



S²ERC Showcase

Researcher/Presenter Biographies

Ahmed Abdelhadi

Ahmed Abdelhadi is a Research Assistant Professor at Virginia Tech. He received his Ph.D. in Electrical and Computer Engineering from the University of Texas at Austin in December 2011. He was a member in Wireless Networking and Communications Group (WNCG) during his Ph.D. In 2012, he joined Bradley Department of Electrical and Computer Engineering and Hume Center for National Security and Technology at Virginia Tech. He is a senior member of IEEE.

Leila Amanzadeh

Leila Amanzadeh is a Master's student and a GRA working under Dr. Ryan Gerdes in the Electrical and Computer Engineering department at Virginia Polytechnic Institute and State University. She is interested in robotics, smart buildings, cyber security and Internet of Things.

Jonathan Black

Jonathan Black is currently the Ted and Karyn Hume Center for National Security and Technology associate director of research for aerospace systems. 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. Black is an associate professor of aerospace 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*, and *Internet Security: Professional Reference*. He has also taught courses at Ball State on Programming Languages, Programming for the Internet, and Systems Administration.

Eric Burger

Dr. Burger is the Director of the Georgetown site of the S²ERC . Prior to Georgetown he served as the CTO of two public companies, two private equity companies, and a VC-funded startup. He has an SBEE, MBA, and PhD from the Massachusetts Institute of Technology, Katholieke Universiteit Leuven, and Illinois Institute of Technology. See <http://people.cs.georgetown.edu/~eburger> for more details on his background.

Tam Chantem

Tam Chantem is an assistant professor in the Department of Electrical and Computer Engineering at Virginia Tech. She received her Ph.D. and M.S. in Computer Science and Engineering from the University of Notre Dame in May of 2011 and May 2008, respectively. She earned a double B.S. degree from Iowa State University in May 2005. Her research interests are in security and resilience in cyber-physical systems, intelligent transportation systems, hardware-software co-design of real-time embedded systems, and energy-aware and thermal-aware system-level design.

Long Cheng

Long Cheng is currently a Ph.D. candidate in the Computer Science Department at Virginia Tech, working with Prof. Daphne Yao. Previously, he worked as a researcher at Institute for Infocomm Research (I2R), Singapore. He received his first Ph.D. degree from Beijing University of Posts and Telecommunications, China in 2012. During the period from 2009 to 2011, he was a research assistant in the Hong Kong Polytechnic University and the University of Texas at Arlington, USA. He is the author and co-author of over 50 papers in international journals and conferences. He received the Best Paper Award of IEEE WCNC 2013 and Erasmus Mundus Scholar Award in 2014. His research interests lie broadly in cyber security, network forensics, cyber-physical systems, Internet of things, pervasive computing, and wireless sensor networks.

Matthew Chiang

Matthew Chiang is a rising senior at Georgetown University pursuing a B.S. in Computer Science. He is currently working with Professor Eric Burger on the STIR project and related SIP projects in an attempt to authenticate the identity of SIP callers.

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 the Harris Associate Professor of Wireless Communication and Applied Research and the Director of the IPFW Wireless Technology Center at Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana. His research interests include software-defined radios and standards for wireless communications. He has worked on several standards committees, serving at times in leadership roles. He has contributed to over 100 publications and 29 patents in these areas.

Joseph M. Ernst

Dr. Joseph Ernst received his Bachelors of Science from the University of Notre Dame and his Ph.D. at Purdue University. At Purdue, Dr. Ernst worked in the Communications Networking Signal and Image Processing (CNSIP) group and specifically in the area of Intelligent Transportation Systems. After Purdue, Dr. Ernst worked at Oak Ridge National Laboratory on tomographic reconstruction of radiation images and algorithms for detecting child pornography. For the last three years, Dr. Ernst has worked at the Virginia Tech Hume Center in the areas of secure communications and cyber physical systems security.

Michael C. Fowler

Michael Fowler is senior research faculty for the Ted and Karyn Hume Center for National Security and Technology at Virginia Tech responsible for driving and providing thought leadership into the centers research on autonomous systems and mission orchestration for wireless and unmanned systems. His research focuses is on the convergence of distributed intelligence and machine learning for decision making under uncertainty for embedded applications including drones, smallsats, IoT, and wireless communications. He has accumulated over 10 years of experience managing and performing research in security, wireless systems and artificial intelligence at Harris Corporation and as faculty at Virginia Tech. He has received a Masters in Engineering Management from Old Dominion University and is currently a Ph.D. candidate in Computer Engineering at VT. During his professional career, he has obtained professional certifications in project management (PMP) and information security (CISSP) along with Six Sigma Operations Black Belt.

