



## S<sup>2</sup>ERC Showcase

### Researcher/Presenter Biographies

#### **Vanessa Arndorfer**



Vanessa is currently a junior at Virginia Tech double majoring in Computer Science and Mathematics with a minor in Cybersecurity, and has been an undergraduate research assistant with the Hume Center for the past three years. She spent the Summer of 2018 as an intern for Northrop Grumman, and will be interning for Microsoft's Cloud Computing and AI team in Summer 2019.

#### **Jonathan Black**



Jonathan Black is the Aerospace and Ocean Systems Lab Director for the Ted and Karyn Hume Center for National Security and Technology. His role consists of overseeing the center's growing portfolio of research in unmanned aircraft and spacecraft, including the design and construction of a new ground station to facilitate small satellite missions. Dr. Black works from the Blacksburg campus and is actively pursuing research, development, and outreach activities with agencies and companies working in national security. He is a Professor in the Kevin T. Crofton Department of Aerospace and Ocean Engineering at Virginia Tech and a member of the Center for Space Science and Engineering Research, also known as Space@VT. Prior to joining Virginia Tech, Black served as an associate professor in the aeronautics and astronautics department at the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio, where he was the founding director of the Center for Space Research and Assurance.

#### **Paul Buis**



Dr. Paul Buis is an Associate Professor and the Department Chairperson in the Department of Computer Science at Ball State University. He received a Ph.D. in Computer Science from Purdue University in 1991, a M.S. in Mathematics from Purdue University in 1986, and a B.S. in Physics and Math from Hope College in 1984. Dr. Buis published book chapters on security for the Internet and the Web in both *Internet Security: Professional Reference*, published by New Riders, and *Internet Security: Professional Reference*, published by New Riders. He has also taught courses at Ball State on Programming Languages, Programming for the Internet, and Systems Administration.

#### **Eric Burger**



Dr. Eric Burger is Research Professor of Computer Science. He is currently on IPA as the Chief Technology Officer of the Federal Communications Commission. He can dedicate up to 20% of his time to Georgetown activities.

## Patrick Butler

Patrick Butler is a senior research associate at DAC. The main thrust of his research focuses on the IARPA funded EMBERS project that uses open source indicators such as tweets, news, blog, weather, etc., to forecast population level events such as civil unrest, elections, and epidemics. He graduated with a Ph.D. in computer science from Virginia Tech in 2014 during which time he was awarded a SMART Fellowship. His dissertation was in the area of using knowledge discovery for intelligence analysis.

## Ulrico Celentano

Ulrico Celentano holds a dott.ing. degree in electronics engineering from the University of Florence, Italy, a doctoral degree in technology from the University of Oulu, Finland, and has completed a block of studies in psychology at the University of Oulu. He currently is with the Biomimetics and Intelligent Systems Group at the University of Oulu, where he has been doing research on adaptive systems and interacting natural and artificial intelligent entities. His present research interests encompass dependable systems (including data privacy and information security), as well as networked artificial intelligent systems, human cognition and the social interaction of the above.

## T. Charles Clancy



Dr. Charles Clancy is an Associate Professor of Electrical and Computer Engineering at Virginia Tech and directs of the Hume Center for National Security and Technology. Additionally he serves as the co-director of the NSF Security and Software Engineering Research Center (S<sup>2</sup>ERC) Industry/University Cooperative Research Center (I/UCRC). Prior to joining Virginia Tech in 2010, he served as a senior researcher at the Laboratory for Telecommunications Sciences, an NSA research lab at the University of Maryland, where he led research programs in software-defined and cognitive radio, and wireless security. Dr. Clancy received his B.S. in Computer Engineering from the Rose-Hulman Institute of Technology, M.S. in Electrical Engineering from the University of Illinois, and his Ph.D. in Computer Science from the University of Maryland. He is a Senior Member of the IEEE and has over 200 peer-reviewed technical publications. His current research interests include cognitive communications and spectrum security, particularly as applied to cyber-physical-human systems.

