



S²ERC Showcase

Researcher/Presenter Biographies

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.

Tam Chantem

Tam Chantem is an assistant professor in ECE at Virginia Tech. Her primary areas of research are embedded systems and cyber-physical systems, with focuses on the hardware/software co-design of real-time embedded systems, integrated security, energy-aware and thermal-aware system-level design, and intelligent transportation systems. She received her Ph.D. and Master's degrees from the University of Notre Dame in 2011 and her Bachelor's degrees from Iowa State University in 2005. Before joining Virginia Tech, Chantem was an assistant professor in ECE at Utah State University. Chantem received a U.S. Air Force Research Lab Summer Faculty Fellowship, Utah State University's 2016 ECE Advisor of the Year, and 2011 Outstanding Research Assistant Award from University of Notre Dame. She has also served as the TPC co-chair (ICISS 2017, RTSOPS 2017, and LPDC 2015) and technical program committee for several conferences such as RTAS, ECRTS, and RTSS.

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 (S2ERC) 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.

Todor Cooklev



Todor Cooklev is Harris Professor of Wireless Communication and Applied Research at Purdue University Fort Wayne, Fort Wayne, Indiana. His research interests include most aspects of modern wireless systems. He has contributed to the development of a number of communications standards, including Bluetooth, DSL, Wi-Fi, cellular, and military radio systems, serving at times in leadership positions in standardization organizations such as ITU-T, IEEE 802, and 3GPP. His research interests include most aspects of wireless standards.

He has several years of experience working in Silicon Valley, California. Dr. Cooklev has contributed to more than 100 publications and numerous patents. He currently serves as an editor of the wireless and radio communication series of the IEEE Communications Standards Magazine.

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.

Mazen Farhood

Mazen Farhood is an Associate Professor in the Kevin T. Crofton Department of Aerospace and Ocean Engineering at Virginia Tech. Before joining Virginia Tech in 2008, he was a Scientific Researcher with the Delft Center for Systems and Control, Delft University of Technology, The Netherlands, and a Post-Doctoral Fellow with Georgia Tech's School of Aerospace Engineering. He received the M.S. and Ph.D. degrees in mechanical engineering from the University of Illinois at Urbana-Champaign in 2001 and 2005, respectively. His current research interests include security aware control and reliability analysis of unmanned aircraft systems, motion planning and tracking along trajectories, cooperative control of multi-vehicle systems, and model complexity reduction. He received the National Science Foundation CAREER Award in 2014.

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.

Paul Gestwicki

Paul Gestwicki is a professor of Computer Science at Ball State University, where he leads a games research and development group. His multidisciplinary student teams have been building educational games since 2009, working with such community partners as The Children's Museum in Indianapolis, the Indiana State Museum, and local museums and nonprofits. His previous work with S2ERC includes the cybersecurity education game--Social Startup Game--which teaches security concepts and practices to upper middle school and high school students; see S2ERC TR 318 for complete details on this project. Dr. Gestwicki has written many scholarly articles on software design, development, and evaluation techniques for educational games, focusing on methodologies for multidisciplinary and cross-functional teams. Dr. Gestwicki earned his Ph.D. in Computer Science and Engineering in 2005 from the University at Buffalo for his work on interactive visualization of object-oriented program execution.

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.

Tom Krauss

Tom Krauss is a senior member of the research faculty at the Hume Center joining Hume in August 2015 with a focus on radar, communications, and software development, specifically Synthetic Aperture Radar, electromagnetic modeling, signal propagation and waveform analysis. Dr. Krauss has more than two decades of experience with space-based and airborne imaging radar systems at Syracuse Research Corporation (SRC), General Dynamics, and ERIM focused on system performance characterization and image quality measurement, improvement, and interference removal. He has also worked radar image quality measurements including algorithm design and code implementation as well as SAR system performance analysis predictions including image quality equation evaluation, requirements flowdown, and subsystem analysis. Dr. Krauss is passionate about mission-critical and high-performance software engineering as well as the languages/environments supporting it. Currently at the Hume Center he is working on machine learning as it applies to radar as well as packetized wireless communications.