Ryan Gerdes

Ryan M. Gerdes is an Assistant Professor in the Department of Electrical and Computer Engineering at Virginia Tech working in the area of cyber-physical systems security. 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 research interests include vehicular security, with an emphasis on intelligent and automated transportation, embedded systems security, physical layer security, and integrated circuit security.

Justus Graham

Mr. Graham is a faculty researcher in the Hume Center for National Security and Technology within Virginia Tech; his research interest is machine learning in support of intelligence analysis. Mr. Graham's experience supporting the federal government includes counter-terrorism, strategic intelligence, and evaluating mission applications of advanced technology. Mr. Graham holds an MA in Security Studies from Georgetown University.

Kevin Heaslip

Kevin Heaslip, Ph.D., PE is an Associate Professor in the Charles Edward Via Jr. Department of Civil & Environmental Engineering at Virginia Tech, Director of the Information Systems Laboratory for the Hume Center for National Security and Technology, and Research Team Leader for Resilience in the National Capital Region. He was previously an Assistant/Associate Professor in the Department of Civil & Environmental Engineering at Utah State University and the Associate Director of the Utah Transportation Center and the Mountain Plains Consortium (Region 8 University Transportation Center). He received his Ph.D. from the University of Massachusetts Amherst in 2007 and graduated from Virginia Tech with a BSCE and MSCE in 2002 and 2003 respectively. Currently, he is serving on the National Academy of Science's Resilience America Roundtable and is the Research Leader for Resilience in the National Capital Region. In addition, USU recognized his research by naming him the Department of Civil & Environmental Engineering Researcher of the Year and Undergraduate Research Mentor of the year twice. He was also awarded the College of Engineering Undergraduate Research Mentor of the Year in 2011. He has published 37 refereed journal publications, 40 refereed conference proceedings, and received research grants as Principal Investigator or co-Principal Investigator in the value of over \$18 million dollars. In addition, he has mentored 28 undergraduate researchers and served as the major professor of 28 graduate students.

Seth Hitefield

Seth Hitefield is a Graduate Research Assistant at the Ted and Karyn Hume Center for National Security and Technology and a Ph.D. candidate in Computer Engineering at Virginia Tech. He received a Master's in Computer Engineering where he focused on network traffic shaping, embedded systems, and mobile security. His current research focuses on the convergence of the cyber-security and electronic warfare domains, where he is working on developing architectures for secure software defined radio systems.

Barrett Koster

Barrett Koster has a BS degree in Engineering from Swarthmore College, an MS from Duke University in Computer Science, and a PhD from NCSU in Computer Science, all three degrees with projects on sound processing and speech recognition. Gaming industry related startup Lips Inc. came (and went) from Koster's dissertation "Owie", but gamers still rely on lipsync from more primitive methods, so he has a revived interest in getting it right this time. Additionally, this lipsync may yield very low bit-rates coding of speech. Koster's career has been in teaching positions, but he also pursues interests in String Theory and some commercial software.

Murat Kuzlu

Dr. Murat Kuzlu is an Assistant Professor at Virginia Tech - Advanced Research Institute (www.ari.vt.edu). He is a Senior Member of the IEEE and is currently serving as the Chapter Treasurer of IEEE Power & Energy Society (PES) Northern Virginia Section. Dr. Kuzlu received his Ph.D. in Electronics and Telecommunications Engineering in 2010, and joined Virginia Tech's Department of Electrical and Computer Engineering as a post-doctoral fellow in 2011. Dr. Kuzlu's research focuses on smart grid applications, including smart home and building research, transactive energy system, real-time co-simulation platform, and smart grid communications and security.

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.

Travis Miller

Travis Miller is a senior at Indiana University/Purdue University Fort Wayne majoring in Computer Science and will graduate in the fall of 2017. He is 26 years old and lives in Fort Wayne, Indiana. During his time at IPFW, Travis has made the Dean's List and participated in several internships and research projects. His accomplishments include completing an internship with Extension Healthcare and the completion of a penetration test as his senior project. In May of 2016, Mr. Miller began researching with Dr. Cooklev on his shared memory project and will continue this research through May of 2017.

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.

Kara Nance

Kara Nance is a Research Professor of at the Ted and Karyn Hume Center for National Security and Technology at Virginia Tech. Her research interests include digital forensics, data systems, security fundamentals, visualization, and security analytics. Dr. Nance is a frequent speaker on cybersecurity and associated issues with an emphasis on national security.

