Seventh Annual Cyber-Physical Systems Principal Investigators' Meeting

October 31 - November 1, 2016

Renaissance Arlington Capital View Hotel

Arlington, Virginia

cps-vo.org/group/cps-pimtg16

The Seventh Annual

NSF CYBER-PHYSICAL SYSTEMS PRINCIPAL INVESTIGATORS' MEETING

Arlington, Virginia, USA | October 31 - November 1, 2016

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Program Organizers:

Janos Sztipanovits, Vanderbilt
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WELCOME MESSAGE

Dear CPS Community Members:

This seventh annual meeting of the Cyber-Physical Systems community marks a significant milestone in the program's history – the 10 year anniversary of the CPS Program. In this ten-year period, we have witnessed an NSF-only program evolve into a multi-agency program with Federal partners including the U.S. Department of Agriculture, U.S. Department of Homeland Security, National Aeronautics and Space Administration, National Institutes of Health, the National Institute of Standards and Technology, the National Security Agency, and the U.S. Department of Transportation; to over 700 Principal Investigators and Co-PIs; and to over 400 projects awarded to date. We are excited about working to ensure the continued growth of the CPS program and collaborations that span government, academia, and industry.

The significant role that CPS research plays in global society is best demonstrated by the diverse technologies and ever-growing set of domains it spans that enables the future of Smart and Connected Communities (S&CC), agriculture, autonomous systems, healthcare, manufacturing, transportation, and the burgeoning Internet of Things (IoT).

As always, the CPS community is the primary focus of the annual CPS PI Meetings and CPS Program. Thus we strive to organize PI Meetings in a manner that builds on the success of past meetings and exposes the community to the rich progress of the research on both national and international levels and allows an environment to network. Day one opens with keynote by Dr. Charlie Catlett of Argonne National Laboratory who will give a keynote on the Array of Things (AoT). AoT is an urban sensing project comprising a network of interactive, modular sensor boxes, the first phase of which, has been installed around Chicago to collect real-time data on the city's environment, infrastructure, and activity for research and public use.

Among other things, we will talk about NSF's effort to support research advances in S&CC. NSF has recently published an S&CC solicitation. Specific objectives of this solicitation include foundational research to: (1) enhance understanding and support the design of smart and connected communities, in ways that improve the quality of life within them; (2) foster the development of a robust, multidisciplinary and diverse research community that encompasses, integrates, and extends disciplinary perspectives in the social, behavioral, economic, and learning sciences and in computer and information sciences and engineering, and engineering research, and (3) support research capacity-building to address the challenges and opportunities of present and future smart and connected communities. Several on-going research projects that strive to integrate these sociotechnical will be presented. We are also pleased to have guests representing Japan and Europe, and are eager to hear about the progress of recent S&CC research being conducted by Osaka and Kyusyu Universities in the area of Social CPS in Japan.

We will hear about the progress of the CPS VO 2: Active Resources project as well as the progress of the CPS student competitions using the VO. We believe these offer new opportunities for increasing and broadening participation in CPS design.

Throughout both meeting days, the main part of the agenda will again be turned over to our CPS Principal Investigators. We will hear from several PIs in the community who will give talks that span a diversity of technologies and application domains. There will be great opportunities to network with our research community and see the progress being made through poster sessions and demonstrations. We look forward to gleaning from the demonstrations those that could serve as candidates to be showcased at the 10 Year CPS Anniversary Celebration that is tentatively scheduled for the Spring of 2017.

We truly hope that this two-day meeting will provide an environment for you to ask stimulating questions to speakers and interact with your peers.

Sincerely,

The NSF CPS Team

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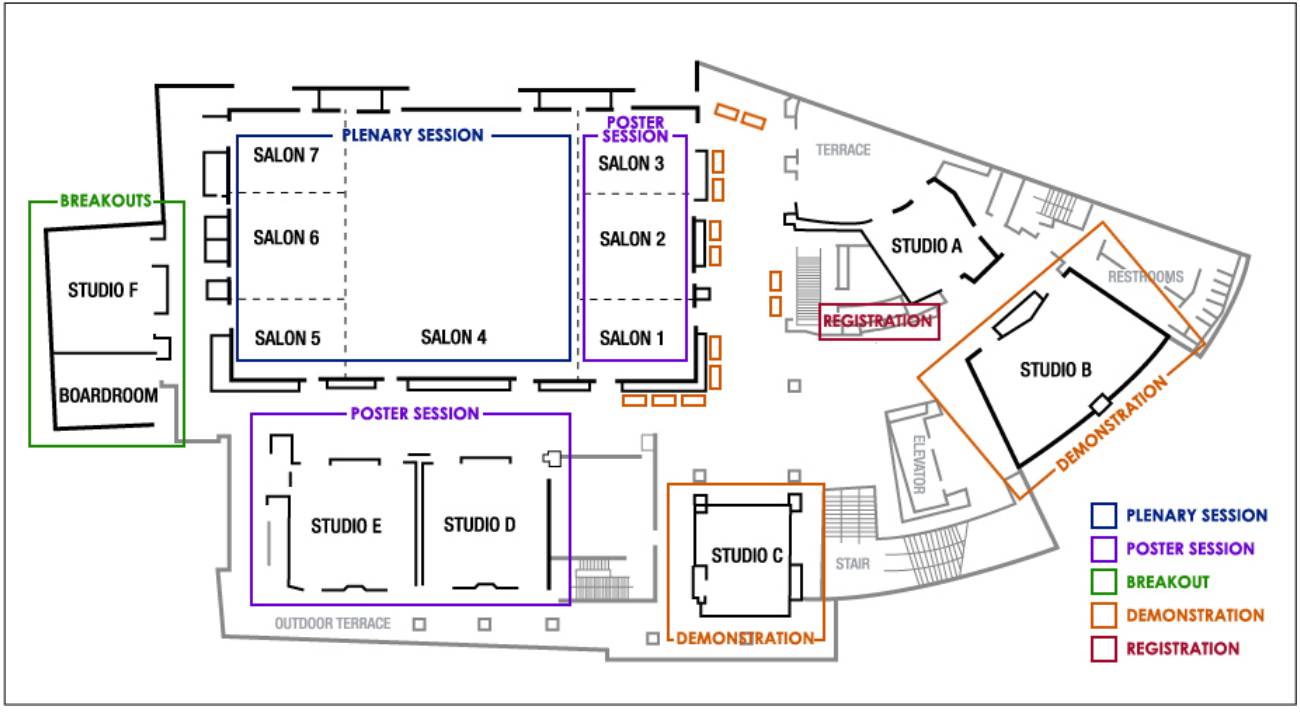
2016 NSF CPS PI MEETING – PROGRAM LAYOUT

Renaissance Arlington Capital View
2nd Floor



FLOOR PLAN

PROGRAM AGENDA

PROGRAM AGENDA

SUNDAY, OCTOBER 30

TIME	TITLE	LOCATION
6:00 - 9:00	**EARLY REGISTRATION**	FOYER

MONDAY, OCTOBER 31

TIME	TITLE	LOCATION
7:30 - 5:00	**REGISTRATION**	FOYER
8:00 - 5:00	**CPS VO HELP DESK**	STUDIO C
7:30 - 8:30	**CONTINENTAL BREAKFAST**	FOYER & HALLWAYS
8:30 - 9:00	**NSF WELCOME AND OPENING REMARKS** *Dr. Kenneth L. Calvert (Division Director CNS/CISE)* *Dr. James Kurose (Assistant Director - CISE)* *Dr. Grace Wang (Acting Assistant Director - Engineering)*	SALONS 4-7
9:00 - 9:45	**SESSION 1: KEYNOTE: ARRAY OF THINGS** *Session Lead - David Corman (CPS Program Lead - CNS/CISE)* *Charlie Catlett (Argonne National Laboratory and the Argonne/University of Chicago Computation Institute's Urban Center for Computation and Data)*	SALONS 4-7
9:45 - 10:00	**BREAK**	FOYER & HALLWAYS
10:00 - 11:40	**SESSION 2: CPS AND SMART AND CONNECTED COMMUNITIES DCL** *Session Lead - Sylvia Spengler (IIS / CISE)*	SALONS 4-7
10:00 - 10:20	**SCALE 2 (Safe Community Awareness and Alerting) - Extending a Smart America Challenge Project** *Nalini Venkatasubramanian (UC-Irvine), Sharad Mehrotra (UC-Irvine)*	

MONDAY, OCTOBER 31

PROGRAM AGENDA

TIME	TITLE	LOCATION
10:20 - 10:40	**A Unified Solution of Mixed Traffic Sensing, Tracking and Acceptable Active Accident Avoidance for On-Demand Automated Shuttles in a Smart City** *Ümit Özgüner (The Ohio State), Keith Redmill (The Ohio State), Bilin Aksun-Guvenc (The Ohio State)*	
10:40 - 11:00	**Recent Research for Social CPS in Japan** *Teruo Higashino (Osaka University-Japan)* *Rin-ichiro Taniguchi (Kyushu University-Japan)*	
11:00 - 11:20	**Transit Hub - Decision Support System With Multi-Timescale Analytical Services** *Abhishek Dubey (Vanderbilt)*	
11:20 - 11:40	**Aerial Communication Infrastructure for Smart Emergency Response** *Yan Wan (U Texas - Arlington), Shengli Fu (U of North Texas)*	
11:40 - 12:40	**SESSION 3: NEW CPS FRONTIERS PROJECTS** *Session Lead - Gurdip Singh (CNS/CISE and Syracuse University)*	SALONS 4-7
11:40 - 12:00	**Software Defined Control for Smart Manufacturing Systems** *Dawn Tilbury (U Michigan-Ann Arbor), Elaine Shi (Cornell), Sibin Mohan (UIUC), Zhuoqing Mao (U Michigan-Ann Arbor), Kira Barton (U Michigan-Ann Arbor), James Moyne (U Michigan-Ann Arbor), Sayan Mitra (UIUC)*	
12:00 - 12:20	**SONYC: A Cyber-Physical System for Monitoring, Analysis, and Mitigation of Urban Noise Pollution** *Juan Bello (NYU), Anish Arora (The Ohio State), Claudio Silva (NYU), Oded Nov (NYU), Roger DuBois (NYU)*	
12:20 - 12:40	**VeHICal: Verified Human Interfaces, Control, and Learning for Semi-Autonomous Systems** *Sanjit Seshia (UC-Berkeley), Richard Murray (California Institute of Technology), Cynthia Sturton (UNC-CH), Thomas Griffiths (UC-Berkeley), Claire Tomlin (UC-Berkeley), S. Shankar Sastry (UC-Berkeley), Ruzena Bajcsy (UC-Berkeley)*	
12:40 - 1:40	**LUNCH**	FOYER & HALLWAYS

PROGRAM AGENDA

MONDAY, OCTOBER 31

TIME	TITLE	LOCATION
1:40 - 2:40	**SESSION 4: CPS VO ACTIVE RESOURCES AND STUDENT COMPETITIONS** *Session Lead - David Corman (CNS/CISE)*	SALONS 4-7
1:40 - 1:50	**CPS-VO Project Overview** *Janos Sztipanovits (Vanderbilt)*	
1:50 - 2:00	**Student Competitions in CPS** *Jonathan Sprinkle (Arizona)*	
2:00 - 2:10	**Student Competitions in the Curriculum** *Julie Adams (Vanderbilt)*	
2:10 - 2:20	**Student Experience** *Paulo Tabuada (UCLA)*	
2:20 - 2:30	**UAV Testbed for the CPS Community** *Jnaneshwar Das (UPenn)*	
2:30 - 2:40	**CPS-VO Portal for Active Resources** *Chris vanBuskirk (Vanderbilt)*	
2:40 - 4:00	**SESSION 5: SYNERGY PROJECTS** *Session Lead - Wendy Nilsen (IIS/CISE)*	SALONS 4-7
2:40 - 3:00	**An Executable Distributed Medical Best Practice Guidance (EMBG) System for End-to-End Emergency Care From Rural to Regional Center** *Shangping Ren (Illinois Institute of Technology), Lui Sha (UIUC), Richard Berlin (Carle Hospital and UIUC)*	
3:00 - 3:20	**MRI Powered & Guided Tetherless Effectors for Localized Therapeutic Interventions** *Aaron Becker (U of Houston), Dipan Shah (The Methodist Hospital Research Institute), Nikolaos Tsekos (U of Houston)*	
3:20 - 3:40	**Threat-Assessment Tools for Management-Coupled Cyber- and Physical-Infrastructure** *Sandip Roy (Washington State), Sajal Das (Missouri University of S&T), Yan Wan (University of Texas-Arlington), Ali Mehrizi-Sani (Washington State), Hans Van Dongen (Washington State), Adam Hahn (Washington State)*	

