium on Software Reliability Engineering, November 2009.

Dobolyi, Kinga, and Westley Weimer. "Changing Java's Semantics for Handling Null Pointer Exceptions." In Proceedings of the 19th IEEE International Symposium on Software Reliability Engineering, November 2008.



CARLOTTA DOMENICONI

Associate Professor

PhD Computer Science, University of California, Riverside, 2002

Domeniconi has

taught at Mason since 2002. Her areas of interest and expertise are machine learning, data mining, pattern recognition, and feature relevance estimation, with applications in text mining and bioinformatics. She received the George Mason University Emerging Researcher, Scholar, Creator Award in 2008 and received the National Science Foundation CAREER Award from 2005 to 2010.

Selected Publications

Domeniconi, C., and M. Al-Razgan. "Weighted Cluster Ensembles: Methods and Analysis." *ACM Transactions on Knowledge Discovery from Data* 2, no. 4 (2009).

Gullo, F., C. Domeniconi, and A. Tagarelli. "Advancing Data Clustering via Projective Clustering Ensembles." In Proceedings of the ACM SIGMOD International Conference on Management of Data, Athens, Greece, June 12–16, 2011.

Wang, P., and C. Domeniconi. "Building Semantic Kernels for Text Classification Using Wikipedia." In Proceedings of the 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, Las Vegas, Nevada, August 24–27, 2008.

Wang, P., K. B. Laskey, C. Domeniconi, and M. I. Jordan. "Nonparametric Bayesian Co-clustering Ensembles." In Proceedings of the SIAM International Conference on Data Mining, Mesa, Arizona, April 28–30, 2011.



ZORAN DURIC

Associate Professor

PhD Computer Science, University of Maryland, College Park, 1995

Duric is the program coordinator for the

master of computer science degree. He has taught at Mason since 1995. His main research interests are applying computer vision and video image processing to analyze movements of humans and vehicles. More recently, he has been applying computer vision, haptics, and motion-capture technologies to problems in rehabilitation.

Selected Publications

Fleck, D., and Z. Duric. "Using Local Ane Invariants to Improve Image Matching." In Proceedings of the International Conference on Pattern Recognition, Istanbul, Turkey, 2010.

Kim, Y., Z. Duric, N. L. Gerber, A. R. Palsbo, and S. E. Palsbo. "Poster: Teaching Letter Writing Using a Programmable Haptic Device Interface for Children with Handwriting Difficulties." In Proceedings of the IEEE Symposium on 3D User Interfaces, IEEE Virtual Reality, Lafayette, Louisiana, March 14–15, 2009.

Lawson, W. E., Z. Duric, and H. Wechsler. "Gait Analysis Using Independent Components of Image Motion." In Proceedings of the IEEE International Conference on Automatic Face and Gesture Recognition, Amsterdam, Netherlands, September 2008.

Narber, C., and Z. Duric. "Analysis of Collision Detection Algorithms in Haptic Environments." In Proceedings of the IEEE International Symposium on Haptic Audio Visual Environments and Games, Phoenix, Arizona, October 15–16, 2010.



HASSAN GOMAA
Professor

PhD Computer Science, Imperial College of Science, Technology, and Medicine, London, 1976

Gomaa was chair of the Department of Computer Science through August 2011. He has taught at Mason since 1987. His current research interests include software architectures and patterns, dynamic software adaptation, and software modeling and design for concurrent, real-time, and distributed systems and product lines. He has more than 30 years of experience in software engineering, in industry and academia, and has published more than 170 technical papers and four textbooks.

Selected Publications

Abu-Matar, M., and H. Gomaa, "Variability Modeling for Service-Oriented Product Line Architectures." In Proceedings of the International Software Product Line Conference, Munich, Germany, August 2011.

Gomaa, H. *Software Modeling and Design: UML, Use Cases, Patterns, and Software Architectures*. New York, NY: Cambridge University Press, 2011.

Gomaa, H., K. Hashimoto, M. Kim, S. Malek, and D. Menascé. "Software Adaptation Patterns for Service-Oriented Architectures." In Proceedings of the ACM Symposium on Applied Computing, Sierre, Switzerland, March 2010.

Gomaa, H., and M. E. Shin. "Multiple-View Modeling and Meta-Modeling of Software Product Lines." *Journal of IET Software* 2, no. 2 (2008): 94–122.



RICCI HEISHMAN
Term Assistant Professor

PhD Information Technology, George Mason University, 2007

Heishman has taught at Mason since 2007. His research interests

include human computer interaction, computer vision, and cognitive/affective state classification using eye region biometrics. He is a member of the Institute of Electrical and Electronics Engineers (IEEE), the IEEE Computer Society, and the Association for Computing Machinery.



LARRY KERSCHBERG
Professor

PhD in Systems Engineering, Case Western Reserve University, Cleveland, 1969

Kerschberg is the co-director of the Mason Center for Health Information Technology. He has taught at Mason since 1986. His areas of interest and expertise are semantic web, knowledge management, intelligent information integration, expert database systems, and electronic commerce systems.

Selected Publications

McDowall, John, and Larry Kerschberg. "A Multi-Agent Approach for Generating Ontologies and Composing Services into Executable Workflows." In Proceedings of the International Conference on Extending Database Technology/International Conference on Database Theory Workshops, 2010.

Muthaiyah, Saravanan, and Larry Kerschberg. "A Hybrid Ontology Mediation Approach for the Semantic Web." *IJEER* 4, no. 4 (2008): 79–91.

Muthaiyah, Saravanan, and Larry Kerschberg. "Achieving Interoperability in E-Government Services with Two Modes of Semantic Bridging." *The Journal of*

Theoretical and Applied Electronic Commerce Research 3, no. 3 (2008): 52–63.

Muthaiyah, Saravanan, Marcel Barbulescu, and Larry Kerschberg. "An Improved Matching Algorithm for Developing a Consistent Knowledge Model across Enterprises Using SRS and SWRL." In Proceedings of the Hawaii International Conference on System Sciences, 2009.



JANA KOŠECKÁ
Associate Professor

PhD Computer Science, University of Pennsylvania, 1996

Košecká has taught at Mason since 1999. Her research interests are

the acquisition of static, dynamic, and semantic models of environments by means of visual sensing; object recognition; scene parsing; and human-robot interaction. She has more than 90 selected publications in refereed journals and conferences and is a coauthor of a monograph titled "Invitation to 3D vision: From Images to Geometric Models."