Xia Ning

Xia Ning is an assistant professor at the Department of Computer & Information Science, Indiana University - Purdue University Indianapolis. She received her Ph.D. from the Computer Science & Engineering Department, University of Minnesota, Twin Cities. From University of Minnesota, Twin Cities, she also received her M.S. in Computer Science from the Computer Science & Engineering Department, and M.S. minor in Statistics from the School of Statistics. She received her B.S. in Computer Science from Chu Kechen Honors College, Zhejiang University, China. Before joining IUPUI in 2014, she was a researcher at the Autonomic Management Department, NEC Labs America for two years.

Xia Ning is working on Data Mining, Machine Learning and Big Data Analytics and their applications in

1. e-Commerce and Recommender Systems, where she develops personalized and scalable methods and software tools to discover knowledge regarding users' personal preferences,

intentions and behavior patterns, etc. from their purchases activities, social networks, click traces, online reviews, etc. and correspondingly produce personalized recommendations;

2. Chemical Informatics, Medical Informatics and Health Informatics, where she develops effective data mining and machine learning methodologies to facilitate rapid and targeted exploration over chemical and biological spaces, and computational methods for various Chemoinformatics and Bioinformatics problems.

Xia Ning's research is currently supported by NSF.

Alan O'Donnell

Alan O'Donnell received his BS and MS from Virginia Tech and is currently working on a PhD. His research at Virginia Tech has focused on creating faster computation techniques for array effects, radar compatibility with communication systems, time modulated arrays, and the creation of an antenna array using extremely sparse elements. Work experience outside of academia comes from his time at the Dahlgren, Virginia, division of the naval surface warfare center (NSWCDD). While at NSWCDD he helped create control circuitry for a RF testing vehicle, conducted testing inside an anechoic chamber, and analyzed the effects of placing antenna systems on the topside of naval ships.

Tim O'Shea

Tim is a Research Associate and PhD Candidate in Electrical Engineering at Virginia Tech in the field of Deep Learning applications in Radio Signal Processing Systems. He is a senior member of the IEEE, earned his MS EE from NC State University in 2007, has been a core developer of the GNU Radio project for 10 years, and has work heavily on software radio implementation of numerous waveforms including 4G and cognitive radio systems. His current research area is focused on applying deep learning techniques to the radio physical layer to provide novel communications, sensing and environmental awareness, reasoning, and decision making capabilities for RF systems.

Rajeev Raje

Rajeev R. Raje is a Professor and Associate Chair in the Department of Computer and Information Science (CIS) at the Indiana University-Purdue University Indianapolis (IUPUI). Rajeev's current research interests are in the fields of distributed computing and programming, object and component-based software systems, programming languages, and software engineering. He is a member of the software engineering and distributed systems group in the CIS department. He has published more than 130 research papers and also has been an invited speaker on many occasions. His current and past research has been funded by various federal agencies and private organizations. Rajeev is a Senior Member of IEEE and ACM.

Jacob Rendall

Jacob Rendall is a recent graduate from the master's degree program in software engineering from Ball State University. While completing his degree, Jacob worked with Dr. Wayne Zage and Professor Dolores Zage on a number of S²ERC related projects, the most significant being Secure Coding. Jacob has been accepted into the doctorate program in computer science and engineering at the University of Notre Dame, where he will begin attending in the fall of 2017.

Ryan Rybarczyk

I am currently a Visiting Assistant Professor in the Department of Computer & Information Science at IUPUI. My areas of research focus are: Computer Science Education, Distributed Systems, and Software Engineering. I have attended many S²ERC over the years as both a student participant as well as in my role as a faculty presenter on various project proposals.

Joanna C. S. Santos

Joanna C. S. Santos is currently a Ph.D. student at RIT (Rochester Institute of Technology). She received a master's degree from RIT in 2016, and has a BS in Computer Engineering from the Federal University of Sergipe (UFS). Her main research interests are on 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 Rural Call Completion, and will be a data science intern with Elder Research this summer.

Clare Sullivan

Dr. Clare Sullivan is cyber-law lawyer specializing in digital identity, privacy and cyber security. She is a Visiting Professor of Law at the Law Center, Georgetown University and a Fellow at the Center on National Security and the Law, at Georgetown University. Professor Sullivan has a PhD in cyber-law and was awarded both a Fulbright scholarship and an Australian government Endeavour Fellowship for her research in this field and is currently a Fulbright Ambassador. Professor Sullivan is the author of internationally published articles on digital identity and cyber security in, the UK, Europe, the US and Australia. 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. Dr Sullivan is currently a PI the International Sharing project for a consortium of US multinational corporations which examines the legal implications of the sharing of cyber threat information internationally. She is PI on a new project on international data protection for USAID and is Co- PI on a project for the US Department of Defense which considers the implications of the Estonian e-Residency initiative on US national and international security. In 2016 Professor Sullivan was appointed consultant to the Commonwealth Secretariat in London to examine the digital identity, 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.' Prior to joining Georgetown University, Professor Sullivan was faculty at the University of South Australia and prior to that she was in legal practice in Australia and internationally with Baker & McKenzie.