MONDAY, OCTOBER 31

PROGRAM AGENDA

TIME	TITLE	LOCATION
3:40 - 4:00	**Smart Calibration Through Deep Learning for High-Confidence and Interoperable Cyber-Physical Additive Manufacturing Systems** *Qiang Huang (USC), Arman Sabbaghi (Purdue)*	
4:00 - 4:15	**BREAK**	FOYER & HALLWAYS
4:15 - 5:00	**SESSION 6: CAREER PROJECTS** *Session Lead - Anindya Banerjee (CCF/CISE)*	SALONS 4-7
4:15 - 4:30	**Resilient Design of Networked Infrastructure Systems: Models, Validation, and Synthesis** *Saurabh Amin (MIT)*	
4:30 - 4:45	**Autonomous Underwater Power Distribution System for Continuous Operation** *Nina Mahmoudian (Michigan Technological University)*	
4:45 - 5:00	**SOISTICe:Software Synthesis with Timing Contracts for Cyber-Physical Systems** *Qi Zhu (UC-Riverside)*	
5:00 - 7:00	**SESSION 7: POSTER SESSION + DEMONSTRATION SESSION** (SHOW & TELL) (REFRESHMENTS)	STUDIOS B, C, D, E, SALONS 1-3, FOYER & HALLWAYS
7:00	**END OF DAY ONE SESSIONS**	

PROGRAM AGENDA

TUESDAY, NOVEMBER 1

TIME	TITLE	LOCATION
7:00 - 5:00	**REGISTRATION**	FOYER
8:00 - 5:00	**CPS VO HELP DESK**	STUDIO C
7:30 - 8:30	**CONTINENTAL BREAKFAST**	FOYER & HALLWAYS
8:30 - 8:50	**WELCOME, OPENING REMARKS, AND SMART AND CONNECTED COMMUNITIES SOLICITATION** *David Corman (CPS Program Lead - CNS/CISE)*	SALONS 4-7
8:50 - 9:40	**SESSION 8: INTEL/CPS PROJECTS** *Session Lead - Lily L. Yang (Intel)*	SALONS 4-7
8:50 - 9:00	**Introductory Remarks** *Lily L. Yang (Intel)*	
9:00 - 9:20	**Security and Privacy-Aware Cyber-Physical System** *Insup Lee (UPenn), Kang Shin (U of Michigan-Ann Arbor), Miroslav Pajic (Duke), George Pappas (UPenn), Nadia Heninger (UPenn), Andreas Haeberlen (UPenn), Oleg Sokolsky (UPenn)*	
9:20 - 9:40	**CPS-Security: End-to-End Security for the Internet of Things** *Philip Levis (Stanford), Prabal Dutta (University of Michigan-Ann Arbor), Bjoern Hartmann (UC-Berkeley), Dan Boneh (Stanford), Dawson Engler (Stanford), Keith Winstein (Stanford), Mark Horowitz (Stanford), Raluca Popa (UC-Berkeley)*	
9:40 - 10:40	**SESSION 9: BREAKTHROUGH PROJECTS** *Session Lead - Bruce Kramer (CMMI/ENG)*	SALONS 4-7
9:40 - 9:55	**Securing Smart Grid By Understanding Communications Infrastructure Dependencies** *Krishna Kant (Temple), Sajal Das (Missouri University of S&T), Mariesa Crow (Missouri University of S&T), Avinash Srinivasan (Temple), Simone Silvestri (Missouri University of S&T)*	
9:55 - 10:10	**Towards Resiliency in Cyber-Physical Systems for Robot-Assisted Surgery** *Ravishankar Iyer (UIUC), T. Kesavadas (UIUC), Zbigniew Kalbarczyk (UIUC)*	
10:10 - 10:25	**Understanding Sub-Second Instabiltities in a Global Cyber-Physical System** *Neil Johnson (U Miami)*	

TUESDAY, NOVEMBER 1

PROGRAM AGENDA

TIME	TITLE	LOCATION
10:25 - 10:40	**WARP: Wide Area Assisted Resilient Protection** *Rajesh Kavasseri (NDSU-Fargo), Sukumar Brahma (NMSU), Nilanjan Ray Chaudhuri (NDSU-Fargo)*	
10:40 - 10:55	**BREAK**	FOYER & HALLWAYS
10:55 - 12:55	**SESSION 10: SYNERGY PROJECTS** *Session Lead - Radhakishan Baheti - (ECCS / ENG)*	SALONS 4-7
10:55 - 11:15	**Design and Control of High-Performance Provably Safe Autonomy-Enabled Dynamic Transportation Networks** *Sertac Karaman (MIT)*	
11:15 - 11:35	**Beyond Stability: Performance, Efficiency, and Disturbance Management for Smart Infrastructure Systems** *Dennice Gayme (Johns Hopkins), Enrique Mallada (Johns Hopkins), Vijay Gupta (Notre Dame), Adam Wierman (Cal Tech), Ao Tang (Cornell)*	
11:35 - 11:55	**Computationally Aware Cyber-Physical Systems** *Jonathan Sprinkle (Arizona), Ricardo Sanfelice (UC-Santa Cruz)*	
11:55 - 12:15	**The Science of Activity-Predictive Cyber-Physical Systems (APCPS)** *Janardhan Rao Doppa (Washington State), Diane Cook (Washington State), Maureen Schmitter-Edgecombe (Washington State), Anurag Srivastava (Washington State)*	
12:15 - 12:35	**Maneuver and Data Optimization for High Confidence Testing of Future Automotive Cyber-Physical Systems** *Ella Atkins (U Michigan-Ann Arbor), Ilya Kolmanovsky (U Michigan-Ann Arbor), Barzan Mozafari (U Michigan-Ann Arbor), Mark Oliver (U Michigan-Ann Arbor)*	
12:35 - 12:55	**Hardening Network Infrastructures for Fast, Resilient, and Cost-Optimal Wide-Area Control of Power Systems** *Aranya Chakrabortty (NCSU), Anuradha Annaswamy (MIT), Alefiya Hussain (USC), Alexandra Duel-Hallen (NCSU)*	
12:55 - 1:55	**LUNCH**	FOYER & HALLWAYS
1:55 - 3:25	**SESSION 11: CPS AND IOT FOUNDATIONS** *Session Lead- Sankar Basu (CCF/CISE)*	SALONS 4-7
1:55 - 2:15	*Jack Stankovic (UVA)*	
2:15 - 2:35	*George Pappas (UPenn)*	
2:35 - 2:55	*Radha Poovendran (U Washington-Seattle)*	

PROGRAM AGENDA

TUESDAY, NOVEMBER 1

TIME	TITLE	LOCATION
2:55 - 3:10	*S. Shankar Sastry (UC-Berkeley)*	
3:10 - 3:40	**CPS AND IOT FOUNDATIONS PANEL**	
	David Corman (NSF) *Xenofon Koutsoukos (Vanderbilt)* *George Pappas (UPenn)* *Radha Poovendran (U Washington-Seattle)* *S. Shankar Sastry (UC-Berkeley)* *Jack Stankovic (UVA)* *Wei Zhao (U Macau-China)*	
3:40 - 3:55	**BREAK**	FOYER & HALLWAYS
3:55 - 5:20	**SESSION 12: POSTER SESSION +DEMONSTRATION SESSION** (SHOW & TELL) (REFRESHMENTS)	STUDIOS C, D, E, SALONS 1-3, FOYER & HALLWAYS
5:20 - 5:30	**WRAP-UP** *David Corman (CNS/CISE)*	SALONS 4-7
5:30	**2016 CPS PI MEETING ADJOURNED**	

SPEAKER BIOGRAPHIES

current as of 10/24/16

KEYNOTE

Charlie Catlett is a Senior Computer Scientist at Argonne National Laboratory, a Senior Fellow at the Argonne/University of Chicago Computation Institute, and a Senior Fellow at the Harris School of Public Policy at the University of Chicago. He is also a Visiting Artist at the School of the Art Institute of Chicago. Charlie is the founding director of the Urban Center for Computation and Data (UrbanCCD), which brings scientists, artists, architects, technologists, and policy makers together to use computation, data analytics, and embedded system to analyze the dynamics, design, and resilient operation of cities. He leads the NSF-funded Array of Things project, establishing a network of 500 Argonne-developed intelligent sensor units in Chicago. Before joining Argonne in 2000, Charlie served as Chief Technology Officer of the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign. Beginning at NCSA's founding in 1985, he participated in the development of NSFNET, one of several early national networks that evolved into what we now experience as the Internet. During the exponential growth of the web following the release of NCSA's Mosaic web browser, his team developed and supported NCSA's scalable web server infrastructure. From 1999 to 2004 Charlie directed the design and deployment of I-WIRE, a dedicated fiber optic network funded by the State of Illinois, which connects research institutions in the Chicago area and downstate Illinois to support advanced research and education. From 2007-2011, Charlie served as Argonne's Chief Information Officer. Government Technology magazine named Charlie one of 25 "Doers, Dreamers & Drivers" of 2016. In 2014 Crain's Chicago Business recognized him as one of Chicago's "Tech 50" technology leaders. Charlie is a Computer Engineering graduate of the University of Illinois at Urbana-Champaign.

INVITED SPEAKERS *(in alphabetical order)*

Julie Adams joined the faculty of the Electrical Engineering and Computer Science Department at Vanderbilt University in August 2003, founding the Human-Machine Teaming Laboratory at that time. Prior to joining Vanderbilt, Dr. Adams was an Assistant Professor of Computer Science at Rochester Institute of Technology (RIT). Before returning to academia, she worked in Human Factors for Honeywell, Inc. and the Eastman Kodak Company from 1995 to 2000. Dr. Adams was also an Adjunct Professor in the Computer Science Department at the University of Rochester from 1999 until she joined RIT. Dr. Adams has published over 120 publications in the areas of multiple robot coalition formation, human-robot interaction, human-computer interaction, and complex human-machine systems. She has received the NSF Career Award and was a member of the DARPA Computer Science Study Panel. Dr. Adams received her Ph.D. degree in Computer and Information Sciences in 1995 from the University of Pennsylvania (Penn), performing her research on human-robotic interaction for multi-robot systems in Penn's General Robotics, Automation, Sensing and Perception (GRASP) Laboratory. She received her M.S.E. degree in Computer and Information Sciences from the University of Pennsylvania, and her B.S. in Computer Science and B.B.E. in Accounting from Siena College.

Saurabh Amin is the Robert N. Noyce Career Development Assistant Professor in the Department of Civil and Environmental Engineering, Massachusetts Institute of Technology (MIT). His research focuses on the design and implementation of high confidence network control algorithms for infrastructure systems. He works on robust diagnostics and control problems that involve using networked systems to facilitate the monitoring and control of large-scale critical infrastructures, including transportation, water, and energy distribution systems. He also studies the effect of security attacks and random faults on the survivability of networked systems, and designs incentive- compatible control mechanisms to reduce network risks. Dr. Amin received his Ph.D. in Systems Engineering from the University of California, Berkeley in 2011. His research is supported by NSF CPS FORCES project, NSF CAREER award, Google Faculty Research award, and Siebel Energy Institute Grant.

SPEAKER BIOGRAPHIES

Ella Atkins is a Professor in the Department of Aerospace Engineering at the University of Michigan, where she is director of the Autonomous Aerospace Systems (A2SYS) Lab. Dr. Atkins' research focuses on task and motion planning, guidance, and control to support increasingly autonomous cyber-physical Aerospace systems with focus on small UAS (unmanned aircraft system) and aviation safety applications. Dr. Atkins is author of over 180 refereed journal and conference publications and has served long-term as an associate editor of the AIAA Journal of Aerospace Information Systems (JAIS). She has served on numerous review boards and panels, including the 2013 NRC committee to develop a research agenda for autonomy in civil aviation, the NRC Aeronautics Roundtable, NRC NASA Aviation Safety program review board, and Decadal Survey of Aeronautics (Panel E). Dr. Atkins is past-chair of the AIAA Intelligent Systems Technical Committee, AIAA Associate Fellow, IEEE senior member, small public airport owner/operator (Shamrock Field, Brooklyn, MI), and private pilot. She served on the National Academy's Aeronautics and Space Engineering Board (ASEB) (2011-2015) and was a member of the IDA Defense Science Studies Group (2012-2013). She currently serves as University of Michigan Robotics Program Graduate Chair.

Aaron Becker's passion is robotics and control. Currently as an Assistant Professor in Electrical and Computer Engineering at the University of Houston, he is building a robotics lab. Aaron was awarded the NSF CAREER in 2016 to study massive manipulation with swarms: using a shared input to drive large populations of robots to arbitrary goal states. Becker won the Best Paper award at IROS 2014. Previously as a Research Fellow in a joint appointment with Boston Children's Hospital and Harvard Medical School, he implemented robotics powered and controlled by the magnetic field of an MRI, as a member of the Pediatric Cardiac Bioengineering Lab with Pierre Dupont. As a Postdoctoral Research Associate at Rice University in the Multi-Robot Systems Lab with James McLurkin, Aaron investigated control of distributed systems and nanorobotics with experts in the fields. His online game http://swarmcontrol.net seeks to understand the best ways to control a swarm of robots by a human. The project achieves this through a community of game-developed experts. Aaron earned his PhD in Electrical & Computer Engineering at the University of Illinois at Urbana-Champaign.