Selected Publications

Micusik, B., H. Wildenauer, and J. Košecká. "Detection and Matching of Rectangular Structures." In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2008.

Micusik B., and J. Košecká. "Multi-View Superpixel Stereo in Urban Environments." *International Journal of Computer Vision* 89, no. 1 (2010): 106–119.

Micusik, B., and J. Košecká. "Piecewise Planar City Modeling from Street View Panoramic Sequences." In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, 2009.

Murillo, Ana C., J. Košecká, J. J. Guerrero, and C. Sagues. "Visual Door Detection Integrating Appearance and Shape Cues." *Robotics and Autonomous Systems*, 2008.

**FEI LI****Assistant Professor***PhD Computer Science, Columbia University, 2008*

Li has taught at Mason since 2007. His areas of interest

and expertise include online, approximation, and randomized algorithm design and analysis, and energy-aware scheduling algorithms. He has won IBM's First Patent Application Invention Achievement Award and has been on the editorial board of the *International Journal of Operations Research and Information Systems* since 2008.

Selected Publications

Devadas, Vinay, Fei Li, and Hakan Aydin. "Competitive Analysis of Online Real-Time Scheduling Algorithms under Hard Energy Constraint." *Real-Time Systems* 46, no. 1 (2010): 88–120.

Li, Fei. "A Near-Optimal Memoryless Online Algorithm for FIFO Buffering Two Packet Classes." In Proceedings of the Fifth Annual International Conference on Combinatorial Optimization and Applications, 2011.

Li, Fei. "Competitive Scheduling of Packets with Hard Deadlines in a Finite Capacity Queue." In Proceedings of the IEEE Conference on Computer Communications, 2009.

Li, Fei, and Zhi Zhang. "Online Maximizing Weighted Throughput in a Fading Channel." In Proceedings of the IEEE International Symposium on Information Theory, 2009.

**JYH-MING LIEN****Assistant Professor***PhD Computer Science, Texas A&M University, 2006*

Lien is an affiliate of the Motion and Shape Computing (MASC)

group and the Autonomous Robotics Laboratory at Mason. He has taught at Mason since 2007. His research goal is to develop efficient algorithms for representing, manipulating, and analyzing massive geometric data of shape and motion.

Selected Publications

Lien, Jyh-Ming. "Covering Minkowski Sum Boundary Using Points with Applications." *Computer Aided Geometric Design* 25, no. 8 (2008): 652–666.

Lien, Jyh-Ming, and Nancy Amato. "Approximate Convex Decomposition of Polyhedra and Its Applications." *Computer Aided Geometric Design* 25, no. 7 (2008): 503–522.

Lien, Jyh-Ming, and Yanyan Lu. "Planning Motion in Similar Environments." In Proceedings of the Robotics: Science and Systems Conference, June 2009.

Lu, Yanyan, Evan Behar, Stephen Donnelly, Jyh-Ming Lien, Fernando Camelli, and David Wong. "Fast and Robust Generation of City-Scale Seamless 3D Urban Models." In Proceedings of the SIAM Conference on Geometric and Physical Modeling, October 2011.

**JESSICA LIN****Assistant Professor***PhD Computer Science, University of California, Riverside, 2005*

Lin has taught at Mason since 2005.

Her areas of interest and expertise are temporal, spatiotemporal, multimedia, and stream data mining. She recently served as chair for the International Workshop on Data Mining for Geoinformatics in cooperation with SIGSPATIAL GIS in 2010. Her work focuses on the discovery of anomalies, frequent patterns, contrasting patterns, and structures in massive time series data.

Selected Publications

Lin, J., and D. Etter. "Exact and Approximate Reverse Nearest Neighbor Search in Multimedia Data." In Proceedings of the SIAM International Conference on Data Mining, 2008.

Lin, J., S. Williamson, K. Borne, and D. DeBarr. "Pattern Recognition in Time Series." In *Advances in Machine Learning and Data Mining for Astronomy*. M. J. Way, J. D. Scargle, K. Ali, and A. N. Srivastava, eds. Chapman & Hall (2011).

Lin, J., and Y. Li. "Finding Structural Similarity in Time Series Using Bag-of-Patterns Representation." In Proceedings of the 21st International Conference on Scientific and Statistical Database Management, New Orleans, Louisiana, June 2–4, 2009.

Lin, J., and Y. Li. "Finding Approximate Frequent Patterns in Streaming Medical Data." In Proceedings of the 23rd IEEE International Symposium on Computer-Based Medical Systems, Perth, Australia, October 12–15, 2010.



SEAN LUKE
Associate Professor
PhD Computer Science, University of Maryland, College Park, 2000

Luke is the associate director of the George Mason University Center for Social Complexity. He has taught at Mason since 2000. His areas of interest and expertise include stochastic optimization and metaheuristics, evolutionary computation, multiagent systems and multiagent learning, autonomous robotics and robot swarms, and simulation development. He is the author of several widely used open-source software packages, including the Mason multiagent simulator and the ECJ evolutionary computation toolkit—the most widely used such tool in the world. Luke received the Volgenau School Outstanding Teaching Award in 2005.

Selected Publications

Balan, Gabriel, Dana Richards, and Sean Luke. “Long-Term Fairness with Bounded Worst-Case Losses.” *Autonomous Agents and Multiagent Systems* 22, no. 1 (2011): 43–63.

Hrolenok, Brian, Sean Luke, Keith Sullivan, and Christopher Vo. “Collaborative Foraging Using Beacons.” van der Hoek et al., eds. In *Proceedings of the Ninth International Conference on Autonomous Agents and Multiagent Systems*, 2011.

Luke, Sean. “Essentials of Metaheuristics.” 2009. cs.gmu.edu/~sean/book/metaheuristics.

Panait, Liviu, Karl Tuyls, and Sean Luke. “Theoretical Advantages of Lenient Learners: An Evolutionary Game Theoretic Perspective.” *Journal of Machine Learning Research* 9 (2008): 423–457.