## Daniel Doyle



Dr. Daniel Doyle currently serves as a Research Professor at Virginia Tech in the Aerospace and Ocean Systems Lab, Hume Center for National Security and Technology. His research focus areas are in computer vision, sense-making, and spaceflight programs. Prior to coming to Virginia Tech, Dr. Doyle served 21 years in the United States Air Force and retired as a Lieutenant Colonel. He last served as the Special Access Programs Branch Chief in the Plans and Programs Directorate, Headquarters Air Force, Pentagon. Dr. Doyle helped to develop and defend the Special Access Programs portfolio and managed the corporate process, integrating all Air Force program data and information. He directed and coordinated the integration of Major Command inputs and evaluated program data to support resourcing decisions through Programmed Objective Memorandum and Program Budget Review. Dr. Doyle entered active duty in 1997 after graduating from Western Michigan University with his Bachelor of Science in Aeronautical Engineering. During his Air Force service, he gained a variety of acquisition and leadership experience in program management, flight test, career field management, MH-53/UH-1N sustainment, standardization and evaluation, officer training, B-2 engine field support, and power systems research. Dr. Doyle earned his Master of Science degree in Mechanical Engineering from North Carolina State University, Raleigh, North Carolina, and his Doctor of Philosophy in Mechanical Engineering from the Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio.

## Huseyin Ergin



Huseyin got his B.Sc. and M.Sc. in Computer Science and Engineering in Turkey. He pursued his Ph.D. in Computer Science at the University of Alabama. His research area is Model-driven Engineering, and he is analyzing the need for a higher-level language that is closer to the domain and free of complexities introduced by general purpose languages. He is also interested in computer science education to educate the next generation of computer scientists starting from high or middle school. He developed software for various departments in companies; in an R&D department at Huawei Telecommunications, in an IT department at Mercedes-Benz US International, at a wedding ring manufacturer called Benchmark, located in Tuscaloosa, Alabama, and at a smart shopping assistant startup company called Mona. His projects in these companies gave him an extensive look at the current software development practices and eventually led to adding another research interest in software development practices by people in various fields. Currently, he is an Assistant Professor of Computer Science at Ball State University, is assigned to teach master of science classes in software engineering and improve the program.

## Tapio Frantti



Tapio Frantti holds degrees of MSc, LicTech and Dr. Tech. from the Department of Automation and Information Technology, University of Oulu. He is also an Adjunct Professor in the University of Oulu. He has worked at the Outokumpu Polarit Oy, University of Oulu, Nokia Telecommunications, and Nokia Mobile Phones as a researcher, senior researcher, chief engineer, and research manager. He has also worked in Technical Research Centre of Finland as a chief research scientist and Research Professor and as Visiting Professor in Tokyo Denki University. Lately he has been working in Renesas Mobile Europe and Broadcom Communications Finland as a distinguished researcher and research leader, in IoLiving Ltd. as CTO and in University of Oulu as a Director of Security and Software Engineering Research Site of Finland . He has been on the field about 25 years and he has published +100 scientific and technical papers in journals, magazines, books and international conferences. He has also authored several patents. Tapio Frantti also acts as a regular reviewer in international conferences and 11 scientific top rated journals and he is a member of Technical Program Committees in tens of international conferences.

## Ryan Gerdes



Ryan M. Gerdes is an Assistant Professor at Virginia Tech, in the Electrical and Computer Engineering Department, Dr. Gerdes' work focuses on designing dependable and usable computing systems, with an emphasis on the operation of cyber physical systems in adversarial environments and leveraging the physical layer for system defense and offensive purposes. Prof. Gerdes received his PhD. in electrical engineering from Iowa State University for his work on device fingerprinting in August 2011. From 2011—2016 he was an Assistant Professor at Utah State University. His current and past research interests include cyber-physical systems security, with an emphasis on intelligent and automated transportation, embedded systems security, physical layer security, and integrated circuit security.