SPEAKER BIOGRAPHIES

Juan Pablo Bello is Associate Professor of Music Technology, and Electrical & Computer Engineering, at New York University, with a courtesy appointment at NYU's Center for Data Science. In 1998 he received a BEng in Electronics from the Universidad Simón Bolívar in Caracas, Venezuela, and in 2003 he earned a doctorate in Electronic Engineering at Queen Mary, University of London. Juan's expertise is in digital signal processing, machine listening and music information retrieval, topics that he teaches and in which he has published more than 70 papers and articles in books, journals and conference proceedings. In 2008, he co-founded the Music and Audio Research Lab (MARL), where he leads research on music informatics. His work has been supported by public and private institutions in Venezuela, the UK, and the US, including a CAREER award from the National Science Foundation and a Fulbright scolar grant for multidisciplinary studies in France. For a complete list of publications and other activities, please visit: https://wp.nyu.edu/jpbello/.

Chris vanBuskirk is a Research Project Manager at Vanderbilt University's Institute for Software Integrated Systems (http://www.isis.vanderbilt.edu) since 1999, Chris' general professional interests lie in the practical application of novel, model-based formalisms and design methodologies to complex, real-world, human-in-the-loop, science/engineering activities. After completing his B.S. in Computer Science and an M.S. in Engineering at The University of Mississippi, Chris has pursued a career in R&D at organizations such as Cray Research Inc., UMiss Medical Center, The National Cancer Institute's Biomedical Supercomputing Center, and The Mind/Brain Institute at Johns Hopkins University. Currently, Mr. vanBuskirk serves as Executive Director for the NSF's CPS Virtual Organization (http://cps-vo.org/), which actively supports the formation and development of distributed research communities required by the demanding challenges of the massively multi-disciplinary cyber-physical systems domain.

SPEAKER BIOGRAPHIES

Aranya Chakrabortty is an Associate Professor in the Electrical & Computer Engineering department of North Carolina State University, Raleigh, NC. He received his Ph.D degree from Rensselaer Polytechnic Institute, Troy, NY in 2008 in Electrical Engineering. From 2008 to 2009 he was a post-doctoral research associate at University of Washington, Seattle. His research interests are in all branches of control theory, and their applications to power system dynamics and control using emerging technologies such as Wide-Area Measurement Systems (WAMS). Dr. Chakrabortty is a senior member of IEEE, and contributes actively to the North American Synchrophasor Initiative (NASPI). He received the NSF CAREER award in 2011.

Jnaneshwar "JD" Das ris a Postdoctoral Researcher in robotics at the GRASP Laboratory, University of Pennsylvania, where working with Dr. Vijay Kumar, he is investigating the use of unmanned aerial vehicles (UAVs) for precision agriculture, earth sciences, and humanitarian applications. Essential to this effort, he is developing a cloud-based testbed to enable UAV education and research at scale. His research interests lie broadly in data-driven robotic sampling, with focus on principled approaches from Bayesian optimization and optimal stopping theory for closing the loop on robotic collection of physical samples such as leaf, water, and soil for complex ex-situ analysis. Jnaneshwar received a Ph.D. in Computer Science from the University of Southern California in 2014 working with Dr. Gaurav Sukhatme.

Sajal K. Das is the Chair of Computer Science Department and the Daniel St. Clair Endowed Chair at the Missouri University of Science and Technology, Rolla. During 2008-2011, he served the NSF as a Program Director in CISE/CNS. Prior to 2013 he was a University Distinguished Scholar Professor of Computer Science and Engineering and founding director of the Center for Research in Wireless Mobility and Networking (CReWMaN) at the University of Texas at Arlington. His current research interests include theory and practice of cyber-physical systems, wireless and sensor networks, mobile and pervasive computing, smart environments including smart healthcare and smart grid, distributed and cloud computing, big data analytics, Internet of Things, security and privacy, biological and social networks, applied graph theory and game theory. He has directed numerous funded projects in these areas totaling over $15M grant and published extensively with more than 600 papers in journals and conferences. He holds 5 US patents, coauthored 51 book chapters and four books titled Smart Environments: Technology, Protocols, and Applications (2005), Handbook on Securing Cyber-Physical Critical Infrastructure: Foundations and Challenges (2012), Mobile Agents in Distributed Computing and Networking (2012), and Principles of Cyber-Physical Systems (2016). His h-index is 73 with more than 21,500 citations according to Google Scholar. Dr. Das received 10 Best Paper Awards in such prestigious conferences as ACM

MobiCom'99, IEEE PerCom'06 and IEEE SmrtGridComm'12. He is a recipient of numerous awards for research, teaching and mentoring including the IEEE Computer Society's Technical Achievement Award for pioneering contributions to sensor networks and mobile computing, Lockheed Martin Teaching Excellence Award, and Graduate Dean's Award of Excellence for mentoring doctoral students. He serves as the founding Editor-in-Chief of the Pervasive and Mobile Computing journal since 2005, and as an Associate Editor of the IEEE Transactions on Mobile Computing, ACM Transactions on Sensor Networks, and several others. He is a co-founder of the IEEE PerCom, IEEE WoWMoM, and ICDCN conferences, and served on numerous conference committees as General Chair, Program Chair, or Program Committee member. Dr. Das is an IEEE Fellow.

Jana Doppa is an Assistant Professor of Computer Science at Washington State University, Pullman. He earned his PhD working with the Artificial Intelligence group at Oregon State University (2014); and his MTech from Indian Institute of Technology (IIT), Kanpur, India (2006). His general research interests are in the broad field of Artificial Intelligence (AI) and its applications including planning, natural language processing, and computer vision. He received a Outstanding Paper Award for his structured prediction work at the AAAI (2013) conference and a Google Faculty Research Award (2015). His PhD dissertation entitled ``Integrating Learning and Search for Structured Prediction'' was nominated for the ACM Distinguished Dissertation Award (2015) and won an ``Outstanding Innovation in Technology Award'' from Oregon State University (2015). He has organized successful workshops at ICML (2013) on structured prediction and IJCAI (2016) on human is more than a labeler; and gave a tutorial at IJCAI (2016) on structured prediction. He regularly serves on the program committee of top-tier AI and machine learning conferences including AAAI, IJCAI, ICML, NIPS, AISTATS, KDD; and serves on the editorial board of the Journal of Artificial Intelligence Research (JAIR).

SPEAKER BIOGRAPHIES

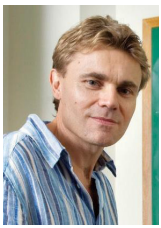
Abhishek Dubey is a Research Scientist at the Institute for Software Integrated Systems and an Adjunct Assistant Professor in the Computer Science department at Vanderbilt University. His research interests include tools, platforms and analytical techniques required for dynamic and resilient cyber-physical platforms. Abhishek completed his Ph.D. in Electrical Engineering from Vanderbilt University in 2009. He received his M.S. in Electrical Engineering from Vanderbilt University in August 2005 and completed his undergraduate studies in electrical engineering from the Indian Institute of Technology, Banaras Hindu University, India in May 2001. He is a senior member of IEEE.

Dennice F. Gayme received a B. Eng & Society from McMaster University in 1997 and an M.S. from the University of California at Berkeley in 1998, both in Mechanical Engineering. In 2010, she received her Ph.D. in Control and Dynamical Systems from the California Institute of Technology, where she was a recipient of the P.E.O. scholar award in 2007 and the James Irvine Foundation Graduate Fellowship in 2003. Prior to her doctoral work (1999-2003) she was a Senior Research Scientist in the Systems and Control Technology and Vehicle Health Monitoring Groups at Honeywell Laboratories in Minneapolis, MN. She joined the Mechanical Engineering Department at Johns Hopkins University in 2012, where she is currently an Assistant Professor. In 2015 she was awarded a JHU Catalyst Award. Prof. Gayme's research interests are in the study of large-scale networked and spatially distributed systems in applications such as power networks, wind farms and wall-turbulence.

Teruo Higashino received his Ph.D. from Osaka University, Japan in 1984. From 2002, he was a Professor of Graduate School of Information Science and Technology, Osaka University, Japan. For details, please see the below URL. http://www-higashi.ist.osaka-u.ac.jp/~higashino/eng/biography.html

SPEAKER BIOGRAPHIES

Ravishankar Iyer is the George and Ann Fisher Distinguished Professor of Engineering at the University of Illinois at Urbana-Champaign. He holds joint appointments in the Department of Electrical and Computer Engineering, the Coordinated Science Laboratory (CSL), and the Department of Computer Science and serves as Chief Scientist of the Information Trust Institute and is affiliate faculty of the National Center for Supercomputing Applications (NCSA) and the Carl R. Woese Institute for Genomic Biology at Illinois. Iyer has led several large successful projects funded by the National Aeronautics and Space Administration (NASA), Defense Advanced Research Projects Agency (DARPA), National Science Foundation (NSF), and industry. He currently co-leads the CompGen Initiative at Illinois. Funded by NSF and partnering with industry leaders, hospitals, and research laboratories, CompGen aims to build a new computational platform to address both accuracy and performance issues for a range of genomics applications. Professor Iyer is a Fellow of the American Association for the Advancement of Science, the Institute of Electrical and Electronics Engineers (IEEE), and the Association for Computing Machinery (ACM). He has received several awards, including the American Institute of Aeronautics and Astronautics (AIAA) Information Systems Award, the IEEE Emanuel R. Piore Award, and the 2011 Outstanding Contributions award by the Association of Computing Machinery–Special Interest Group on Security for his fundamental and far-reaching contributions in secure and dependable computing. Professor Iyer is also the recipient of the degree of Doctor Honaris Causa from Toulouse Sabatier University in France.



Neil Johnson heads up a new inter-disciplinary research initiative in Complex Systems & Networks at the University of Miami, focusing on emergent dynamical phenomena across the physical and life sciences. Until 2007, Neil was Professor of Physics at Oxford University. He did his BA/MA at Cambridge University and his PhD at Harvard University as a Kennedy Scholar. He has published more than 250 research articles and two books: "Financial Market Complexity" (Oxford University Press, 2003) and "Simply Complexity: A Clear Guide to Complexity Theory" (Oneworld Publishing, 2009). He wrote and presented the Royal Institution Lectures in 1999 on BBC television. Publications at: http://www.physics.miami.edu/~njohnson/.

SPEAKER BIOGRAPHIES

Krishna Kant is currently a professor in the Computer and Information Science Department at Temple University in Philadelphia, PA where he directs the IUCRC center on Intelligent Storage. Earlier he was a research professor in the Center for Secure Information Systems (CSIS) at George Mason University. From 2008-2013 he served as a program director at NSF where he managed the computer systems research (CSR) program and was instrumental in the development and running of NSF-wide sustainability initiative called SEES (science, engineering and education for sustainability). Prior to NSF, he served in industry for 18 years (at Intel, Bellcore, and Bell Labs) and 10 years in academia (at Penn State and Northwestern Univ.). He received his Ph.D. degree in Mathematical Sciences from University of Texas at Dallas in 1981. He carries a combined 35 years of experience in academia, industry, and government. He has published in a wide variety of areas in computer science, authored a graduate textbook on performance modeling of computer systems. His research interests span a wide range including energy efficiency, robustness, and security in cyber and cyber-physical systems. He is a Fellow of IEEE.

Sertac Karaman received his Ph.D. in Computer Science from Brown University in 1983 is the Charles Stark Draper Assistant Professor of Aeronautics and Astronautics at the Massachusetts Institute of Technology (since Fall 2012). He has obtained B.S. degrees in mechanical engineering and in computer engineering from the Istanbul Technical University, Turkey, in 2007, an S.M. degree in mechanical engineering from MIT in 2009, and a Ph.D. degree in electrical engineering and computer science also from MIT in 2012. His research interests lie in the broad areas of robotics and control theory. In particular, he studies the applications of probability theory, stochastic processes, stochastic geometry, formal methods, and optimization for the design and analysis of high-performance cyber-physical systems.

Rajesh Kavasseri is an Associate Professor and Graduate Program Director in the Department of Electrical Engineering and Computer Engineering at North Dakota State University (NDSU). Dr. Kavasseri received his BS from the Visvesvaraya National Institute of Technology, Nagpur, India in 1995, his M.S. from the Indian Institute of Science (IISc), Bangalore, India in 1998 and PhD from Washington State University, Pullman in 2002, all in Electrical Engineering. His primary research expertise is in bulk power system dynamics, power systems computation, stability and control. He is an Associate Editor for the IEEE Transactions on Sustainable Energy and is a senior member of the IEEE.