TAMARA A. MADDOX
Term Associate Professor
JD, Marshall-Wythe School of Law, College of William and Mary, 1991

Maddox is the coordinator of the department’s Computer Law and Ethics program and Undergraduate Teaching Assistant program. She has taught at Mason since 1999. She teaches courses in computer law and ethics and core technical courses in the curriculum, including C, C++, and Java. She was previously the department’s assistant chair from 2003 to 2006 and was responsible for many administrative duties, including scheduling all the department’s faculty classes, coordinating undergraduate advising, and hiring adjunct faculty members. Maddox received the Volgenau School Outstanding Teaching Award in 2010.

SAM MALEK
Assistant Professor
PhD Computer Science, University of Southern California, 2007



Malek is a member of the Center of Excellence in Command, Control, Communications, Computing, and Intelligence Center at George Mason University. He has taught at Mason since 2007. His general research interests are in the field of software engineering with a focus on software architecture, distributed and embedded software systems, and quality of service analysis. The results of his research have been published in more than 50 refereed selected publications.

Selected Publications

Cooray, Deshan, Sam Malek, Roshanak Roshandel, and David Kilgore. “RESISTing Reliability Degradation

through Proactive Reconfiguration.” In *Proceedings of the 25th IEEE/ACM International Conference on Automated Software Engineering*, Antwerp, Belgium, September 2010.

Elkhodary, Ahmed, Naeem Esfahani, and Sam Malek. “FUSION: A Framework for Engineering Self-Tuning Self-Adaptive Software Systems.” In *Proceedings of the 18th ACM SIGSOFT International Symposium on the Foundations of Software Engineering*, Santa Fe, New Mexico, November 2010.

Esfahani, Naeem, Ehsan Kouroshfar, and Sam Malek. “Taming Uncertainty in Self-Adaptive Software.” In *Proceedings of the Eighth Joint Meeting of the European Software Engineering Conference and ACM SIGSOFT Symposium on the Foundations of Software Engineering*, Szeged, Hungary, September 2011.

Malek, Sam, Nenad Medvidovic, and Marija Mikic-Rakic. “An Extensible Framework for Improving a Distributed Software System’s Deployment Architecture.” *IEEE Transactions on Software Engineering* 99, no. 1 (2011).



DANIEL MENASCÉ
Professor
PhD Computer Science, University of California, Los Angeles, 1978

Menascé is the Volgenau School’s senior associate dean. He has taught at Mason since 1992. His areas of interest and expertise are autonomic computing, software performance engineering, service-oriented computing, and the modeling and analysis of computer systems, web, and e-commerce systems.

Selected Publications

Jabbour, G., and D. A. Menascé. “The Insider Threat Security Architecture.” In

Faculty

Proceedings of the IEEE International Symposium on Secure Computing, Vancouver, Canada, August 29–31, 2009.

Menascé, D. A., E. Casalicchio, and V. Dubey. “On Optimal Service Selection in Service-Oriented Architectures.” *Performance Evaluation Journal* 67, no. 8 (2010): 659–675.

Menascé, D. A., J. Ewing, H. Gomaa, S. Malek, and J. P. Sousa. “A Framework for Utility-based Service Oriented Design in SASSY.” In Proceedings of the First Joint WOSP/SIPEW International Conference on Performance Engineering, San Jose, California, January 28–30, 2010.

Menascé, D. A., J. P. Sousa, S. Malek, and H. Gomaa. “QoS Architectural Patterns for Self-Architecting Software Systems.” In Proceedings of the Seventh IEEE International Conference on Autonomic Computing and Communication, Washington, D.C., June 7–11, 2010.



AMIHAI MOTRO
Professor

PhD Computer and Information Science, University of Pennsylvania, 1981

Motro is the director of the department’s PhD computer science program. He has taught at Mason since 1990. His research interests are in database management, information systems, and information retrieval (with a focus on information integration), cooperative user interfaces, and virtual enterprises.

Selected Publications

Acar, A. C., and A. Motro. “Efficient Discovery of Join Plans in Schemaless Data.” In Proceedings of the 13th International Database Engineering and Applications Symposium, Cetraro (Calabria), Italy, September 2009.

Acar, A. C., and A. Motro. “Inferring User Goals from Sets of Independent Queries in a Multidatabase Environment.” *Advances in Intelligent Information Systems (Studies in Computational Intelligence)* no. 265 (2010): 225–243.

D’Atri, A., and A. Motro. “Virtual Enterprise Transactions: A Cost Model.” *Information Systems: People, Organizations, Institutions, and Technologies* (2010): 165–174.

D’Atri, A., and A. Motro. “VirtuE: A Formal Model of Virtual Enterprises for Information Markets.” *Journal of Intelligent Information Systems* 30, no. 1 (2008): 33–53.



DAVID NORDSTROM
Term Associate Professor

PhD Mathematics, University of California, Berkeley, 1976

Nordstrom has taught at Mason since 1993.

He has more than 30 years of teaching experience, including 13 years at Mason, with courses ranging from low-level programming to operating systems, computer systems architecture, algorithms, and compilers. He was the first faculty member to teach several new undergraduate courses, developing the course material and assignments. He has taught a greater variety of undergraduate courses than any other faculty member in the department.



JEFF OFFUTT
Professor

PhD Computer Science, Georgia Institute of Technology, 1988

Offutt is the graduate coordinator of software engineering. He has taught at Mason since 1992. His areas of interest include software testing, all aspects of web applications and web services, software maintenance and evolution, and software measurement. He also holds part-time visiting positions at the University of Skövde, Sweden, and Linköping University, Sweden. Offutt is the editor-in-chief of the leading research journal in software testing, Wiley’s *Software Testing, Verification and Reliability*. The premier conference in software testing is the IEEE International Conference on Software Testing, Verification and Validation, which was cofounded by Offutt, who was elected the first chair of the steering committee.

Selected Publications

Alexander, Roger T., Jeff Offutt, and Andreas Stefik. “Testing Coupling Relationships in Object-Oriented Programs.” *Software Testing, Verification, and Reliability* 20, no. 4 (2010): 291–327.

Ammann, Paul, and Jeff Offutt. *Introduction to Software Testing*. New York, NY: Cambridge University Press, 2008.

Hayes, Jane, and Jeff Offutt. “Recognizing Authors: An Examination of the Consistent Programmer Hypothesis.” *Software Testing, Verification, and Reliability* 20, no. 4 (2010): 329–356.

Offutt, Jeff, and Ye Wu. “Modeling Presentation Layers of Web Applications for Testing.” *Software and Systems Modeling* 9, no. 2 (2010): 257–280.