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-infrastructure, 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 and the State of Florida.

Dylan Thomas

Dylan Thomas is a PhD candidate in the Kevin T. Crofton Department of Aerospace & Ocean Engineering at Virginia Tech. His current research focus is in optimal control & trajectory optimization of small satellites. Dylan has also worked on developing a SLAM computer vision algorithm to aid in small satellite proximity operations and relative navigation.

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 on the Systems end of Software Engineering, with a particular emphasis on distributed systems, mobile/IoT applications, middleware, software energy efficiency, software security, automated program transformation, music informatics, and CS education. He has published over 70 refereed research papers on these subjects. His research awards include a Microsoft Research Software Engineering Innovation Foundation Award and an IBM Faculty Award. Tilevich has earned a B.A. summa cum laude in Computer Science/Math from Pace University, an M.S. in Information Systems from NYU, and 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 federal funding agencies (i.e., NSF, ONR, AFOSR) and private industry. Tilevich is also a professionally trained classical clarinetist, with experience in orchestral, chamber, and solo performances.

Shaoen Wu

Shaoen Wu, an IEEE Senior Member, received the Ph.D. degree in computer science and software engineering from Auburn University in 2008. He is currently an Assistant Professor of computer science with Ball State University. He was an Assistant Professor with the School of Computing, University of Southern Mississippi, a Research Scientist with ADTRAN Inc., and a Senior Software Engineer with Bell Laboratories. His current research interests include Internet of Things, system and software security and reliability, and wireless and mobile networking. Prof. Wu has been working on various research projects over 1.5 million sponsored by both federal agencies such as NSF and industry such as Intel and Microsoft. Prof. Wu has served on the chairs and the committees of various conferences, such as the IEEE INFOCOM, ICC, and Globecom, and an Editor for several journals. He was a recipient of the Best Paper Award of the IEEE ISCC 2008 and the ANSS 2011.

Danfeng (Daphne) Yao

Danfeng (Daphne) Yao is an associate professor, Turner and L-3 Faculty Fellow in the Department of Computer Science at Virginia Tech. She received her Computer Science Ph.D. degree from Brown University in 2007. She received the NSF CAREER Award in 2010 for her work on human-behavior driven malware detection, and most recently ARO Young Investigator Award for her semantic reasoning for mission-oriented security work in 2014. She received the Outstanding New Assistant Professor Award from Virginia Tech College of Engineering in 2012. Dr. Yao has several Best Paper Awards (e.g., ICICS '06, CollaborateCom '09, and ICNP '12) and Best Poster Awards (e.g., ACM CODASPY '15). She was given the

Award for Technological Innovation from Brown University in 2006. Dr. Yao is an associate editor of IEEE Transactions on Dependable and Secure Computing (TDSC). She serves as PC members in numerous computer security conferences, including ACM CCS. She has over 75 peer-reviewed publications in major security and privacy conferences and journals. Dr. Yao is a senior member of ACM and a senior member of IEEE.

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. 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 SERC and in the S²ERC 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 40 years at Ball State, Wayne has won three university-wide awards: the Outstanding Young Faculty Award in the 1980s, the Outstanding Research Award in the 1990s, and the Ball State University Outstanding Faculty Award in 2002. He and Dolores were also the co-recipients of the National Science Foundation I/UCRC Association's Award entitled the Alexander Schwarzkopf Prize for Technological Innovation for the work in design metrics, which they received in 2007. Wayne is in his 16th year as a Director of an NSF Industry/University Cooperative Research Center.

Wenchao Zhou

Dr. Wenchao Zhou is an Assistant Professor of Computer Science at Georgetown University. Prof. Zhou's academic interests include networking, databases, distributed systems, and network security. He is a leading expert in network provenance for forensics in distributed systems, and runner-up for the ACM SIGMOD Dissertation Award; he also received a CAREER award from the National Science Foundation in 2015 for his work on applying provenance for system management. His research centers around the use of data-centric and formal techniques towards ensuring safe and secure distributed systems. He received Ph.D. and M.S.E degrees from the University of Pennsylvania, and B.S.E. degree from Tsinghua University.