Xenofon Koutsoukos is a Professor of Computer Science, Computer Engineering, and Electrical Engineering in the Department of Electrical Engineering and Computer Science at Vanderbilt University. He is also a Senior Research Scientist in the Institute for Software Integrated Systems (ISIS). Before joining Vanderbilt, Dr. Koutsoukos was a Member of Research Staff in the Xerox Palo Alto Research Center (PARC) (2000-2002), working in the Embedded Collaborative Computing Area. He received his Diploma in Electrical and Computer Engineering from the National Technical University of Athens (NTUA), Greece in 1993. Between 1993 and 1995, he joined the National Center for Space Applications, Hellenic Ministry of National Defense, Athens, Greece as a computer engineer in the areas of image processing and remote sensing. He received the Master of Science in Electrical Engineering in January 1998 and the Master of Science in Applied Mathematics in May 1998 both from the University of Notre Dame. He received his PhD in Electrical Engineering working under Professor Panos J. Antsaklis with the group for Interdisciplinary Studies of Intelligent Systems. His research work is in the area of cyber-physical systems with emphasis on formal methods, distributed algorithms, diagnosis and fault tolerance, and adaptive resource management. He has published numerous journal and conference papers and he is co-inventor of four US patents. He is the recipient of the NSF Career Award in 2004, the Excellence in Teaching Award in 2009 from the Vanderbilt University School of Engineering, and the 2011 Aeronautics Research Mission Directorate (ARMD) Associate Administrator (AA) Award in Technology and Innovation from NASA.

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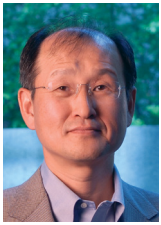


Insup Lee is Cecilia Fitler Moore Professor of Computer and Information Science and Director of PRECISE Center, which he co-founded in 2008 at the University of Pennsylvania. His research interests include cyber-physical systems (CPS), real-time systems, embedded systems, high-confidence medical device systems, formal methods, run-time verification, assurance cases, CPS security, and trust management. The theme of his research activities has been to assure and improve the safety, security, and timeliness of life-critical embedded systems. His papers received the best paper awards in IEEE RTSS 2003, CEAS 2011, IEEE RTSS 2012, and ACM/IEEE ICCPS 2014, and the best student paper in IEEE RTAS 2012. Recently, he has been working in medical cyber-physical systems and security of cyber-physical systems. He has served on numerous program committees, chaired many international conferences and workshops and served on various steering and advisory committees of technical societies. He has served on the editorial boards on the several scientific journals, including ACM Transactions on CPS, Journal of ACM, IEEE Transactions on Computers, Formal Methods in System Design, and Real-Time Systems Journal. He is a founding co-Editor-in-Chief of KIISE Journal of Computing Science and Engineering (JCSE). He is Chair of ACM SIGBE (2015-2017) and was Chair of IEEE TCRTS (2003-2004). He was a member of Technical Advisory Group (TAG) of President's Council of Advisors on Science and Technology (PCAST) Networking and Information Technology (2006-2007). He is a member of the National Research Council's committee on 21st Century Cyber-Physical Systems Education (2013-2015). He received an appreciation plaque from Ministry of Science, IT and Future Planning, South Korea, for speaking at the Universal Linkage for Top Research Advisor (ULTRA) Program Forum in 2013. He is IEEE fellow and received IEEE TC-RTS Outstanding Technical Achievement and Leadership Award in 2008.

Philip Levis is an Associate Professor in the computer science and electrical engineering departments of Stanford University. He researches embedded systems, distributed systems, and more recently, secure systems. He's published some papers and won some awards. He likes his students a lot and so tries to buy them snacks very often. He loves great engineering and has a self-destructive aversion to low-hanging fruit.

SPEAKER BIOGRAPHIES

Nina Mahmoudian is an assistant professor of Mechanical Engineering at Michigan Tech. She is the founding director of the Nonlinear and Autonomous Systems Laboratory (NAS Lab). Dr. Mahmoudian received her Ph.D. in Aerospace Engineering from Virginia Tech in 2009. Her research interests lie in the area of cyber-physical systems, autonomous systems, dynamics and controls. Dr. Mahmoudian is a recipient of the 2015 NSF-CAREER and 2015 ONR-YIP awards.

Enrique Mallada is an assistant professor of electrical and computer engineering at Johns Hopkins University. Before joining Hopkins in 2016, he was a post-doctoral fellow at the Center for the Mathematics of Information at the California Institute of Technology from 2014 to 2016. He received his Ingeniero en Telecomunicaciones degree from Universidad ORT, Uruguay, in 2005 and his Ph.D. degree in electrical and computer engineering with a minor in applied mathematics from Cornell University in 2014. Dr. Mallada was awarded the ECE Director's Ph.D. Thesis Research Award for his dissertation in 2014, the Cornell University's Jacobs Fellowship in 2011 and the Organization of American States scholarship from 2008 to 2010. His research interests lie in the areas of control, networked dynamics, and optimization, with applications to engineering networks such as power systems and the Internet.

Ümit Özgüner received his Ph.D. from the University of Illinois and held positions at I.B.M. Research Labs, University of Toronto and Istanbul Technical University. He has been with the Ohio State University 1981 through 2015, where he is now a Professor Emeritus of Electrical and Computer Engineering and holds the title of TRC Inc. Chair on ITS. He still participates in research projects at OSU and is the Director of the "Crash Imminent Safety" University Transportation Center at OSU. Dr. Ozguner is a Life Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and has received the 2015 IEEE ITS Society Outstanding Research Award. Dr. Ozguner is an expert on autonomous vehicle development and deployment issues and their utility in mixed traffic, networked environments. He is the Editor-in-Chief of the new IEEE Transactions of Intelligent Vehicles, which started in 2016.

SPEAKER BIOGRAPHIES

George J. Pappas is the Joseph Moore Professor and Chair of the Department of Electrical and Systems Engineering at the University of Pennsylvania. He also holds a secondary appointment in the Departments of Computer and Information Sciences, and Mechanical Engineering and Applied Mechanics. He is member of the GRASP Lab and the PRECISE Center. He has previously served as the Deputy Dean for Research in the School of Engineering and Applied Science. His research focuses on control theory and in particular, hybrid systems, embedded systems, hierarchical and distributed control systems, with applications to unmanned aerial vehicles, distributed robotics, green buildings, and biomolecular networks. He is a Fellow of IEEE, and has received various awards such as the Antonio Ruberti Young Researcher Prize, the George S. Axelby Award, the O. Hugo Schuck Best Paper Award, the National Science Foundation PECASE, and the George H. Heilmeier Faculty Excellence Award.

Radha Poovendran is a professor and chair of the department of electrical engineering at the University of Washington, where he has been since 2000. His research areas are wireless security and cyber-physical systems security. He is a recipient of the NSA Rising Star Award (1999), NSF CAREER award (2001), ARO YIP (2002), ONR YIP (2004), PECASE (2005), Kavli Faculty Fellow of the National Academy of Sciences (2007). He is a recipient of the UW EE Outstanding Teaching Award (2002) and Outstanding Research Award (2002). He is recipient of the Graduate Mentor Award (2006) from the Office of the Chancellor of the University of California, San Diego. He is a co-author of multiple best paper awards, including 2010 IEEE/IFIP William C. Carter Award winning paper. He is a fellow of the IEEE (2015). He is a recipient of the 2016 Distinguished Alumni Award of the ECE Department of the University of Maryland. He holds five US patents in the areas of wireless and aviation security.

SPEAKER BIOGRAPHIES

Shangping Ren is Professor of Computer Science at Illinois Institute of Technology. She earned her doctoral degree from the University of Illinois at Urbana-Champaign. Before she joined Illinois Institute of Technology, she worked in ERP, Software, and Tele-Communication companies for six years. Her research is in the area of cyber-physical systems, M-CPS, resource scheduling for distributed real-time and embedded systems, and programming models and languages for open distributed and real-time systems. She is a CAREER awardee and a senior IEEE member.

Sandip Roy works as Professor and Associate Director in the School of Electrical Engineering and Computer Science at Washington State University. His research is primarily focused on developing techniques for the sparse control of dynamical networks, and using these techniques to support wide-area management of disruptions in large-scale cyber-physical infrastructure networks. Recently, he has also been interested in network analysis and design problems that arise in neurological and epidemiological processes. These research efforts have led to new models and algorithms, as well as software deployments, which are described in archival journal publications (about 60 in total) and conference articles (about 100 in total). Roy received his B.S. in Electrical Engineering from the University of Illinois at Urbana Champaign in 1998, and Master's and Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology in 2000 and 2003, respectively.

Arman Sabbaghi is an Assistant Professor in the Department of Statistics at Purdue University. His research interests include model building for improved quality control of complex engineering systems, Bayesian data analysis, and experimental design. He received his Ph.D. degree in Statistics from Harvard University in May 2014.

SPEAKER BIOGRAPHIES

Ricardo G. Sanfelice is an Associate Professor of Computer Engineering, University of California at Santa Cruz, CA, USA. He received his M.S. and Ph.D. degrees in 2004 and 2007, respectively, from the University of California, Santa Barbara. During 2007 and 2008, he was a Postdoctoral Associate at the Laboratory for Information and Decision Systems at the Massachusetts Institute of Technology and visited the Centre Automatique et Systemes at the Ecole de Mines de Paris for four months. Prof. Sanfelice is the recipient of the 2013 SIAM Control and Systems Theory Prize, the National Science Foundation CAREER award, the Air Force Young Investigator Research Award, and the 2010 IEEE Control Systems Magazine Outstanding Paper Award. His research interests are in modeling, stability, robust control, observer design, and simulation of nonlinear and hybrid systems with applications to power systems, aerospace, and biology.

Sanjit A. Seshia is a Professor in the Department of Electrical Engineering and Computer Sciences at the University of California, Berkeley. He received an M.S. and Ph.D. in Computer Science from Carnegie Mellon University, and a B. Tech. in Computer Science and Engineering from the Indian Institute of Technology, Bombay. His research interests are in dependable computing and computational logic, with a current focus on applying automated formal methods to problems in cyber-physical systems, computer security, electronic design automation, and synthetic biology. His Ph.D. thesis work on the UCLID verifier and decision procedure helped pioneer the area of satisfiability modulo theories (SMT) and SMT-based verification. He is co-author of a widely-used textbook on embedded systems and has led the development of technologies for cyber-physical systems education based on formal methods. His awards and honors include a Presidential Early Career Award for Scientists and Engineers (PECASE) from the White House, an Alfred P. Sloan Research Fellowship, the Frederick Emmons Terman Award for contributions to electrical engineering and computer science education, and the School of Computer Science Distinguished Dissertation Award at Carnegie Mellon University.

Lui Sha graduated with Ph.D. from CMU in 1985. He is Donald B. Gillies Chair professor at UIUC. He is a fellow of the ACM, a fellow of the IEEE and a recipient of IEEE Simon Ramos Medal. He served on National Academy of Science's committee on certifiably dependable software and is a member of NASA Advisory Council. He is active in CPS system research.

SPEAKER BIOGRAPHIES

Kang Shin is the Kevin & Nancy O'Connor Professor of Computer Science in the Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor. His current research focuses on QoS-sensitive computing and networking as well as on embedded real-time and cyber-physical systems. He has supervised the completion of 77 PhDs, and authored/coauthored more than 830 technical articles, a textbook and more than 30 patents or invention disclosures, and received numerous best paper awards, including the Best Paper Awards from the 2011 ACM International Conference on Mobile Computing and Networking (MobiCom'11), the 2011 IEEE International Conference on Autonomic Computing, the 2010 and 2000 USENIX Annual Technical Conferences, as well as the 2003 IEEE Communications Society William R. Bennett Prize Paper Award and the 1987 Outstanding IEEE Transactions of Automatic Control Paper Award. He has also received several institutional awards, including the Research Excellence Award in 1989, Outstanding Achievement Award in 1999, Distinguished Faculty Achievement Award in 2001, and Stephen Attwood Award in 2004 from The University of Michigan (the highest honor bestowed to Michigan Engineering faculty); a Distinguished Alumni Award of the College of Engineering, Seoul National University in 2002; 2003 IEEE RTC Technical Achievement Award; and 2006 Ho-Am Prize in Engineering (the highest honor bestowed to Korean-origin engineers). He was a co-founder of a couple of startups and also licensed some of his technologies to industry.