**J. MARK PULLEN****Professor**

DSc, George Washington University, 1981

Pullen is the director of the Center of Excellence in

Command, Control, Communications, Computing, and Intelligence. He has taught at Mason since 1992. His research interests include networked multimedia applications (with an emphasis on command and control), networked education and training, distributed virtual simulation, and interoperation of command and control with simulations. He is a fellow of the Institute of Electrical and Electronics Engineers (IEEE), fellow of the Association for Computing Machinery, and recipient of the IEEE Harry Diamond Award.

Selected Publications

Pullen, J. and L. Nicklas. "Supporting NATO C2-Simulation Experimentation with Scripted Web Services." In Proceedings of the International Command and Control Research and Technology Symposium, Quebec, Canada, June 2011.

Pullen, J. M., et al. "An Expanded C2-Simulation Experimental Environment Based on BML." In Proceedings of the IEEE Simulation Interoperability Workshop, Orlando, Florida, April 2010.

Pullen, J. M., D. Corner, S. Singapogu, and P. McAndrews. "Interpreted Web Services as a Tool for Development of Command and Control Interoperability with Simulations." In Proceedings of the IEEE Distributed Simulation and Real Time Applications Symposium, Singapore, October 2009.

Pullen, J. M., and J. Chen. "Distributed Application Launching for High Quality Graphics in Synchronous Distance Education." *ACM Special Interest Group on Computer Science Education Bulletin* 40, no. 3 (2008): 204–208.

**HUZefa RANGWALA****Assistant Professor**

PhD Computer Science, University of Minnesota, Minneapolis, 2008

Rangwala holds affiliate appointments in

the Department of Bioinformatics and Computational Biology and in the bioengineering program. He has taught at Mason since 2008. His areas of interest and expertise are data mining, bioinformatics, chemoinformatics, and high-performance computing, with an emphasis on the development of computational methods for proteins structure and function prediction, metagenomic analysis, and drug design.

Selected Publications

Charuvaka, Anveshi, and Huzefa Rangwala. "Evaluation of Short Read Metagenomic Assembly." In Proceedings of the IEEE Conference in Bioinformatics and Biomedicine, Hong Kong, December 2010.

Naqvi, Ammar, Huzefa Rangwala, Ali Kesharvarizan, and Patrick Gillevet.

"Network-based Modeling of the Human Gut Microbiome." *Chemistry and Biodiversity* 7, no. 5 (2010): 1040–1050.

Rangwala, Huzefa, and Salman Jamali.

"Defining a Coparticipation Network Using Comments on Digg." *IEEE Intelligent Systems* 25, no. 4 (2010): 36–45.

Rasheed, Zeehasham, and Huzefa Rangwala. "TAC-ELM: Metagenomic Taxonomic Classification Using Extreme Learning Machines." In Proceedings of the Third ISCA International Conference on Bioinformatics and Computational Biology, New Orleans, Louisiana, March 2011.

**DANA RICHARDS****Associate Professor**

PhD Computer Science, University of Illinois, 1970

Richards has taught at Mason since 1994.

His research focus is

in algorithms. He previously worked at the National Science Foundation and the University of Virginia.

Selected Publications

Youn, In-Ja, Brian Mark, and Dana Richards. "Statistical Geolocation of Internet Hosts." In Proceedings of the International Conference on Computer Communications and Networks, August 2009.

**SANJEEV SETIA****Professor**

PhD Computer Science, University of Maryland, College Park, 1993

Setia has taught at Mason since 1993

and became chair of the Department of Computer Science in August 2011.

Setia's research interests are in ad hoc and sensor networks, network security, and performance evaluation of computer systems. In recent years, he has worked extensively on security mechanisms and protocols for ad hoc and wireless sensor networks. He was a cofounder of the Association for Computing Machinery workshop on Security in Ad hoc and Sensor Networks and served as its co-organizer in 2003 and 2004.

Selected Publications

Gabrieli, Andrea, Luigi Mancini, Sanjeev Setia, and Sushil Jajodia. "Securing Topology Maintenance Protocols for Sensor Networks." *IEEE Transactions on Dependable and Secure Computing* 8, no. 3 (2011): 450–465.

Huang, Leijun, and Sanjeev Setia. "CORD: Energy-Efficient Reliable Bulk Data Dissemination in Sensor Networks." In Proceedings of the 27th IEEE International Conference on Computer Communications, March 2008.

Roy, Sankardas, Mauro Conti, Sanjeev Setia, and Sushil Jajodia. "Secure Median Computation in Wireless Sensor Networks." *Journal of Ad hoc Networks* 7, no. 8 (2009): 1448–1462.

Zhu, Bo, Sanjeev Setia, Sushil Jajodia, Sankardas Roy, and Lingyu Wang. "Efficient Distributed Detection of Node Replication Attacks in Sensor Networks." *IEEE Transactions on Mobile Computing* 9, no. 7 (2010): 213–926.



AMARDA SHEHU
Assistant Professor
PhD Computer
Science, Rice
University, 2008

Shehu holds affiliated appointments in the Department of Bio-

informatics and Computational Biology and in the bioengineering program. She has taught at Mason since 2008. Her area of interest and expertise is modeling and simulation of complex physics-based systems in the presence of constraints. Her primary goal is to advance current understanding of the relationship between sequence, structure, and biological function of protein molecules in isolation and supramolecular complexes.

Selected Publications

Hegler, Joseph A., Joachim Laetzer, Amarda Shehu, Cecilia Clementi, and Peter G. Wolynes. "Restriction vs. Guidance: Fragment Assembly and Associative Memory Hamiltonians for Protein Structure Prediction." *Proceedings of the National Academy of Sciences* 106, no. 36 (2009): 15302–15307.

Olson, Brian, Kevin Molloy, and Amarda Shehu. "In Search of the Protein Native State with a Probabilistic Sampling Approach." *Journal of Bioinformatics and Computational Biology* 9, no. 3 (2011): 1215–1230.

Shehu, Amarda, and Brian Olson. "Guiding the Search for Native-Like Protein Conformations with an Ab-initio Tree-based Exploration." *International Journal of Robotics Research* 29, no. 8 (2010): 1106–1127.