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.

Samuel Laurén

Samuel Laurén acts as a project researcher at the University of Turku while pursuing a doctoral degree there. His research interests include cyber security, trusted computing and operating systems. As a part of this project, he has worked to develop a platform for advanced virtual machine introspection. Going forward, he wishes to find new applications for introspection techniques and work towards bringing these solutions to mainstream use. Samuel has a Master of Science degree in the field of Computer Science from the Department of Future Technologies at the University of Turku.

Lan Lin

Dr. Lan Lin is an Assistant 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 (2001) and the University of Tennessee, Knoxville (2006), 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. Her recently 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 Director of Research 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.

Geoffrey S. Mearns

Geoffrey S. Mearns became the 17th president of Ball State University in May 2017. He came from Northern Kentucky University, where he had served as president for five years. During his tenure at NKU, President Mearns led the development of a new five-year strategic plan, which led to substantial increases in retention rates. Among his other accomplishments, President Mearns secured \$97 million from the state to build a modern health innovation center, as well as an \$8 million private gift to support simulation facilities in the center. Before leading NKU, President Mearns served as provost and senior vice president for academic affairs at Cleveland State University, where he led the most successful accreditation process in the institution's history, and led a strong effort to improve retention rates. Before he became provost, President Mearns was dean and professor of law at the university's Cleveland-Marshall College of Law. President Mearns also practiced law for more than 15 years, including serving as a federal prosecutor in the U.S. Department of Justice. He earned his undergraduate degree in English from Yale University. He earned a JD from the University of Virginia. President Mearns and his wife, Jennifer, have five children.

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 has served on the Program Committees for several conferences and 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 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.

Sampsa Rauti

Sampsa Rauti is a PhD student, a university teacher and a researcher in the field of Software Engineering. His research concentrates on software security, more specifically on preventing and monitoring malicious software with proactive methods such as software diversification and honeypots. Rauti has over 30 software security related publications in international conferences and journals, and he is scheduled to defend his PhD thesis in fall 2018. He has worked in several cyber security related projects such as DIMECC Cyber Trust Program and software security projects funded by Ministry of Defence of Finland. Rauti has taught over 10 different courses related to computer science and software engineering.

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 at Rochester Institute of Technology (RIT). She graduated in Computer Engineering at Federal University of Sergipe - UFS, Brazil (2013) and received a masters degree from Rochester Institute of Technology-RIT, USA (2016). Her main research interests are: Software Architecture and Software Security.

Andrew Stewart

Andrew Stewart is a current graduate student at Georgetown University pursuing a Master's of Science in Mathematics and Statistics. He completed his undergraduate work at California State University - Sacramento, majoring in Applied Mathematics and Statistics. Andrew is also a Marine Corps veteran who completed three combat tours in support of Operations Iraqi Freedom and Enduring Freedom. Before coming to Georgetown, he worked in defense contracting as a C4ISR subject matter expert, as well as statistics consulting for an international economic development firm. Andrew is currently working with Professor Eric Burger on the Economic Impact of AES and is a data scientist with Elder Research in Arlington, VA.

Clare Sullivan

Dr. Clare Sullivan is cyber-law lawyer specializing in digital identity, privacy, and cyber security. She is a Professor at the Law Center and a Fellow at the Centre on National Security and the Law at Georgetown University. Prior to joining the academy, Professor Sullivan was in academia in Australia and in legal practice in Australia and internationally with Baker & McKenzie.