Jonathan Sprinkle is an Assistant Professor of Electrical and Computer Engineering at the University of Arizona. In 2013 he received the NSF CAREER award, and in 2009, he received the UA's Ed and Joan Biggers Faculty Support Grant for work in autonomous systems. Until June 2007, he was the Executive Director of the Center for Hybrid and Embedded Software Systems at the University of California, Berkeley. His research is in the area of intelligent autonomous systems, including UAVs, UGVs, and hybrid systems. Building blocks for this are in domain-specific modeling, meta-modeling, and generative programming. Dr. Sprinkle was the co-Team Leader of the Sydney-Berkeley Driving Team, a collaborative entry into the DARPA Urban Challenge with partners Sydney University, University of Technology, Sydney, and National ICT Australia (NICTA). In 2004, he led a team from UC Berkeley, which autonomously flew against an Air Force pilot in autonomous pursuit/evasion games in the Mojave Desert at Edwards Air Force Base (the UAV successfully targeted the human pilot). In his teaching career spanning Arizona, Berkeley, and Vanderbilt, he has taught or largely assisted in the graduate courses on hybrid systems, unmanned systems, and model-integrated computing. Dr. Sprinkle graduated with the Ph.D. from Vanderbilt University in August 2003, and with his M.S. in August 2000. He graduated with his B.S.E.E. in cursu honorum, cum laude, from Tennessee Tech University in Cookeville,

TN, in May 1999, where he was the first graduate of the Computer Engineering program, and the first Electrical Engineering double major. In 2005, Dr. Sprinkle was selected as one of 108 Regional Finalists for 11-19 highly competitive positions of White House Fellow. In 2002-2003, he was named a Master Teaching Fellow by the Vanderbilt University Center for Teaching, and in July 2002 he participated in the 52nd Meeting of the Nobel Laureates. As an undergraduate, in 1998-99, he served as the President of the Student Government Association and in 1997-98 was honored as Campus Leader of the Year and Legislator of the Year by the SGA of Tennessee Tech University.

John A. Stankovic is the BP America Professor in the Computer Science Department at the University of Virginia. He served as Chair of the department for 8 years. He is a Fellow of both the IEEE and the ACM. He has been awarded an Honorary Doctorate from the University of York. He won the IEEE Real-Time Systems Technical Committee's Award for Outstanding Technical Contributions and Leadership. He also won the IEEE Technical Committee on Distributed Processing's Distinguished Achievement Award (inaugural winner). He has seven Best Paper awards, including one for ACM SenSys 2006. He also has two Best Paper Runner Up Awards, including one for IPSN 2013. He has also been a finalist for multiple other Best Paper Awards. Stankovic has an h-index of 108 and over 43,000 citations. In 2015 he was awarded the Univ. of Virginia Distinguished Scientist Award, and in 2010 the School of Engineering's Distinguished Faculty Award. He also received a Distinguished Faculty Award from the University of Massachusetts. He has given more than 40 Keynote talks at conferences and many Distinguished Lectures at major Universities. Currently, he serves on the National Academy's Computer Science Telecommunications Board. He was the Editor-in-Chief for the IEEE Transactions on Distributed and Parallel Systems and was founder and co-editor-in-chief for the Real-Time Systems Journal. His research interests are in real-time systems, wireless sensor networks, wireless health, cyber physical systems, and the Internet of Things. Prof. Stankovic received his PhD from Brown University.

SPEAKER BIOGRAPHIES

Janos Sztipanovits is currently the E. Bronson Ingram Distinguished Professor of Engineering at Vanderbilt University and he also holds the Joe B. Wyatt Distinguished University Professor title in 2012/2013. He is founding director of the Institute for Software Integrated Systems (ISIS). His research areas are at the intersection of systems and computer science and engineering. His current research interest includes the foundation and applications of Model-Integrated Computing for the design of Cyber-Physical Systems. His other research contributions include structurally adaptive systems, autonomous systems, design space exploration and systems-security co-design technology. He was founding chair of the ACM Special Interest Group on Embedded Software (SIGBED). He served as program manager and acting deputy director of DARPA/ITO between 1999 and 2002 and he was member of the US Air Force Scientific Advisory Board between 2006–2010. He is member of the Academic Executive Board of Cyber-Physical Systems Virtual Organization and he is member of the national steering group. Dr. Sztipanovits was elected Fellow of the IEEE in 2000 and external member of the Hungarian Academy of Sciences in 2010. He won the National Prize in Hungary in 1985 and the Golden Ring of the Republic in 1982. He graduated (Summa Cum Laude) from the Technical University of Budapest in 1970 and received his doctorate from the Hungarian Academy of Sciences in 1980.

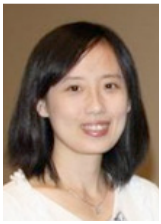
Paulo Tabuada was born in Lisbon, Portugal, one year after the Carnation Revolution. He received his "Licenciatura" degree in Aerospace Engineering from Instituto Superior Tecnico, Lisbon, Portugal in 1998 and his Ph.D. degree in Electrical and Computer Engineering in 2002 from the Institute for Systems and Robotics, a private research institute associated with Instituto Superior Tecnico. Between January 2002 and July 2003 he was a postdoctoral researcher at the University of Pennsylvania. After spending three years at the University of Notre Dame, as an Assistant Professor, he joined the Electrical Engineering Department at the University of California, Los Angeles, where he established and directs the Cyber-Physical Systems Laboratory. Paulo Tabuada's contributions to cyber-physical systems have been recognized by multiple awards including the NSF CAREER award in 2005, the Donald P. Eckman award in 2009, the George S. Axelby award in 2011, and the Antonio Ruberti Prize in 2015. In 2009 he co-chaired the International Conference Hybrid Systems: Computation and Control (HSCC'09) and joined its steering committee in 2015, in 2012 he was program co-chair for the 3rd IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys'12), and in 2015 he was program co-chair for the IFAC Conference on Analysis and Design of Hybrid Systems. He also served on the editorial board of the IEEE Embedded Systems Letters and the IEEE Transactions on Automatic Control.

SPEAKER BIOGRAPHIES

Dawn M. Tilbury is currently the Associate Dean for Research in the College of Engineering, University of Michigan. She received the B.S. degree in Electrical Engineering from the University of Minnesota in 1989, and the M.S. and Ph.D. degrees in Electrical Engineering and Computer Sciences from the University of California, Berkeley, in 1992 and 1994, respectively. In 1995, she joined the faculty of the Universiaty of Michigan, Ann Arbor, where she is currently Professor of Mechanical Engineering with a joint appointment in Electrical Engineering and Computer Science. Her research interests lie broadly in the area of control systems, including applications to robotics and manufacturing systems. She has published more than 150 articles in refereed journals and conference proceedings. She was elected Fellow of the IEEE in 2008 and Fellow of the ASME in 2012, and is a Life Member of SWE.

Nalini Venkatasubramanian is currently a Professor in the School of Information and Computer Science at the University of California Irvine. She has had significant research and industry experience in the areas of distributed systems, adaptive middleware, pervasive and mobile computing, distributed multimedia and formal methods and has published extensively in these areas. As a key member of the Center for Emergency Response Technologies at UC Irvine, Nalini's recent research has focused on enabling resilient, scalable observation and analysis of situational information from multimodal input sources, techniques for dynamic adaptation of the underlying systems to enable information flow under massive failures and the dissemination of rich notifications to members of the public at large. Many of her research contributions have been incorporated into software artifacts, which are now in use at various first responder partner sites. She received her M.S. and Ph.D. in Computer Science from the University of Illinois in Urbana-Champaign. Prior to arriving at UC Irvine, Nalini was a Research Staff Member at the Hewlett-Packard Laboratories in Palo Alto, California.

SPEAKER BIOGRAPHIES

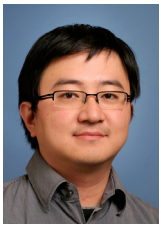


Yan Wan is currently an Associate Professor in the Electrical Engineering Department at the University of Texas at Arlington. Her research interests lie in developing fundamental theories and tools for the modeling, evaluation, and control tasks in large-scale dynamic networks and cyber-physical systems, with applications to air traffic management, airborne networking, systems biology, and complex information systems. Her research projects funded by NSF, NIST, IEEE, and MITRE have led to over 110 publications and successful technology transfer outcomes. Her contributions to the field of air traffic management, airborne networking, and general cyber-physical systems have been recognized by several prestigious awards, including the NSF CAREER Award, RTCA William E. Jackson Award, U.S. Ignite and GENI demonstration awards, IEEE WCNC Best Paper Award, and Tech Titan of the Future – University Level Award. Dr. Wan is a member of the AIAA Intelligent Systems Technical Committee.

Liuyang Lily Yang (aka Lily Yang) is a Principal Engineer in Security and Privacy Research at Intel Labs, Hillsboro, Oregon, USA. Lily joined Intel in 1995 and over the last 21 years has held a number of positions at Intel in research, standard development, R&D management, product planning, product management and now academic partnership management. She is currently the Director for Intel-NSF CPS Security Center, an academic program jointly funded by Intel and NSF with five universities (Stanford, UC Berkeley, U of Michigan, Duke and U of Pennsylvania) on Cyber Physical Systems security and privacy research. Lily has developed technical expertise in data compression, video and image coding, wireless communications, and now start to learn and think about security, especially in emerging CPS and IoT applications. Lily has represented Intel in multiple standard bodies and industry organizations, including IEEE, WiGig, and IETF; Lily holds 17 U.S. and international patents and has published 20+ research and technical papers. Lily holds a Ph.D. in Electrical Engineering from Washington State University and an executive MBA degree from U. of Oregon; she received her B.S. and M.S. in Computer Science and Technology from Tsinghua University, Beijing, China.

SPEAKER BIOGRAPHIES

Wei Zhao completed his undergraduate studies at Shaanxi Normal University, China, in 1977, and then received his MSc and PhD degrees in Computer and Information Sciences at the University of Massachusetts at Amherst, USA in 1983 and 1986, respectively. In 2008, Professor Zhao was appointed as the 8th Rector for the University of Macau. Prior to this position, Professor Zhao also served as the Director of the Division of Computer and Network Systems at the US National Science Foundation, the Dean of Science at Rensselaer Polytechnic Institute, and the Senior Associate Vice President of Research at Texas A&M University, making him one of the few scholars from Mainland China who have ever held such senior posts in the US federal government and high education institutions. An IEEE fellow, Professor Zhao is internationally acclaimed for his research in the areas of Internet of Things, distributed computing, real-time systems, and cyber-physical systems. His research team has won numerous awards from international research community. In recognition of his outstanding achievements in scientific research and contributions to higher education, he has been conferred honorary doctorate degrees by twelve world-renowned universities. In 2011, he was appointed by the Chinese Ministry of Science and Technology as the Chief Scientist of the Internet of Things - a national 973 project. In 2012, he was elected to be an Academician of the International Eurasian Academy of Sciences.



Qi Zhu is an Assistant Professor at the Department of Electrical and Computer Engineering in University of California, Riverside. Prior to joining UCR, Dr. Zhu was a research scientist at the Strategic CAD Labs in Intel from 2008 to 2011. Dr. Zhu received a Ph.D. in EECS from University of California, Berkeley in 2008, and a B.E. in CS from Tsinghua University in 2003. His research interests include model-based design and software synthesis for cyber-physical systems, CPS security, energy-efficient buildings and infrastructures, and system-on-chip design. He received the National Science Foundation (NSF) CAREER award in 2016. He received best paper awards at the Design Automation Conference (DAC) 2006, DAC 2007, International Conference on Cyber-Physical Systems (ICCPS) 2013, and ACM Transactions on Design Automation of Electronic Systems (TODAES) 2016. Dr. Zhu has served on the technical program committees and as session organizer and chair for a number of international conferences, including DAC, ICCAD, DATE, ASP-DAC, CODES+ISSS, RTSS, RTAS, SAC, SIES, MEMOCODE, etc. He is a member and the education committee chair of the IEEE Technical Committee on Cybernetics for Cyber-Physical Systems (CCPS). He received the ACM SIGDA Service Award in 2015.