Shehu, Amarda, Lydia E. Kavradi, and Cecilia Clementi. "Multiscale Characterization of Protein Conformational Ensembles." *Proteins: Structure, Function, and Bioinformatics* 76, no. 4 (2009): 837–851.



ROBERT SIMON
Associate Professor
PhD Computer
Science, University of
Pittsburgh, 1996

Simon serves on the editorial boards of four computer science journals and has participated in numerous program committees in various capacities. He has taught at Mason since 1996. His research interests include embedded systems, wireless and mobile computing, ad hoc networking, performance modeling and analysis, and distributed computing. He is the co-inventor of two patents, has three best paper awards, and has graduated six PhD students.

Selected Publications

Abdullah, M., and R. Simon. "Controlled Epidemic Routing Schemes for Multicasting in Delay Tolerant Networks." In Proceedings of IEEE MASCOTS, Baltimore, Maryland, September 2008.

Alnife, G., and R. Simon. "MULEPRO: A Multi-Channel Response to Jamming Attacks in Wireless Sensor Networks."

Wireless Communications and Mobile Computing 10, no. 5 (2010): 704–721.

Huang, L., S. Setia, and R. Simon. "McTorrent: Using Multiple Communication Channels for Efficient Bulk Data Dissemination in Wireless Sensor Networks." *Journal of Systems and Software* 83, no. 1 (2010): 108–120.

Zhang, B., R. Simon, and H. Aydin. "Energy Management for Time-Critical Energy Harvesting Wireless Sensor Networks." In Proceedings of the 12th International Symposium on Stabilization, Safety, and Security of Distributed Systems, New York, New York, September 2010.



ARUN SOOD
Professor
PhD Electrical
Engineering, Carnegie
Mellon University,
1971

Sood is the codirector of the International

Cyber Center. He has taught at Mason since 1987. His areas of interest are security architectures, intrusion tolerance, image analysis and computer vision, optimization, parallel and distributed processing, performance modeling, and simulation and modeling. His research team developed Self-Cleansing Intrusion Tolerance Technology, which won the Global Security Challenge sponsored by the Security Technology of Tomorrow Challenge.

Selected Publications

Bangalore, Anantha K., and Arun K. Sood. "Securing Web Servers Using Self-Cleansing Intrusion Tolerance (SCIT)." In Proceedings of the second International Conference on Dependability, Athens/Vouliagmeni, Greece, 2009.

Nagarajan, Ajay, and Arun Sood. "SCIT and IDS Architectures for Reduced Data Ex-Filtration." In Proceedings of the

Fourth Workshop on Recent Advances in Intrusion-Tolerant Systems, Chicago, Illinois, 2010.

Nguyen, Quyen L., and Arun Sood. "Multiclass S-Reliability for Services in SOA." In Proceedings for the Fifth International Conference on Software Engineering Advances, Nice, France, 2010.

Nguyen, Quyen, and Arun Sood. "Comparative Analysis of Intrusion-Tolerant System Architectures." In *IEEE Security and Privacy*, 2011.

JOÃO PEDRO SOUSA



Assistant Professor
PhD Computer Science, Carnegie Mellon University, 2005

Sousa has taught at Mason since 2006. His research work

includes making ubiquitous computing accessible to endusers and domain experts, as well as applications to smart spaces and other cyberphysical systems. His other areas of expertise include software architectures, human-computer interaction, and security and trust management.

Selected Publications

Menascé, Daniel A., Hassan Gomaa, Sam Malek, and João P. Sousa. "SASSY: A Framework for Self-Architecting Service-Oriented Systems." *IEEE Software* (2011).

Menascé, Daniel, João P. Sousa, Sam Malek, and Hassan Gomaa. "QoS Architectural Patterns for Self-Architecting Software Systems." In Proceedings of the Seventh IEEE International Conference on Autonomic Computing and Communications, ACM, Washington, D.C., 2009.

Sousa, J. P., B. Schmerl, V. Poladian, and A. Brodsky. "uDesign: End-User Design Applied to Monitoring and Control Applications for Smart Spaces." In

Proceedings of the Working IEEE/IFIP Conference on Software Architecture, IEEE Computer Society, Vancouver, Canada, 2008.

Sousa, João P., Vasilios Tzeremes, and Ala'a El Masri. "Space-Aware TeC: End-User Development of Safety and Control Systems for Smart Spaces." In Proceedings of the IEEE International Conference on Systems, Man, and Cybernetics, IEEE Computer Society, Istanbul, Turkey, 2010.

ANGELOS STAVROU Assistant Professor



PhD Computer Science, Columbia University, 2007

Stavrou is a member of the Center for Secure Information Systems. He has taught at Mason since

2007. His current research interests include security and reliability for distributed systems, and security principles for virtualization and anonymity with a focus on building and deploying large-scale systems. He is a member of the Association for Computing Machinery, the Institute of Electrical and Electronics Engineers, and USENIX.

Selected Publications

Boggs, Nathaniel, Sharath Hiremagalore, Angelos Stavrou, and Salvatore J. Stolfo. "Cross-Domain Collaborative Anomaly Detection: So Far Yet So Close." In Proceedings of the 14th International Symposium on Recent Advances in Intrusion Detection, Menlo Park, California, September 2011.

Le, Meixing, Angelos Stavrou, and Brent ByungHoon Kang. "DoubleGuard: Detecting Intrusions in Multi-Tier Web Applications." *IEEE Journal on Transactions on Dependable and Secure Computing* (2011).

Song, Yingbo, Michael E. Locasto, Angelos

Stavrou, Angelos D. Keromytis, and Salvatore J. Stolfo. "On the Infeasibility of Modeling Polymorphic Shellcode: Re-thinking the Role of Learning in Intrusion Detection Systems." *Machine Learning Journal*, Pavel Laskov and Richard Lippmann, eds. (2009).

Wang, Jiang, Angelos Stavrou, and Anup K. Ghosh. "HyperCheck: A Hardware-Assisted Integrity Monitor." In Proceedings of the 13th International Symposium on Recent Advances in Intrusion Detection, Ottawa, Canada, September 15–17, 2010.