## **William Christopher Headley**



Dr. William "Chris" Headley is a Research Assistant Professor for Electronic Systems research at the Virginia Tech Hume Center, where he has served as a principal or co-principal investigator on a multitude of government and commercial projects totaling over \$5M. He also serves as a mentor to both undergraduate and graduate students, providing them with hands-on research opportunities through these projects as well as guiding them towards their degree requirements. Dr. Headley earned his BS/MS/PhD in Electrical Engineering at Virginia Tech. His current research interest is in the intersection of spectrum sensing and machine learning technologies.

## **Marko Helenius**



Dr. Marko Helenius is University Teacher at Tampere University of Technology, Tampere, Finland. He completed his master's thesis in 1994 and during that time he started assessing computer antivirus product's virus detection capabilities. Computer antivirus vendors valued the assessments because of their accuracy and detailed data. He completed his Ph.D. from University of Tampere in 2002. After that he became interested about information security in general and usable security in 2006. He has been active in many national research programs obtaining research funding including Future Internet, Cloud Software, Internet of Things, Need4Speed and Cyber Trust. He is responsible of the master's degree program in information security.

## **Mohammad Raihanul Islam**

Mohammad Raihanul Islam is a 5th year Ph.D. student at Virginia Tech. His research interest is related to mining social media, cascade modeling, deep learning, rumor propagation. He has published in several peer-reviewed conferences such as IEEE International Conference on Data Mining, Association for the Advancement of Artificial Intelligence Conference, IEEE International Conference on Big Data etc.

## **Antti Kolehmainen**

Antti Kolehmainen is a PhD student at Tampere University of Technology. His research interests include computer networking, security and the Internet of Things. More specifically, his current research involve secure firmware updates in IoT context. He holds a B.Eng. degree in telecommunications from HAMK University of Applied Sciences as well as M.Sc. (tech) in information technology from Tampere University of Technology.

## **Ville Leppänen**



Ville Leppänen is a full professor in software engineering and software security at the University of Turku, Finland. He received his PhD in 1996 (Computer Science) and has now over 200 international conference and journal publications. His research interests are related broadly to software engineering and parallelism, ranging from software engineering methodologies, practices, and tools to security and quality issues, and to programming languages, parallelism, and architectural design topics. His security related research has focused on IoT and cloud security, software based diversification, vulnerability analyses, machine learning based profiling for host intrusion detection systems, introspection mechanisms, and fake service generation. He has supervised over 130 master's theses and over 100 bachelor theses. His teaching experience covers over 20 different courses, mostly related to various aspects of software engineering. Currently Leppänen serves as vice head of department and leader of 8 research and development projects.

## Ming Li



Ming Li is an Associate Professor in the Department of Electrical and Computer Engineering of the University of Arizona. He was an Assistant Professor in the Computer Science Department at Utah State University from 2011 to 2015. He received his Ph.D. in ECE from Worcester Polytechnic Institute in 2011. His main research interests are wireless and cybersecurity, with current emphases on cross-layer optimization and machine learning in wireless networks, wireless physical layer security (e.g., authentication and key establishment), privacy enhancing technologies, IoT and cyber-physical system security (e.g., vehicle security). He received the NSF Early Faculty Development (CAREER) Award in 2014, and the ONR Young Investigator Program (YIP) Award in 2016. He is a senior member of IEEE and a member of ACM.

## Lan Lin



Dr. Lan Lin is an Associate Professor of Computer Science at Ball State University. She earned her M.Sc. and Ph.D. in Computer Science from the University of British Columbia and the University of Tennessee, Knoxville, respectively. Prior to joining Ball State she worked as a Research Scientist in the Software Quality Research Laboratory (SQRL) at the University of Tennessee. Her research has been focused on rigorous software specification and automated, model-based statistical testing, and funded by Lockheed Martin, Northrop Grumman, Rockwell Collins, Air Force Research Laboratory, and Ontario Systems, through the NSF Security and Software Engineering Research Center, and most recently by NSF. Her funded project titled “Towards Scalable Modeling for Rigorous Software Specification and Testing” was nominated and selected to be published in the 2016 NSF Industry & University Cooperative Research Center Technological Breakthrough Compendium.