Professor Sullivan has a PhD in cyber-law and has been awarded both a Fulbright scholarship and an Australian government Endeavour Fellowship for her research in this field. She is currently a Fulbright Ambassador. Professor Sullivan is the author of internationally published articles on digital identity, privacy, and cyber security. She authored the first report on international trade-based money laundering, and 'Digital Identity,' the first international legal study of the legal implications of digital identity for individuals, businesses and government. In 2016, Professor Sullivan was appointed consultant to the Commonwealth Secretariat to examine the privacy and data security issues for the 54 Commonwealth countries implementing the United Nations' Sustainable Development Goal 16.9 'A Legal Identity for All by 2030.' Following this work, Professor Sullivan was engaged to develop best practice data handling guidelines for USAID for its international aid and development activities.

Professor Sullivan has recently completed research for the U.S. Department of Defense on the implications of e-residency on U.S. national and international security. She has a number of current projects for the private sector including a major project for a consortium of U.S. multinationals that examines the legal implications of business-to-business sharing of cyber-threat information internationally. This research involves examination of the privacy and data protection laws of 34 OECD countries. Other private sector projects include consideration of the international privacy and data protection implications of the IoT era and the impact of international data protection regulation and privacy law on artificial intelligence (AI) and deep learning. The latter project considers the operation of current regulation and the obligations imposed on businesses that use AI and deep learning to analyze and use big data.

Xin Sun

Dr. Xin Sun joined the Computer Science Department at Ball State University in fall 2016 as an assistant professor. From 2012 to 2016 he was an assistant professor with Florida International University in Miami, Florida. In summer 2014 he was a visiting researcher at IBM T.J. Watson Research Center. He received his Ph.D. from Purdue University, West Lafayette, in 2012. His research interest lies in computer networking and networked systems, with a focus on network management and operations. The overarching goal of his research is to develop rigorous scientific approaches and automated software tools for managing and securing large and complex data networks, which today are kept running entirely by manual effort and human intelligence and are thus prone to human errors. Dr. Sun is also very passionate about Computer Science education and loves working with students. Dr. Sun is a recipient of the Computer and Information Science and Engineering Research Initiation Initiative (CRII) Award from National Science Foundation, and his research has been funded by National Science Foundation, the State of Florida, and the Security and Software Engineering Research Center.

Eli Tilevich



Eli Tilevich is an Associate Professor in the Dept. of Computer Science and the College of Engineering Faculty Fellow 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 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.

Scott Tousley

Scott Tousley is the Deputy Director of the Cyber Security Division for the Homeland Security Advanced Research Projects Agency at DHS S&T. His responsibilities include organizational liaison, IPT management and support, and project leadership for educational/operational efforts such as the Computer Security Incident Response (CSIRT) project. He also supports several initiatives in critical infrastructure protection and cyber-physical systems. Tousley served 20 years as an Army officer in the Corps of Engineers, many of these years in interagency technology programs. He lead the Watch/Warning program in the Federal Bureau of Investigation as part of the National Infrastructure Protection Center, part of the Clinton Administration's early engagement with national cyber security challenges. He also previously managed the operations security team for a large internet service provider, was the principal with a technology start-up company in the private sector, and was program manager at the DHS National Cybersecurity Division. He has served nine years with DHS, principally with S&T but also with the Domestic Nuclear Detection Office and supporting Customs and Borders Protection.

Nathan White

Nathan White is a graduate student at Ball State University pursuing a Master of Science in Software Engineering. He is currently a research assistant to the Zages working on projects including Code Duplication and Secure Coding. In addition, he enjoys developing software, solving technical problems, and acting as a systems administrator for a small satellite company called NearSpace Launch.

Shaoen Wu



Shaoen Wu is an Associate Professor of Computer Science at Ball State University. He received his PhD degree in Computer Science and Software Engineering from Auburn University. He is a senior member of IEEE, 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. His research interests include Internet of Things Cyber-Physical Systems, Cyber Security and Wireless Networking. He has published over 65 peer-reviewed papers in 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, 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 of international journals.

Dolores Zage

Dolores M. Zage is a faculty member in the Computer Science Department at Ball State University and the Research Coordinator of the Security and Software Engineering Research Center (S²ERC). 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, 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 (S²ERC) 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.