GHEORGHE TECUCI Professor



PhD Computer Science, University of Paris-South and the Polytechnic Institute of Bucharest, 1988

Tecuci is the director of the Learning Agents Center. He has taught

at Mason since 1990. He has followed a career-long interest in the development of a computational theory and technology that allows noncomputer scientists to develop cognitive agents that incorporate their expertise and can act as problem-solving and decision-making assistants to experts, as consultants to nonexperts, or as intelligent tutors to students. He has published more than 180 papers with contributions to artificial intelligence, instructable agents, multistrategy learning, and computational evidence-based reasoning.

Selected Publications

Tecuci, G., D. Schum, M. Boicu, D. Marcu, and B. Hamilton. "Intelligence Analysis as Agent-Assisted Discovery of Evidence, Hypotheses and Arguments." *Advances in Intelligent Decision Technologies*. G. Phillips-Wren, L. C. Jain, K. Nakamatsu, and R. J. Howlett, eds. (2010).

Tecuci, G., D. Schum, M. Boicu, D.

Faculty

Marcu, B. Hamilton, and B. Wible. "Teaching Intelligence Analysis with TIACRITIS." *American Intelligence Journal* 28, no. 2 (2010): 50–65.

Tecuci, G., M. Boicu, D. Marcu, M. Barbulescu, C. Boicu, V. Le, and T. Hajduk. "Teaching Virtual Experts for Multi-Domain Collaborative Planning." *Journal of Software* 3, no. 3 (2008): 38–59.

Tecuci, G., M. Boicu, and J. Comello. *Agent-Assisted Center of Gravity Analysis*. George Mason University Press, 2008.

PEARL Y. WANG Associate Professor



PhD Mathematics, University of Wisconsin, Milwaukee, 1983

Wang is the associate chair of the department's undergraduate studies. She has taught

at Mason since 1983. Her research areas are sequential and parallel algorithms for combinatorial optimization problems. She served on the editorial boards of professional journals, including the *IEEE Transactions on Parallel and Distributed Systems*, the *Journal of Parallel and Distributed Computing*, and the *European Journal of Operational Research*.



XINYUAN (FRANK) WANG

Associate Professor

PhD Computer Science, North Carolina State University, 2004

Wang is the coordinator of the Master's in Information Security and Assurance program. He has taught at Mason since 2004. His main research interests are computer network and system security, including malware analysis and defense, attack attribution, privacy and anonymity, VoIP security, steganography, and digital forensics. His work includes the demonstration of tracking encrypted, anonymous peer-to-peer VoIP calls on the Internet and the fundamental limitations of existing low-latency anonymous communication systems in the presence of timing attacks.

Selected Publications

Jiang, Xuxian, Xinyuan Wang, and Donyan Xu. "Stealthy Malware Detection and Monitoring through VMM-Based 'Out of the Box' Semantic View Reconstruction." *ACM Transactions on Information and System Security* 13, no. 2 (2010).

Jin, Jing, and Xinyuan Wang. "On the Effectiveness of Low Latency Anonymous Network in the Presence of Timing Attack." In Proceedings of the 39th Annual IEEE/IFIP International Conference on Dependable Systems and Networks, July 2009.

Wang, Xinyuan, and Douglas S. Reeves. "Robust Correlation of Encrypted Attack Traffic through Stepping Stones by Watermarking the Interpacket Timing." *IEEE Transactions on Dependable and Secure Computing* 8, no. 3 (2011): 434–449.

Wang, Xinyuan, and Xuxian Jiang. "Artificial Malware Immunization Based on Dynamically Assigned Sense of Self." In Proceedings of the 13th Information Security Conference, October 2010.



HARRY WECHSLER Professor

PhD Computer and Information Science, University of California, Irvine, 1975

Wechsler has taught at Mason since 1988. His areas of expertise include image analysis and computer vision; data mining, machine learning, and pattern recognition; information retrieval and large image databases; and security, biometrics, and smart identity management systems. He is a fellow of the Institute of Electrical and Electronics Engineers and a fellow of the International Association of Pattern Recognition.

Selected Publications

De Marsico, M., M. Nappi, D. Riccio, and H. Wechsler. "Iris Segmentation Using Pupil Localization, Linearization, and Limbus Reconstruction." *Journal of Ambient Intelligence and Human Computing* 2 (2011): 153–162.

Ho, S. S., and H. Wechsler. "A Martingale Framework for Detecting Changes in the Data Generating Model in Data Streams." *IEEE Transactions on Pattern Analysis and Machine Intelligence* 32, no. 12 (2010): 2113–2127.

Ho, S. S., and H. Wechsler. "Query by Transduction." *IEEE Transactions on Pattern Analysis and Machine Intelligence* 30, no. 9 (2008): 1557–1571.

Li, F., and H. Wechsler. "Face Authentication Using Recognition-by-Parts, Boosting and Transduction." *International Journal of Artificial Intelligence and Pattern Recognition* 23, no. 3 (2009): 545–573.

**ELIZABETH WHITE****Associate Professor***PhD Computer Science, University of Maryland, College Park, 1995*

White has taught at Mason since 1994.

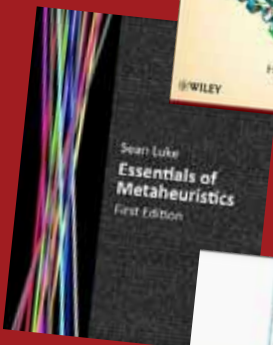
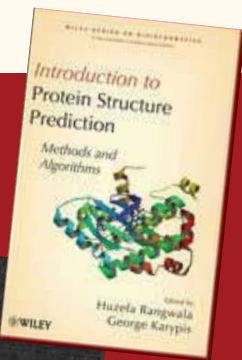
Her areas of interest and expertise include compilers, software architecture, distributed computing, and dynamic reconfiguration. White received the Volgenau School Outstanding Teaching Award in 2008.

**DUMINDA WIJESEKERA****Associate Professor***PhD Mathematical Logic, Cornell University, 1990, PhD Computer Science, University of Minnesota, 1998*

Wijesekera is the acting director of energy initiatives at the Critical Infrastructure and Homeland Security Institute at George Mason University. He has taught at Mason since 1999. His research interests are information security and applying logical methods to computing. He is a visiting faculty fellow at the Federal Railroad Administration, a fellow of the Potomac Institute of Policy Studies, a visiting scientist at the National Institute of Standards and Technology, and a visiting associate professor at the Naval Postgraduate School.