## Bob McGwier



Dr. Robert McGwier is the Chief Scientist of the Ted and Karyn Hume Center for National Security and Technology, and Research Professor in the Bradley Department of Electrical and Computer Engineering at Virginia Tech. He leads the overall execution of the Center's research mission, Blacksburg operations, and lead's the university's program development efforts in national security applications of wireless and space systems. His area of expertise is in radio frequency communications and digital signal processing. Before joining Virginia Tech, Dr. McGwier spent 26 years as a member of the technical staff at the Institute for Defense Analyses' Center for Communications Research in Princeton, NJ, where he worked on advanced research topics in mathematics and communications supporting the federal government. He received his Ph.D. in applied mathematics from Brown University in 1988. His work on behalf of the federal government has earned him many awards, including one of the intelligence community's highest honor in 2002.

## Alan Michaels



Dr. Alan J. Michaels serves as the Director for Electronic Systems research at the Hume Center. At Hume, his research covers a variety of topics related to special communications, SIGINT, RF machine learning, cryptography, EW, and non-traditional hardware. Prior to joining VT, Alan spent a decade at the Harris Corporation in roles ranging from research in LPI/D spread spectrum and GPS; PI for 47 R&D projects; technical lead for multiple \$30M-\$50M DoD programs, and functional manager for >100 engineers. Dr. Michaels earned his BS/MS/PhD in ECE, a BS/MS in Applied Mathematics, and MS in Operations Research from Georgia Tech and an MBA from Carnegie Mellon. He has received 40 U.S. patents, written >30 conference/journal publications, and holds active clearances.

## Mehdi Mirakhorli



Dr. Mehdi Mirakhorli is an Assistant Professor at Rochester Institute of Technology with a research background in software architecture design, requirements engineering, and application of data mining in software engineering. Previously, he worked as a software architect on large data-intensive software systems in the banking, meteorological and health care domains. He is on the editorial board of the Journal of Software and Systems, and serves as associate editor for IEEE Software Blog or Software Architecture and Requirements. Dr. Mirakhorli has received two ACM SIGSOFT Distinguished Paper Awards at the International Conference on Software Engineering and a best paper award at the International Conference on Software Architecture. He has engaged in research projects with the US Department of Homeland Security (DHS). Furthermore, Dr. Mirakhorli has been a speaker in several technical venues such as ALTA Distinguished Speaker at Alcatel-Lucent and a technical briefing hold by the Department of Homeland Security on issues related to Security Architecture.

## Pekka Pietikäinen



M. Sc. (Eng.) Pekka Pietikäinen is currently finishing up his PhD at the Oulu University Secure Programming Group a (OUSPG). His thesis concentrates on modeling the behaviour of complex systems. Pekka did his M.Sc. thesis at CERN with the title “Hardware-assisted Networking Using Scheduled Transfer Protocol on Linux”. He has nearly 20 years of experience in the field, in both research and private industry. He was a founding partner of Net People Oy, the first ISP in northern Finland (later merged with Nixu Oy) and Clarified Networks Oy, a pioneer in collaborative analysis, reporting and visualization of events related to abuse, incident and critical infrastructure.

## Naren Ramakrishnan



Naren Ramakrishnan is the Thomas L. Phillips Professor of Engineering in the Department of Computer Science at Virginia Tech. He is also the director of the Discovery Analytics Center. He received his Ph.D. in computer sciences from Purdue University. His research interests include mining scientific datasets in domains such as systems biology, neuroscience, sustainability, and intelligence analysis. His work has been featured in the National Institutes of Health outreach publication Biomedical Computation Review, the National Science Foundation’s Discoveries series, Wall Street Journal, Newsweek, Smithsonian Magazine, Popular Science, Slate magazine, and in the ACM Technews 12 times. He serves on the editorial boards of IEEE Computer, ACM Transactions on Knowledge Discovery from Data, Data Mining and Knowledge Discovery, IEEE Transactions on Knowledge and Data Engineering, and numerous other journals. He has served as both program chair and general chair of the IEEE International Conference on Data Mining (ICDM). He was invited to co-organize the NAE Frontiers of Engineering symposium in 2009.