NSF BIOGRAPHIES

Radhakishan Baheti is a Program Director for Energy, Power, Control and Networks Program in the Division of Electrical, Communications, and Cyber Systems at the National Science Foundation. Dr. Baheti received the B.S. and M.S. in Electrical Engineering in India from VRCE Nagpur, and from BITS Pilani, respectively. In 1970, he came to USA and received M.S. in Information and Computer Science from University of Oklahoma and Ph.D. in Electrical and Computer Engineering from Oregon State University. In 1976, Dr. Baheti joined the Control Engineering Laboratory of GE Corporate Research and Development Center in Schenectady, NY. His work focused on advanced multivariable control for jet engines, computer- aided control system design, vision-based robots for precision welding, and Kalman filtering. Dr. Baheti and his colleagues received IR-100 award for robotic welding vision system. He has organized a series of educational workshops for GE engineers that resulted in innovative product developments and contributed to enhance university collaborations with GE business divisions. In 1989, Dr. Baheti joined NSF as a Program Director in the Division of Electrical and Communications Systems. His contributions include the development of NSF initiatives on "Combined Research and Curriculum Development", "Semiconductor Manufacturing", and NSF/EPRI Program on "Intelligent Control". In addition, he started NSF Program "Research Experience for Teachers (RET)" to involve middle and high school teachers in engineering research that can be transferred to pre-college classrooms. Recently he is involved in cyber-physical systems, science of learning, and Robotics. He has served as associate editor for IEEE Transactions on Automatic Control, member of the Control Systems Board of Governors, chair for Public Information Committee, and awards chair for the American Automatic Control Council (AACC). He received "Distinguished Member Award" from the IEEE Control Systems Society. In 2013, he received "Outstanding Leadership and Service Award" from the Electrical and Computer Engineering Department Head Association. He was elected a Fellow of IEEE and a Fellow of AAAS.

NSF BIOGRAPHIES

Anindya Banerjee is a Program Director at the National Science Foundation in the CISE Directorate in the Division of Computing and Communication Foundations (CCF) where he focuses on the issues of Software and Hardware Foundations; Exploiting Parallelism for Scalability; Cyber-physical Systems; Research Experience for Undergraduates; CISE Research Initiation Initiatives. Banerjee's research interests span software security, software verification, probabilistic programming, semantics and logics of programs, abstract interpretation, program analysis and program transformation. He received his Ph.D. from Kansas State University, USA, in 1995. After his Ph.D., Anindya was a postdoctoral researcher, first in the Labaratoire d'Informatique (LIX) of Ecole Polytechnique, Paris and subsequently at the University of Aarhus. He joined the IMDEA Software Institute in February 2009 as Full Professor. Immediately prior to this position, Anindya was Full Professor of Computing and Information Sciences at Kansas State University, USA. He was an Academic Visitor in the Advanced Programming Tools group, IBM T. J. Watson Research Center in 2007 and a Visiting Researcher in the Programming Languages and Methodology group at Microsoft Research in 2007–2008. He was a recipient of the Career Award of the US National Science Foundation in 2001.

Sankar Basu is a permanent member of NSF scientific staff and is a program Director. He came to NSF from the IBM T. J. Watson Research Center at the beginning of fiscal year 2003. After receiving a Ph.D. from the University of Pittsburgh he served on the faculty of Stevens Institute of Technology, where he taught and conducted funded research (Air Force, NSF), and for a brief period was with the Naval Underwater Systems Center, CT as a visiting senior scientist. He has visited the Ruhr University, Bochum, Germany as an Alexander von Humboldt fellow, and the MIT Laboratory for Information and Decision Systems (LIDS) for extended periods. During the summer of 2012 he was a science advisor to the US Embassy in Berlin, Germany as a State Department Embassy Science Fellow. At NSF his primary responsibilities include Design automation for Micro and Nano-systems, which includes nano-computing architectures, VLSI CAD, Cyber- Physical Systems (CPS) etc. In addition, he participates in interdisciplinary NSF program on the National Nanotechnology Initiative (NNI), and in the past has participated in the Interactions between Mathematics and Computer Science (MCS), Science of Learning Centers (SLC) Program and the Information Technology Research (ITR) program.

Kenneth (Ken) Calvert was appointed Division Director for the CISE Division of Computer and Network Systems (CNS) in May 2016. Ken hails from the University of Kentucky, where he is Professor of Computer Science. He has served as Chair of the Department of Computer Science and as Interim Director of the Center for Visualization and Virtual Environments at Kentucky. Ken's research focus is in computer networks and systems. In his 25-year academic career, he has made contributions in areas including network topology modeling, active and programmable networking, and future Internet architectures. Ken received his Ph.D. in computer science from the University of Texas at Austin. He received his M.S. degree in computer science from Stanford University, and his B.S. degree in computer science and engineering from the Massachusetts Institute of Technology. Prior to his appointment at the University of Kentucky, he was a Member of the Technical Staff at Bell Laboratories in Holmdel, NJ, and served on the faculty in the College of Computing at the Georgia Institute of Technology. Ken is a Fellow of the IEEE and an active member of the Association for Computing Machinery and the IEEE Computer Society.

David Corman is a Program Director and leader of the Cyber-Physical Systems program at the National Science Foundation. Dr. Corman is a Research Associate Professor at Washington University St. Louis in the Department of Electrical and Systems Engineering. Dr. Corman has a broad range of research interests spanning many technologies fundamental to CPS application areas including transportation, energy, medical devices, and manufacturing. Dr. Corman has extensive industrial experience in the development, design, and manufacture of CPS systems. Dr. Corman received the Ph. D. degree in electrical engineering from the University of Maryland.

NSF BIOGRAPHIES

Bruce Kramer is a graduate of the MIT (S.B., S.M., Ph.D.). He served on the faculty of Mechanical Engineering at MIT from 1979 to 1985 and of George Washington University from 1985 to 1995. Since 1991, he has been at the National Science Foundation, as Program Director for Materials Processing and Manufacturing, Director of the Division of Design, Manufacture and Industrial Innovation, and Director of the Division of Engineering Education and Centers. He is currently the Senior Advisor for Manufacturing in the Division of Civil, Mechanical and Manufacturing Innovation and the point of contact at the NSF for the National Advanced Manufacturing Program. Dr. Kramer co-founded and was Director of Engineering of Zoom Telephonics, Inc. of Boston, a NASDAQ company and leading producer of cable modems and wireless networking products marketed under the Motorola, Zoom, and Hayes brands. Professor Kramer was conferred the rank of Fellow of the School of Engineering at the University of Tokyo in 2007. He has also been awarded the F.W. Taylor Medal of the International Institution for Production Engineering Research, the Blackall Award of the American Society of Mechanical Engineers and the R.F. Bunshah Medal of the International Conference on Metallurgical Coatings, all in recognition of outstanding contributions to the manufacturing research literature, and the Distinguished Service Award, the highest honorary award granted by the National Science Foundation. He is a fellow of the Society of Manufacturing Engineers. Professor Kramer was conferred the rank of Fellow of the School of Engineering at the University of Tokyo in 2007. He has also been awarded the F.W. Taylor Medal of the International Institution for Production Engineering Research, the Blackall Award of the American Society of Mechanical Engineers and the R.F. Bunshah Medal of the International Conference on Metallurgical Coatings, all in recognition of outstanding contributions to the manufacturing research literature, and the Distinguished Service Award, the highest honorary award granted by the National Science Foundation. He is a fellow of the Society of Manufacturing Engineers.

Jim Kurose is the Assistant Director of the National Science Foundation (NSF) for Computer and Information Science and Engineering (CISE). He leads the CISE Directorate, with an annual budget of more than $900 million, in its mission to uphold the nation's leadership in scientific discovery and engineering innovation through its support of fundamental research in computer and information science and engineering, state-of-the-art cyberinfrastructure, and education and workforce development. Dr. Kurose is on leave from the University of Massachusetts, Amherst (UMass Amherst), where he has served as Distinguished Professor at the School of Computer Science since 2004. He has also served in a number of administrative roles at UMass and has been a Visiting Scientist at IBM Research; INRIA; Institut EURECOM; the University of Paris; the Laboratory for Information, Network and Communication Sciences; and Technicolor Research Labs. His research interests include network protocols and architecture, network measurement, sensor networks, multimedia communication, and modeling and performance evaluation. Dr. Kurose has served on many national and international advisory boards and panels and has received numerous awards for his research and teaching. With Keith Ross, he is the co-author of the textbook, Computer Networking, a top down approach (6th edition) published by Addison-Wesley/Pearson. Dr. Kurose received his Ph.D. in computer science from Columbia University and a Bachelor of Arts degree in physics from Wesleyan University. He is a Fellow of the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronic Engineers (IEEE).

Wendy J. Nilsen is a Program Director for the Smart and Connected Health program at the National Science Foundation. Her work focuses on the intersection of technology and health. This includes a wide range of methods for data collection, data analytics and turning data to knowledge. More specifically, her efforts in technlogy and health research include: serving as the lead for the NSF/NIH Smart and Connected Health announcement, convening meetings to address methodology in mobile technology research; serving on numerous federal technology initiatives; and, leading training institutes. Wendy works in multiple trans-NIH initiatives in mobile and wireless health (mHealth). Some of these activities include: coleading the NIH-NSF mPower mHealth group, convening meetings to address methodology and barriers to the utilization of mobile technology in research; serving on numerous federal mHealth initiatives; and, leading the mHealth training institutes.

NSF BIOGRAPHIES

Gurdip Singh is the Associate Dean for Research and Doctoral Programs at Syracuse University. He is also an Expert in the Division of Computer and Network Systems in the CISE Directorate at National Science Foundation and was a Program Director in the same division from 2014 to 2016. His program management duties include the following programs: Cyber-Physical Systems, Computer Systems Research, Critical Resilient Interdependent Infrastructure Systems and Processes, Partnership for Innovation, and Research Coordination Networks. From 2009 and 2014, he was the Head of Computer Science Department at Kansas State University. His research interests include real-time embedded systems, sensor networks, network protocols and distributed computing. His research has been funded by NSF, ARO, DARPA and Lockheed Martin. He has been involved in developing software tools to design large-scale, distributed safety critical systems.

Sylvia Spengler is a program director in the Division of Information and Intelligent System (IIS) within the CISE Directorate at the National Science Foundation. She also served as program officer for the Biological Databases and Informatics in BIO/DBI. Prior to joining NSF, she was a Director of Department of Energy (DOE) Human Genome Program Field Operations. She served as Co-Director of the Program in Mathematics and Molecular Biology at the University of California, Berkeley, Lawrence Berkeley National Laboratory. Her many honors include Senior Fellow of the American Cancer Society, and National Institutes of Health (NIH) Postdoctoral Fellow. As a member of DOE ELSI panels, she has been involved in evaluating the ethical, legal and social implications of human genome research. Dr. Spengler's many publications include co-authorship of the DOE's Primer of Molecular Biology. As part of her work with the Human Genome Project, Dr. Spengler has been involved in many types of public outreach including lectures given to college students, judges, and appearances on public television. Her current NSF programs include: Information and Intelligent Systems-Advancing Human-Centered Computing, Information Integration and Informatics, and Robust Intelligence; CISE Pathways to Revitalized Undergraduate Computing Education (CPATH); Domestic Nuclear Detection Office/National Science Foundation Academic Research Initiative (ARI); Explosives and Related Threats: Frontiers in Prediction and Detection (EXP).

Grace Wang was named Deputy Assistant Director for Engineering at the National Science Foundation in July 2014. Prior to that, Dr. Wang was the Division Director of the Division of Industrial Innovation and Partnerships (IIP) at NSF since February of 2012. Dr. Wang joined NSF in June 2009 as a Program Director for the SBIR/STTR Program. She also served as the Cluster Leader for the Nanotechnology, Advanced Materials and Manufacturing (NM) Cluster in SBIR/STTR Program. Before joining NSF, Dr. Wang was a Senior Development Scientist at Hitachi, where she led a team to successfully develop and launch a few generations of products into the market. While in Hitachi, Dr. Wang also led task forces both in the US and overseas that identified and executed effective and viable solutions to major technical crises, and helped mitigate impact on revenue generation. Dr. Wang started her career as an Advisory Development Scientist at IBM. Dr. Wang is the recipient of many leadership and technical achievement awards. Dr. Wang holds a Ph.D. in Materials Science and Engineering from Northwestern University.