Selected Publications

Al-Faresi, Ahmed, Khaled Moidu, and Duminda Wijesekera, "A Comprehensive Privacy-Aware Authorization Framework Founded on HIPAA Privacy Rules." In Proceedings of the first ACM International Health Informatics Symposium, Arlington, Virginia, November 11–12, 2010.

Barker, Steve, Marek Sergot, and Duminda Wijesekera. "Status-based Access Control." *ACM Transactions of Information and System Security* 12, no. 1 (2008): 1–47.Hartong, Mark, Rajni Goel, and Duminda Wijesekera. "Secure Interchange Routing." *Journal of Transportation Technologies* 1, no. 2 (2011): 21–29.Sengar, Hemant, Haining Wang, Duminda Wijesekera, and Sushil Jajodia. "Detecting VoIP Floods Using the Hellinger Distance." *IEEE Transactions in Parallel and Distributed Systems* 19, no. 6 (2008): 794–805.**FACULTY BOOKS SINCE 2008***Foundations of 3D Graphics Programming: Using JOGL and Java3D*
Jim X. Chen and Chunyang Chen (Springer, August 25, 2008)*Guide to Graphics Software Tools*
Jim X. Chen (Springer, November 14, 2008)*Introduction to Protein Structure Prediction: Methods and Algorithms*
Huzefa Rangwala and George Karypis, eds. (Wiley, 2010)*Essentials of Metaheuristics*
Sean Luke (Free online text; also available in print at Lulu.com, 2009)*Introduction to Software Testing*
Paul Ammann and Jeff Offutt (Cambridge University Press, 2008)*Agent-Assisted Center of Gravity Analysis*
Gheorghe Tecuci, Mihai Boicu, and Jerome Comello (George Mason University Press, 2008)*Software Modeling and Design: UML, Use Cases, Patterns, and Software Architectures*
Hassan Gomaa (Cambridge University Press, 2011)

Adjunct Faculty

The Department of Computer Science honors its adjunct professors for their commitment and support to George Mason University. These individuals allow the department to offer a vast course selection taught by instructors who bring invaluable current and real-world expertise into the classroom and provide students with industry connections and opportunities.

MUHAMMAD ABDULLA

SAIC

PhD Computer Science, George Mason University

Abdulla teaches course work in systems programming and object-oriented programming in Java.

FRANK ARMOUR

ArmourIT Consulting

PhD Information Technology, George Mason University

Armour teaches two courses in information technology (IT) that specify how to address an organization's software requirements and organize and plan the system and service development across an entire enterprise.

JAMES BALDO

Oracle

PhD Information Technology, George Mason University

Baldo augments his software engineering course with his industry knowledge and experience, integrating engineering aspects based on a foundation of engineering principles and theory.

RICHARD BAUM

Professor Emeritus, Software Engineer/Security Analyst Consultant

PhD Mathematics, University of Michigan

Baum's course in information system applications emphasizes the principles and methods of building commercial applications within a high-level framework and

investigates program construction in varied settings, such as database systems, graphical user interfaces, and prototyping.

NICK DUAN

Industrial Engineering

PhD, Pennsylvania State University

Duan's course in software engineering is a hands-on, project-oriented class in which students develop programming skills in a teamwork environment and are equipped with the right skills and mental toughness to enter the job market.

VINOD DUBEY

Booz Allen Hamilton

PhD Information Technology, George Mason University

Dubey's research interests include system performance engineering, services computing, and QoS management in service-oriented architecture. He teaches a course in software engineering.

WILLIAM ELLIS

Pension Benefit Guaranty Corporation

MPhil Mathematics, Yale University

Ellis's course in the discrete and logical structures of modern information systems studies and applies modern encryption techniques, as well as the applications of classical structures in logic, counting, set theory, and graph theory to solve practical problems.

HARRY FOXWELL

Oracle Corporation

PhD Information Technology, George Mason University

Foxwell provides Mason with valuable contributions as an industry practitioner. He teaches a course in computer architecture that studies the fundamental curriculum concepts and their relevance to current industry and research practice.

FRED GELDON

Retired

JD, Harvard Law School

Geldon's course in computer ethics is an important introduction to ethical and practical issues created by our society's ever-increasing dependence on evolving technology.

MARK GIANTURCO

DSH Management Systems

PhD Information Technology—Software Engineering, George Mason University

Gianturco's course in web-based software engineering, a rapidly expanding area of software development, teaches students the critical-thinking skills required to be a successful client-server software engineer in this constantly evolving discipline.

CHARLES HOWARD

Solutions Made Simple Inc.

PhD Information Technology, George Mason University

Howard provides Mason 28 years of system engineering experience. His course in systems analysis and design teaches students how to apply new translation and language skills to mediate between business and technical communities and explain rationale and recommendations to stakeholders.

YIH-FENG HWANG

The Boeing Company

PhD Information Technology, George Mason University

Hwang's course in communication networks introduces the principles of computer networks and their applications to the Internet. It discusses details of layering, protocols, performance, resource allocation, management, security, and other contemporary issues related to networks.

NAREN KODALI

Independent Compliance Architect

PhD Information Technology, George Mason University

Kodali's course in IT auditing teaches an essential function to maintain an effective operation of IT infrastructure. Students learn the founding principles, applicability, policies, and procedures pertaining to the laws governing the compliance metrics required of civilian and government domains.

MICHAEL MADDOX

Pet Industry Joint Advisory Council

JD, Marshall-Wythe School of Law, College of William and Mary

Maddox teaches two courses in IT ethical and legal issues. His courses enhance students' skills and awareness of the need to apply ethical considerations in the performance of their duties.

GREG MARTIN

Infoblox

MS Computer Science, Johns Hopkins University

Martin believes that software engineering is as much an art form as it is a science. His software engineering course provides students with creative ideas, computer science concepts, and practical knowledge about writing efficient and reliable software.

KENNETH NIDIFFER

Software Engineering Institute

PhD Engineering Administration, George Washington University

Nidiffer's style of teaching comes from his belief that true education is about asking questions and facilitating students' efforts to learn. He applies his experience, attention, and industry passion in his course in software project management to help students develop team-building and critical-thinking skills.

ERIKA OLIMPIEW

Computer Sciences Corporation

PhD Information Technology, George Mason University

Olimpiew's course in information systems covers the project inception, planning, system analysis, and system design phases in an information system's life cycle. Students apply concepts such as determining and structuring system requirements, and designing databases, forms, and reports.