## Jeffrey Reed



Dr. Jeffrey H. Reed is the founder of Wireless @ Virginia Tech, and served as its Director until 2014. He is the Founding Faculty member of the Ted and Karyn Hume Center for National Security and Technology and served as its interim Director when founded in 2010. His book, Software Radio: A Modern Approach to Radio Design was published by Prentice Hall and his latest textbook Cellular Communications: A Comprehensive and Practical Guide was published by Wiley-IEEE in 2014. He is co-founder of Cognitive Radio Technologies (CRT), a company commercializing of the cognitive radio technologies; Allied Communications, a company developing spectrum sharing technologies; and for PFP Cybersecurity, a company specializing in security for embedded systems. In 2005, Dr. Reed became Fellow to the IEEE for contributions to software radio and

communications signal processing and for leadership in engineering education. In 2013 he was awarded the International Achievement Award by the Wireless Innovations Forum. In 2012 he served on the President's Council of Advisors of Science and Technology Working Group that examine ways to transition federal spectrum for commercial use. Dr. Reed is a past member CSMAC a group that provides advice to the NTIA on spectrum issues.

### **Joanna Cecilia da Silva Santos**



Joanna is currently a Ph.D. student in Computing and Information Sciences at Rochester Institute of Technology (RIT), being advised by Dr. Mehdi Mirakhorli. She has an M.Sc. in Software Engineering from Rochester Institute of Technology (RIT) and a B.Sc. in Computer Engineering from Federal University of Sergipe (UFS, Brazil). She is the recipient of the Best Paper Award at the 2017 IEEE International Conference on Software Architecture (ICSA) for the paper "Understanding Software Vulnerabilities Related to Architectural Security Tactics: An Empirical Investigation of Chromium, PHP and Thunderbird". Her main research interests are in Software Architecture and Software Security.

### **David Simpson**



Rear Admiral (ret.) David Simpson has influenced U.S. National Defense and Homeland Security policy for over thirty years. He currently is leading Pelorus Consulting Services, specializing in public safety, telecommunications, and Cybersecurity. He is a Professor at Virginia Tech, leading Cybersecurity Risk studies for Pamplin College of Business graduate degree programs. He previously served as Chief of the Federal Communications Commission's Public Safety and Homeland Security Bureau from 2013 to 2017. As Bureau Chief, he oversaw public safety, homeland security, emergency management, cybersecurity, and disaster preparedness activities for over 30,000 commercial companies in the telecommunications sector. Rear Admiral Simpson served in the U.S. Navy in leadership positions at sea and around the world, for over thirty years. As a Flag Officer he served as the Director of Navy Networks, the Vice Director of the Defense Information Systems Agency (DISA) and Director of Communications and Information Services in Iraq. He had Space, Combat Systems and Information Technology assignments in multiple countries around the world. He served as a senior delegate to the ITU World Radio Telecommunications Conference and to the World Conference on International Telecom (WCIT). Admiral Simpson is a graduate of the United States Naval Academy and earned a master's degree in space systems technology from the Naval Postgraduate School.