REGISTRANTS

current as of 10/23/16

REGISTRANTS

#	First Name	Last Name	Organization / Institution / Agency
1	Houssam	Abbas	University of Pennsylvania
2	Ossama	Abdelkhalik	Michigan Tech University
3	Tarek	Abdelzaher	University of Illinois at Urbana-Champaign
4	Kyler	Abernathy	National Geographic Society
5	Behcet	Acikmese	University of Washington
6	Julie	Adams	Vanderbilt University
7	Ryan	Adams	University of North Carolina at Charlotte
8	Henny	Admoni	Carnegie Mellon University
9	Priyanshu	Agarwal	University of Texas at Austin
10	Mohammad	Al Faruque	University of California, Irvine
11	Amr	Alanwar	University of California Los Angeles
12	Aaron	Ames	Georgia Institute of Technology
13	Saurabh	Amin	Massachusetts Institute of Technology
14	James	Anderson	The University of North Carolina at Chapel Hill
15	Mihai	Anitescu	University of Chicago
16	Anuradha	Annaswamy	Massachusetts Institute of Technology
17	Fatima	Anwar	University of California Los Angeles
18	Murat	Arcak	University of California, Berkeley
19	Brenna	Argall	Northwestern University :: Rehabilitation Institute of Chicago
20	Reza	Arghandeh	Florida State University
21	Ansish	Arora	The Ohio State University
22	Peter	Arzberger	National Science Foundation
23	Mikhail	Atallah	Purdue University
24	Ella	Atkins	University of Michigan
25	Radhakishan	Baheti	National Science Foundation
26	Erwei	Bai	University of Iowa
27	Ou	Bai	Florida International University
28	Ruzena	Bajcsy	University of California, Berkeley
29	Clayton	Baker	George Mason University
30	Denise	Baker	Missouri University of Science and Technology

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#	First Name	Last Name	Organization / Institution / Agency
31	David	Balenson	SRI International
32	Sanjoy	Baruah	University of North Carolina
33	Bipendra	Basnyat	University of Maryland Baltimore County
34	Mitra	Basu	National Science Foundation
35	Sankar	Basu	National Science Foundation
36	Carolyn	Beck	University of Illinois at Urbana-Champaign
37	Aaron	Becker	University of Houston
38	Madhur	Behl	University of Pennsylvnaia
39	Juan Pablo	Bello	New York University
40	Calin	Belta	Boston University
41	Alexander	Berg	UNC Chapel Hill
42	Bir	Bhanu	University of California at Riverside
43	Saroj	Biswas	Temple University
44	Eilyan	Bitar	Cornell University
45	Paul	Bogdan	University of Southern California
46	Alper	Bozkurt	North Carolina State University
47	Sukumar	Brahma	New Mexico State University
48	Philip	Brisk	University of California, Riverside
49	Richard	Brooks	Clemson University
50	Samuel	Burden	University of Washington
51	Linda	Bushnell	University of Washington
52	Kenneth	Calvert	National Science Foundation
53	Jaime	Camelio	Virginia Polytechnic Institute and State University
54	Mark	Campbell	Cornell University
55	Álvaro	Cárdenas	University of Texas at Dallas
56	David	Castanon	Boston University
57	Charles	Catlett	Argonne National Laboratory
58	Siva Chaitanya	Chaduvula	Purdue University
59	Aranya	Chakrabortty	North Carolina State University
60	Thidapat	Chantem	Virginia Polytechnic Institute and State University

#	First Name	Last Name	Organization / Institution / Agency
61	Nilanjan Ray	Chaudhuri	Pennsylvania State University
62	Charalampos	Chelmis	University at Albany - SUNY
63	Zheng	Chen	Wichita State University
64	Maggie	Cheng	New Jersey Institute of Technology
65	Elizabeth	Cherry	Rochester Institute of Technology
66	Ajay	Chhokra	Vanderbilt University
67	Walter	Cleaveland	University of Maryland
68	Richard	Conroy	National Institutes of Health
69	David	Corman	National Science Foundation
70	Jorge	Cortes	University of California, San Diego
71	Bo	Cui	Washington State University
72	Judy	Cushing	The Evergreen State College
73	Ram	Dantu	University of North Texas
74	Sajal	Das	Missouri University of Science and Technology
75	Jnaneshwar	Das	University of Pennsylvania
76	Sanjoy	Dasgupta	University of California, San Diego
77	Russell	Davis	Defense Health Agency HIT/IATDD
78	Douglas	Densmore	Boston University
79	Ashish	Deshpande	The University of Texas at Austin
80	Maged	Dessouky	University of Southern California
81	Mary	Dey	Vanderbilt University
82	Yu	Ding	Texas A&M University
83	Bing	Dong	University of Texas at San Antonio
84	Ming	Dong	Wayne State University
85	Adwait	Dongare	Carnegie Mellon University
86	Janardhan Rao	Doppa	Washington State University, Pullman
87	Sandeep	Dsouza	Carnegie Mellon University
88	Abhishek	Dubey	Vanderbilt University
89	Michael	Dunaway	NIMSAT/LA-BEOC, University of Louisiana, Lafayette
90	Magnus	Egerstedt	Georgia Institute of Technology

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#	First Name	Last Name	Organization / Institution / Agency
91	Jon	Eisenberg	National Academy of Sciences, Engineering, and Medicine
92	Lily	Elefteriadou	University of Florida
93	Randall	Erb	Northeastern University
94	Deniz	Erdogmus	Northeastern University
95	Paria	Esmatloo	University of Texas at Austin
96	Georgios	Fainekos	Arizona State University
97	Yaser	Fallah	University of Central Florida
98	Zhou	Fang	University of California San Diego
99	Lu	Feng	University of Pennsylvania
100	Flavio	Fenton	Georgia Institute of Technology
101	Cornelia	Fermuller	University of Maryland
102	Eric	Feron	Georgia Institute of Technology
103	Massimo	Franceschetti	University of California, San Diego
104	Vanessa	Frias-Martinez	University of Maryland
105	Shengli	Fu	University of North Texas
106	Nathan	Fulton	Carnegie Mellon University
107	John	Gallagher	Wright State University
108	Subhashini	Ganapathy	Wright State University
109	Aryya	Gangopadhyay	University of Maryland Baltimore County
110	Sicun	Gao	Massachusetts Institute of Technology
111	Chase	Garwood	U.S. Department of Homeland Security
112	Yuri	Gawdiak	Aeronautics Research Mission Directorate/NASA
113	Dennice	Gayme	Johns Hopkins University
114	Demoz	Gebre-Egziabher	University of Minnesota, Twin Cities Campus
115	Chris	Gill	Washington University in St Louis
116	Helen	Gill	National Science Foundation (Retired)
117	Mani	Golparvar-Fard	University of Illinois at Urbana-Champaign
118	Humberto	Gonzalez	Washington University in St. Louis
119	Manimaran	Govindarasu	Iowa State University
120	Richard	Gray	U.S. Food and Drug Administration

#	First Name	Last Name	Organization / Institution / Agency
121	Chris	Greer	National Institute of Standards and Technology
122	Jessy	Grizzle	University of Michigan
123	Radu	Grosu	Technische Universität Wien
124	Marco	Gruteser	Rutgers University
125	Vijay	Gupta	University of Notre Dame
126	Rajesh	Gupta	University of California, San Diego
127	Harshit	Gupta	Georgia Institute of Technology
128	Levent	Guvenc	Ohio State University
129	Adam	Hahn	Washington State University
130	Abhishek	Halder	Texas A&M University
131	Qing	Han	University of California, Irvine
132	Tian	He	University of Minnesota Twin Cities
133	Zhihai	He	University of Missouri
134	Kevin	Heaslip	Virginia Polytechnic Institute and State University
135	Babak	Hejrati	Harvard University - Wyss Institute
136	Joao	Hespanha	University of California
137	Payam	Heydari	University of California, Irvine
138	Teruo	Higashino	Osaka University
139	Derek	Hoiem	University of Illinois at Urbana-Champaign
140	Shamina	Hossain-McKenzie	University of Illinois at Urbana-Champaign
141	Wen-Hao	Hsu	Wyss Institute for Biologically Inspired Engineering at Harvard University
142	Yu Hen	Hu	University of Wisconsin - Madison
143	Jianghai	Hu	Purdue University
144	Qiang	Huang	University of Southern California
145	Dryver	Huston	University of Vermont
146	Mohamed	Ibrahim	Duke University
147	Md Ariful	Islam	Carnegie Mellon University
148	Rachael	Ivison	Boston University
149	Ravishankar K	Iyer	University of Illinois, Coordinated Science Laboratory
150	Murtuza	Jadliwala	Wichita State University

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151	Rishabh	Jain	North Carolina State University
152	Nils	Jansen	The University of Texas at Austin
153	Tara	Javidi	University of California, San Diego
154	Seongwoon	Jeong	Stanford University
155	Ramesh	Johari	Stanford University
156	Neil	Johnson	University of Miami
157	Christine	Julien	The University of Texas at Austin
158	Mehdi	Kalantari Khandani	Resensys LLC
159	Zbigniew	Kalbarczyk	University of Illinois at Urbana-Champaign
160	Krishna	Kant	Temple University
161	Sertac	Karaman	Massachusetts Institute of Technology
162	Amy	Karns	Vanderbilt University - ISIS
163	Gabor	Karsai	Vanderbilt University
164	Rajesh	Kavasseri	North Dakota State University
165	Mladen	Kezunovic	Texas A&M University
166	Samee	Khan	National Science Foundation
167	Namhoon	Kim	University of North Carolina at Chapel Hill
168	Frankie	King	Vanderbilt University - ISIS
169	Israel	Koren	University of Massachusetts
170	Jana	Kosecka	George Mason University
171	Oliver	Kosut	Arizona State University
172	Xenofon	Koutsoukos	Vanderbilt University
173	Bruce	Kramer	National Science Foundation
174	Srikanth	Krishnamurthy	University of California, Riverside
175	Sandeep	Kulkarni	Michigan State University
176	P.R.	Kumar	Texas A&M University
177	Thomas	Kurfess	Georgia Institute of Technology
178	Jim	Kurose	National Science Foundation
179	Arda	Kurt	The Ohio State University
180	Richard	La	University of Maryland

#	First Name	Last Name	Organization / Institution / Agency
181	Constantino	Lagoa	The Pennsylvania State University
182	Sanjay	Lall	Stanford University
183	David	Lary	University of Texas at Dallas
184	Kincho	Law	Stanford University
185	Akos	Ledeczi	Vanderbilt University
186	Edward	Lee	University of California, Berkeley
187	Insup	Lee	University of Pennsylvania
188	Min Kyung	Lee	Carnegie Mellon University
189	Xiaogong	Lee	Federal Aviation Administration
190	Dongwon	Lee	National Science Foundation
191	Hohyun	Lee	National Institute of Standard and Technology
192	Martin	Lehofer	Siemens
193	Alexander	Lemon	Stanford University
194	Philip	Levis	Stanford University
195	Husheng	Li	The University of Tennessee
196	Wenchao	Li	Boston University
197	Wei	Li	Texas Southern University
198	Hai	Lin	University of Notre Dame
199	Shan	Lin	Stony Brook University
200	Mikael	Lindvall	Fraunhofer
201	Charles	Liu	University of Southern California
202	Kaikai	Liu	San Jose State University
203	Zhenhua	Liu	Stony Brook University
204	Jia	Liu	The Ohio State University
205	Edgar	Lobaton	NC State University
206	Steven	Low	California Institute of Technology
207	Ernest	Lucier	National Coordination Office / Networking and Information Technology Research and Development
208	Mulong	Luo	University of California, San Diego
209	Anh	Luong	University of Utah
210	Robyn	Lutz	Iowa State University

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211	Jack	Lutz	Iowa State University
212	Jerome	Lynch	University of Michigan
213	Meiyi	Ma	University of Virgina
214	Daria	Madjidian	Massachusetts Institute of Technology
215	Curtis	Madsen	Boston University
216	Nina	Mahmoudian	Michigan Technological University
217	Ann	Majewicz	University of Texas at Dallas
218	Enrique	Mallada	Johns Hopkins University
219	Rahul	Mangharam	University of Pennsylvania
220	Zhi-Hong	Mao	University of Pittsburgh
221	William	Martin	National Security Agency
222	Manel	Martinez-Ramon	The University of New Mexico
223	Nuno	Martins	University of Maryland, College Park
224	Eric	Matson	Purdue University
225	Nicholas	Maxemchuk	Columbia University
226	Sudip	Mazumder	University of Illinois, Chicago
227	Ali	Mehmani	Columbia University
228	Christoph	Meinrenken	Columbia University
229	Sukarno	Mertoguno	Office of Naval Research - United States Navy
230	William	Milam	Ford Motor Company
231	Paul	Miner	NASA Langley Research Center
232	Pitu	Mirchandani	Arizona State University
233	Sayan	Mitra	University of Illinois
234	Aloysius	Mok	University of Texas at Austin
235	Ted	Morris	University of Minnesota
236	Bashir	Morshed	The University of Memphis
237	Barzan	Mozafari	University of Michigan, Ann Arbor
238	Kamesh	Namuduri	University of North Texas
239	Srinivasa	Narasimhan	Carnegie Mellon University
240	Ashutosh	Nayyar	University of Southern California