ROB PETTIT

The Aerospace Corporation

PhD Information Technology—Software Engineering, George Mason University

Pettit teaches two software courses that support the critical skills necessary for the successful development of increasingly complex mission-critical systems. His courses provide students an industrial perspective on model-based software engineering and help to develop critical skills.

MATTHEW REVELLE

Woven

MS Computer Science, George Mason University

Revelle has ties to the startup communities in the Washington, D.C., and San Francisco Bay areas and is able to connect students with opportunities to participate in the industry as interns or employees. He teaches a course in program design and is pursuing his PhD at Mason.

MOHAMED SHARIF

Independent Telecommunications and IT Consultant

PhD Information Technology, George Mason University

Sharif provides 25 years of industry experience with his courses in data communication and network security. His courses introduce students to the ever-evolving telecommunications and IT industries.

MICHAEL SMELTZER

Johns Hopkins University, Applied Physics Laboratory

PhD Mathematics, Yale University

With 10 years of experience working in the field of cyber security, Smeltzer brings an in-depth, real-world understanding of current information assurance issues to the curriculum. His experience stimulates conversations in the classroom and provides valuable insight about cyber research and information security.

KEN SMITH

The MITRE Corporation

PhD Computer Science, University of Illinois at Urbana-Champaign

Smith teaches an introductory graduate course in databases that discusses trends in information systems and serves as an entry to the world of information management, providing relational theory and practical Oracle lab experience.

MICHAEL TOMPKINS

Rich Rosenthal Brincefield Manitta Dzubin & Kroeger, LLP

JD, Marshall-Wythe School of Law, College of William and Mary

Tompkins teaches a course in computer ethics that helps students navigate the ethical and legal pitfalls associated with IT in the 21st century.

DAVID WHEELER

Institute for Defense Analyses

PhD Information Technology, George Mason University

Wheeler teaches courses in Java programming and secure software design and programming. His course helps students understand data acquired through networks and teaches them how to develop software that resists attack.

Staff

The Department of Computer Science employs a dedicated and knowledgeable staff of five full-time administrative professionals who provide assistance to students, faculty, and visitors.

Michele Pieper, administrative assistant to the chair, is responsible for scheduling of classes each semester; communicating with adjunct faculty, including contract preparation; assignment of space to graduate teaching assistants, graduate research assistants, and visiting faculty; and coordinating and scheduling departmental meetings, as well as minute taking, coordination of catalog copy, assistance with administration of annual promotion and tenure cases, and faculty recruiting, coordination of Industrial Advisory Board meetings, and acting as a liaison between the external editor and the Computer Science Department for the Computer Science newsletter.



Nooshi Mohebi, office manager and undergraduate administrative advisor. In her advising role, Mohebi is available to meet with walk-in or by-appointment undergraduate students who need assistance with administrative and basic degree requirements. She also encourages students to meet with their faculty advisors and assists in providing information to faculty regarding individual advisees whenever necessary. In her office manager role, Mohebi supervises three members of staff: Anne Hamill, Ryan Lucas, and Therese Michael.

Anne Hamill handles all travel paperwork and textbook ordering for the Computer Science Department faculty. She is responsible for IRR data gathering and spreadsheet preparation for statistical purposes, maintains the equipment inventory for the department, and assists the associate chair for undergraduate studies with document preparation.

Ryan Lucas is the education support specialist for the MS in Information Systems program, MS in Information Security and Assurance program, and MS in Software Engineering program. Lucas handles administrative requests and routes student administrative forms for review and approval. He also handles all administrative duties for MS student recruiting for these programs. Lucas has been with the department for many years and is well versed in both departmental and university procedures and processes.

Therese Michael is devoted to the administration of the PhD in Computer Science and MS in Computer Science programs, handling administrative requests and routing student administrative forms for review and approval to the appropriate graduate coordinator. She also handles all administrative duties for PhD in Computer Science and MS in Computer Science student recruiting. Michael is both experienced and committed, and thus provides solid administrative support to both of these programs.

The Computer Science Department would like to thank all those who contributed to this publication:

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Sharon Ritchey and her colleagues at HomeRow Editorial

Mason's Creative Services staff

Department of Computer Science Industrial Advisory Board Members

Our sincerest thanks to our advisory board members for their valuable contributions of time, talent, and resources to the Department of Computer Science. By continually evaluating the programs and curriculum, they ensure relevance in an ever-changing world for our graduates and faculty. They bring current trends and future direction of the industry to our students, helping to prepare them for employment and research in the rapidly evolving field of information technology.

Anhtuan Dinh
The MITRE Corporation

Cris Flagg
Express Search

Harry Foxwell
Oracle Corporation

Jim Fuechsel
Booz Allen Hamilton

Michelle Lee
GeoEye Inc.

Lu (Larry) Lu
Open Concepts Systems Inc.

Mike Missler
Booz Allen Hamilton

Kenneth E. Nidiffer
Software Engineering Institute

Robert G. Pettit IV
The Aerospace Corporation

Jim Sowder
Northrop Grumman Corporation

Lawrence (Larry) Tarr
Raytheon Company

Terence R. Thompson
Metron Aviation

Doyle Weishar
i_SW Corporation

"The seasoned professional experts from the board bring with them the current trends and future directions of the industry, and they work with the Computer Science Department to review the curricular setup to ensure that the students will be well prepared when they graduate." —Larry Lu

"I am still working today with faculty members I met through the board over five years ago. The collaboration on issues of mutual interest is a big benefit to the school, industry participants, and the students." —Jim Fuechsel

"Participation and contribution of industry practitioners on the [Computer Science] Curriculum Advisory Board is critical to providing guidance in creating courses and programs that reflect the state of the art in computing technology." —Harry Foxwell

"The Advisory Board members are driven with a passion to improve the George Mason University Computer Science and Software Engineering programs. In general, Advisory Board members hold similar views as they are a set of seasoned professionals who work on real problems in firms and organizations that hire Mason students." —Kenneth Nidiffer

"Being a member of the Advisory Board has been personally rewarding in that it allows me to keep in touch with the university and with faculty, and understand where Mason is going in the future. That understanding has enabled me to be an ambassador within my professional circles for Mason—and I hope—has played at least a small part in fostering the growth and bolstering the reputation of Mason, its students, and its graduates." —Doyle Weishar





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