### **Clare Sullivan**



Dr. Clare Sullivan is cyber-lawyer specializing in digital identity, international privacy and data protection, blockchain and cyber security. She is a Professor at the Law Center, and a Fellow at the Center on National Security at Georgetown University in Washington D.C. Professor Sullivan is also the Managing Director of both the Security and Software Engineering Research Center and the new Blockchain Technology Ecosystem Design Research Center at Georgetown University. Professor Sullivan is the author of "Digital Identity" the first text to define and examine digital identity from a legal perspective and its implications for government, business and individuals. She has authored internationally published articles on digital identity, blockchain, privacy, and cyber security and reports for the U.S, U.K. and Australian governments, for the Commonwealth Secretariat for private sector organizations that involved examination and evaluation of the privacy and data protection laws of 40 countries; the E.U. General Data Protection Regulation, the new E.U. e-Privacy Regulation; and comparison of the E.U. model with the APEC cross border data transfer scheme.

## Xin Sun



Dr. Xin Sun is an Assistant Professor in the Computer Science Department at Ball State University. In summer 2014 he was a visiting researcher at IBM Watson Research Center. He received his Ph.D. from Purdue University, West Lafayette, in 2012. The overarching goal of his research is to create rigorous scientific approaches and automated software tools for managing and securing large and complex cyber-infrastructures, which today are kept running mostly by manual efforts and thus prone to human errors. Dr. Sun is passionate about Computer Science education and loves working with students. He is a recipient of the Computer and Information Science and Engineering Research Initiation Initiative (CRII) Award from National Science Foundation (NSF), and his research has been funded by NSF, S<sup>2</sup>ERC, and the State of Florida.

## Eli Tilevich



Eli Tilevich is an Associate Professor in the Dept. of Computer Science at Virginia Tech. Tilevich's research interests lie in the System's end of Software Engineering (mobile/IoT computing, cloud/edge computing, middleware, software refactoring, energy efficiency, and privacy), CS Education, and Music Informatics. He has published over 85 refereed research papers on these subjects. His research awards include a Microsoft Research Software Engineering Innovation Foundation Award and an IBM Faculty Award. Tilevich chaired the Program Committee of the 15th International Conference on Managed Languages & Runtimes (ManLang 2018) and currently serves as General Chair of the 6th IEEE/ACM International Conference on Mobile System Engineering and Systems (MOBILESoft 2019). Tilevich holds a Ph.D. in Computer Science from Georgia Tech. At Virginia Tech, Tilevich leads the Software Innovations lab. The lab's research projects have been supported by major US government funding agencies and private industry. Tilevich is also a professionally trained classical clarinetist, with experience in orchestral, chamber, and solo performances.

## Teemu Tokola



Teemu Tokola has worked at the Oulu University Secure Programming Group (OUSPG) since 2004. His work at the OUSPG has focused on teaching and dissemination, with latest projects related to Europe-wide collaboration on cybersecurity education and dissemination, Finland-wide collaboration on improving cyber security teaching at universities to better cater to industry needs and on development of cybersecurity courses and making cybersecurity curriculum planning for the University of Oulu. His additional teaching and research interest areas include development of effective systems for providing support for Bachelor level thesis writing, teaching of programming and software engineering skills, black-box modelling, computer architectures, artificial intelligence and natural language processing.

## Nathan White



Nathan White is currently a graduate student at Ball State University working on a Masters of Science in Software Engineering. He is a research assistant to the Zages assisting them with the current project titled, Code Duplication++, and the proposed project, Unlocking the Knowledge Embedded in Source Code. In previous employment, Nathan filled a support role for the Computer Science Department at Taylor University. While in this role, he learned systems administration, problem solving, and love for the linux command line. He charted the course for several significant server migrations without interrupting services, and developed a number of administrative scripts to simplify complex or time consuming aspects of his job. Additionally, he has been employed on a part time basis since Spring of 2014 by a small startup company specializing in cubesats called NearSpace Launch. In this employment, he has worked on software which has flown on several cubesats, automated server cluster setups, built websites and APIs, developed and championed software workflows, and built a number of applications to meet specific needs for the business. He obtained his



undergraduate degree in biology from Taylor University, broadening his studies with minors in computer science and chemistry. Nathan enjoys spending time with family and friends, reading books, hiking, travelling, making and eating good food, physical activity, playing sports, and going for walks.

### **Eric Wong**



W. Eric Wong received his Ph.D. in Computer Science from Purdue University. He is a Full Professor and the Founding Director of Advanced Research Center for Software Testing and Quality Assurance in Computer Science at the University of Texas at Dallas. He also has an appointment as a guest researcher at the National Institute of Standards and Technology. Dr. Wong was the recipient of the 2014 IEEE Reliability Society Engineer of the Year. He is also the Edit-in-Chief of IEEE Transactions on Reliability. His research focuses on software testing, program debugging, risk analysis, safety, and reliability.

### **Lauren Wong**



Lauren Wong is currently a Research Associate at the Hume Center for National Security and Technology at Virginia Tech, and is also pursuing her PhD in Electrical Engineering at VT. She recently earned her MS in Electrical Engineering from VT, and has a BAs in Computer Science and Mathematics from Oberlin College. Her research focuses in various aspects and applications of RF Machine Learning.

### **Shaoen Wu**



Shaoen Wu is an associate professor and the assistant department chair of computer science at Ball State University. He received his PhD degree in Computer Science and Software Engineering from Auburn University. He serves on the Advisory Council of Scholarship for the Associate Vice President for Research, and the Dean's Faculty Advisory Board. He was featured in the spotlight story of the Ball State Research Magazine 2015. He is a senior member of IEEE, the secretary of IEEE MMTC 2018-2020, and a member of ACM. He has worked as an assistant professor in the School of Computing at University of Southern Mississippi, a Staff Scientist at ADTRAN, and a Member of Technical Staff at Bell Labs, Lucent Technologies. He has published over 70 peer-reviewed papers in cyber security, wireless, IoT, smart health and robotics at international journals e.g. IEEE Internet of Things Journal and conferences e.g. IEEE Globecom, ICC and ICCCN. His research has been generously supported by NSF, NASA, Cisco, NVIDIA, Intel, Dell, ARM, Cypress Inc., Microsoft, and Ball State Aspire Program. He has received two Best Paper Awards, a Faculty Excellence Award, and a First Place in Graduate Student Forum. He has actively served as a Chair/Co-Chair at several international conferences and an editor for a few international journals.

### **Dolores Zage**



Dolores M. Zage is an assistant professor in the Computer Science Department at Ball State University and the Research Coordinator of the Security and Software Engineering Research Center (S<sup>2</sup>ERC). Dolores' research interests are in software metrics and models and their application during the design and maintenance phases of software development. She has been a co-principal investigator on over 40 projects funded by the National Science Foundation, Motorola, Telcordia, Northrop Grumman, Computer Sciences Corporation, Harris Corporation, Magnavox Electronics Systems Division, GTE Data Services, NASA, Raytheon, Rockwell Collins, iconectiv, Beulah Works, Cisco, the U.S. Department of Homeland Security, the U.S. Air Force Research Lab and the U.S. Army Research Lab.

## Wayne Zage



Wayne M. Zage is the George and Frances Ball Distinguished Professor of Computer Science at Ball State University. Wayne has been conducting research in the Security and Software Engineering Research Center (S<sup>2</sup>ERC) and previously in the Software Engineering Research Center (SERC) since it began in 1986. His research in design metrics and models has led to the Zages' design metrics being used at Center industrial sites as indicators of good software design, to identify error-prone modules during the design phase of development, and as indicators of where to place effort during software testing. During his 41 years at Ball State, Wayne has won three university-wide awards: the Outstanding Young Faculty Award in the 1980s (while he was still young), the Outstanding Research Award in the 1990s, and the Ball State University Outstanding Faculty Award in 2002. He and Dolores Zage were also the co-recipients of the National Science Foundation I/UCRC Association's Award entitled the Alexander Schwarzkopf Prize for Technological Innovation for their work in software design metrics, which they received in 2007. Wayne is in his 18th year as a Director of an NSF Industry/University Cooperative Research Center.