#	First Name	Last Name	Organization / Institution / Agency
241	Himanshu	Neema	Vanderbilt University
242	Marie	Nguyen	Carnegie Mellon University
243	Zhen	Ni	South Dakota State Unviersity
244	Dejan	Nickovic	AIT Austrian Institute of Technology
245	Wendy	Nilsen	National Science Foundation
246	Meeko	Oishi	University of New Mexico
247	Nathan	Otterness	University of North Carolina at Chapel Hill
248	Necmiye	Ozay	University of Michigan
249	Umit	Ozguner	Ohio State University
250	Karen	Paczkowski	National Science Foundation
251	Taskin	Padir	Northeastern University
252	Anil	Pahwa	Kansas State University
253	Miroslav	Pajic	Duke University
254	Jitesh	Panchal	Purdue University
255	George	Pappas	University of Pennsylvania
256	Younghee	Park	San Jose State University
257	Fabio	Pasqualetti	University of California, Riverside
258	Matthew	Pezent	Rice University
259	Pierluigi	Pisu	Clemson University
260	Andre	Platzer	Carnegie Mellon Univeristy
261	Kameshwar	Poolla	Univ of California, Berkeley
262	Radha	Poovendran	University of Washington
263	Bradley	Potteiger	Vanderbilt University
264	Pavithra	Prabhakar	Kansas State University
265	Arun	Prakash	Purdue University
266	Sarah Masud	Preum	University of Virginia
267	Calton	Pu	Georgia Institute of Technology
268	Hairong	Qi	University of Tennessee
269	Zhen	Qian	Carnegie Mellon University
270	Raj	Rajkumar	Carnegie Mellon University

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#	First Name	Last Name	Organization / Institution / Agency
271	Umakishore	Ramachandran	Georgia Institute of Technology
272	Sanjay	Raman	Virginia Polytechnic Institute and State University
273	Parameswaran	Ramanathan	University of Wisconsin, Madison
274	Lakshmish	Ramaswamy	University of Georgia
275	Huzefa	Rangwala	George Mason University
276	Sanjay	Ranka	University of Florida
277	Lillian	Ratliff	University of Washington
278	Stephen	Rees	Vanderbilt University
279	Shangping	Ren	Illinois Insitute of Technology
280	Sokwoo	Rhee	National Institute of Standards and Technology
281	Hanz	Richter	Cleveland State University
282	Jason	Rife	Tufts University
283	David	Roberts	North Carolina State University
284	Chad	Rose	Rice University
285	Anthony	Rowe	Carnegie Mellon Univeristy
286	Nirmalya	Roy	University of Maryland Baltimore County
287	Kristin Yvonne	Rozier	Iowa State University
288	Harald	Ruess	fortiss GmbH
289	Sarah	Rust	University of North Carolina at Chapel Hill
290	Walid	Saad	Virginia Polytechnic Institute and State University
291	Arman	Sabbaghi	Purdue University
292	Dorsa	Sadigh	University of California, Berkeley
293	Yasser	Sakr	University of California, Berkeley/University of California, Los Angeles
294	Srinivasa	Salapaka	University of Illinois, Urbana Champaign
295	Venkatesh	Saligrama	Boston University
296	Ricardo	Sanfelice	University of California
297	Anibal	Sanjab	Virginia Polytechnic Institute and State University
298	Lalitha	Sankar	Arizona State University
299	Sriram	Sankaranarayanan	University of Colorado Boulder
300	Soumik	Sarkar	Iowa State University

#	First Name	Last Name	Organization / Institution / Agency
301	Arif	Sarwat	Florida International University
302	Daniel	Schmoldt	USDA National Institute of Food & Agriculture
303	Christoph	Schulze	University of Maryland / Fraunhofer
304	Curt	Schurgers	University of California, San Diego
305	Mac	Schwager	Stanford University
306	Peter	Seiler	University of Minnesota
307	Sanjit	Seshia	University of California, Berkeley
308	Lui	Sha	University of Illinois
309	Yaman	Sharaf-Dabbagh	Virginia Polytechnic Institute and State University
310	Ajay	Sharda	Kansas State University
311	Elaine	Shi	Cornell University
312	Kang	Shin	The University of Michigan
313	Ness	Shroff	The Ohio State University
314	Siddhartha	Sikdar	George Mason University
315	Gurdip	Singh	National Science Foundation / Syracuse University
316	Scott	Smolka	Stony Brook University
317	Rasam	Soheilian	Northeastern University
318	Oleg	Sokolsky	University of Pennsylvania
319	WenZhan	Song	University of Georgia
320	Tolga	Soyata	SUNY Albany
321	Sylvia	Spengler	National Science Foundation
322	Jonathan	Sprinkle	University of Arizona
323	Mani	Srivastava	University of California Los Angeles
324	John	Stankovic	University of Virginia
325	Edward	Steager	University of Pennsylvania
326	Susan	Sterett	Virginia Polytechnic Institute and State University
327	Radu	Stoleru	Texas A&M University
328	Cynthia	Sturton	University of North Carolina at Chapel Hill
329	Zhi	Sun	University at Buffalo, State University of New York
330	Fangzhou	Sun	Vanderbilt University

REGISTRANTS

#	First Name	Last Name	Organization / Institution / Agency
331	Katia	Sycara	Carnegie Mellon University
332	Janos	Sztipanovits	Vanderbilt University
333	Paulo	Tabuada	University of California Los Angeles
334	Adam	Tagert	National Security Agency
335	Ahmad	Taha	The University of Texas at San Antonio
336	Walid	Taha	Rice University
337	Robert	Tamburo	Carnegie Mellon University
338	Xiaobo	Tan	Michigan State University
339	Jiong	Tang	University of Connecticut
340	Ao	Tang	Cornell University
341	Rin-ichiro	Taniguchi	Kyushu University
342	Steven	Thomson	U.S. Department of Agriculture - National Institute of Food and Agriculture
342	Dawn	Tilbury	University of Michigan
344	Scott	Tousley	U.S. Department of Homeland Security Scienece and Technology
345	Hung	Trinh	Deparment of Defense/Veterans Affairs Interagency Program Ofiice
346	Stavros	Tripakis	University of California, Berkeley
347	Panagiotis	Tsiotras	Georgia Institute of Technology
348	Nitin	Vaidya	University of Illinois at Urbana-Champaign
349	Umesh	Vaidya	Iowa State University
350	Prashant	Vaidyanathan	Boston University
351	Kimon	Valavanis	University of Denver
352	Chris	vanBuskirk	Vanderbilt University
353	Patricio	Vela	Georgia Institute of Technology
354	Nalini	Venkatasubramanian	University of California, Irvine
355	Yon	Visell	University of California, Santa Barbara
356	Yevgeniy	Vorobeychik	Vanderbilt University
357	Conor	Walsh	Harvard University - Wyss Institute
358	Yan	Wan	University of Texas at Arlington
359	Xiaofeng	Wang	University of South Carolina

#	First Name	Last Name	Organization / Institution / Agency
360	Shige	Wang	General Motors Global R&D
361	Hongning	Wang	University of Virginia
362	Pu	Wang	Wichita State University
363	Dong	Wang	University of Notre Dame
364	Grace	Wang	National Science Foundation
365	Emily	Wehby	Vanderbilt University / Institute for Software Integrated Systems
366	James	Weimer	University of Pennsylvania
367	Matthew	West	University of Illinois at Urbana-Champaign
368	Jules	White	Vanderbilt University
369	Kamin	Whitehouse	University of Virginia
370	David	Wollman	National Institute of Standards and Technology
371	Dan	Work	University of Illinois
372	Wencen	Wu	Rensselaer Polytechnic Institute
373	Jie	Wu	The University of Tennessee
374	Tian	Xia	University of Vermont
375	Chengshan	Xiao	National Science Foundation
376	Wenyao	Xu	University at Buffalo
377	Ming	Yang	University of North Carolina at Chapel Hill
378	Lily	Yang	Intel
379	Mark	Yim	University of Pennsylvania
380	Yafeng	Yin	University of Florida
381	Wei	Yu	Towson University
382	Hitten	Zaveri	Yale University
383	Michael	Zavlanos	Duke University
384	Baosen	Zhang	University of Washington
385	Wei	Zhang	Ohio State University
386	Hongwei	Zhang	Wayne State University
387	Wei	Zhao	Unviersity of Macau
388	Quanyan	Zhu	New York University
389	Qi	Zhu	University of California, Riverside

REGISTRANTS

#	First Name	Last Name	Organization / Institution / Agency
390	Minghui	Zhu	Pennsylvania State University
391	Qiuxi	Zhu	University of California, Irvine
392	Michael	Zink	University of Massachusetts Amherst
393	Saman	Zonouz	Rutgers University

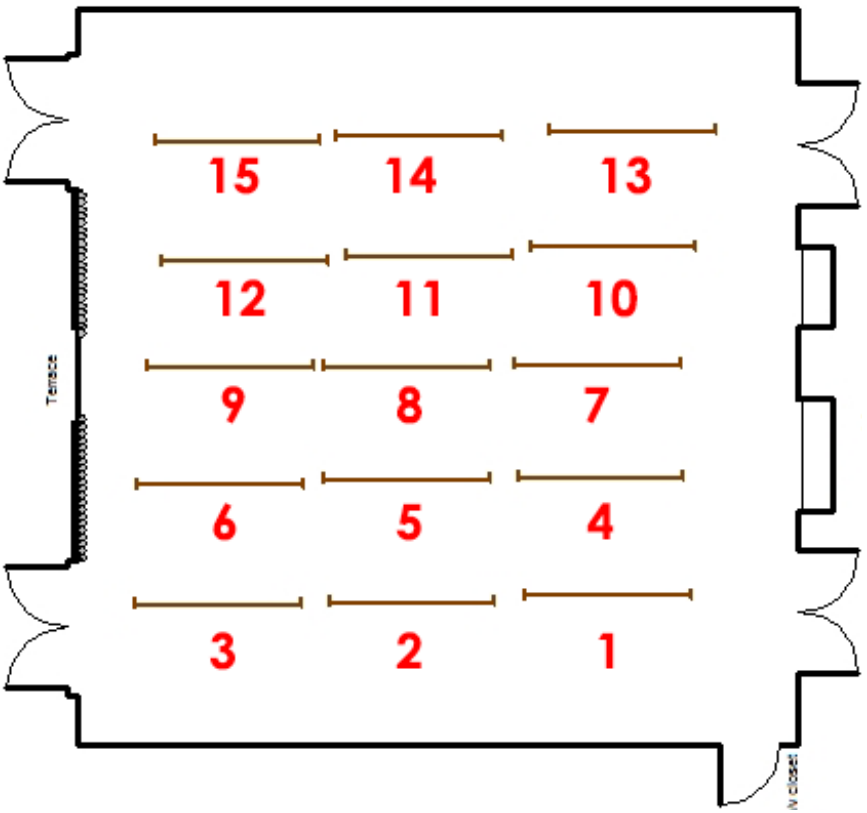
POSTER SESSION DIAGRAMS

current as of 10/22/16

2016 NSF CPS PI MEETING – POSTER SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View
Arlington, VA

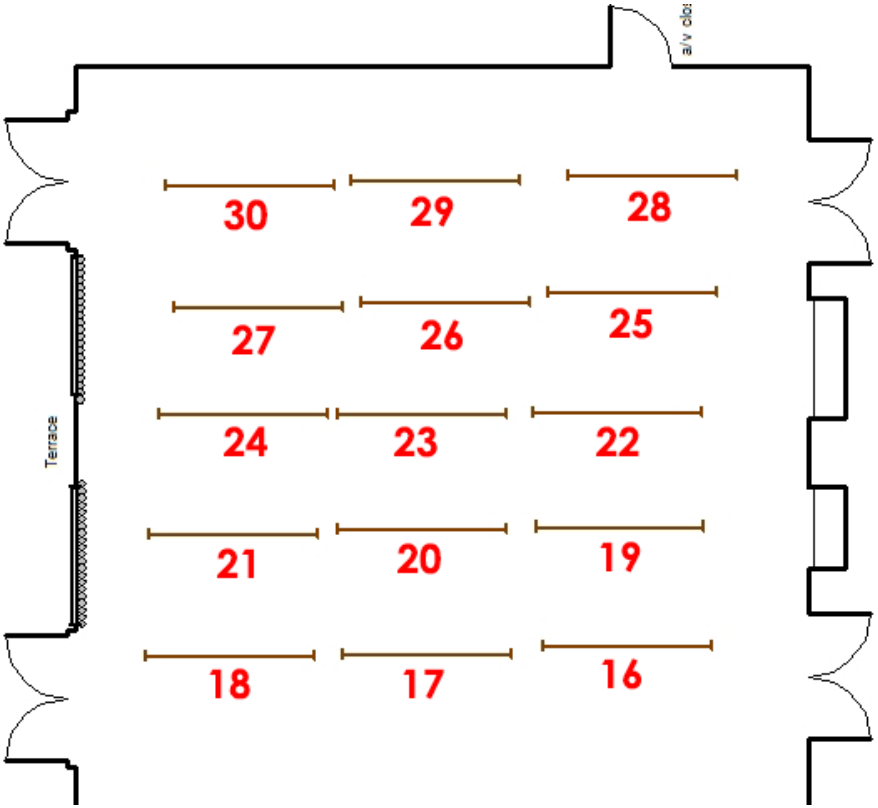
STUDIO D



2016 NSF CPS PI MEETING – POSTER SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View
Arlington, VA

STUDIO E



2016 NSF CPS PI MEETING – POSTER SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View | Arlington, VA

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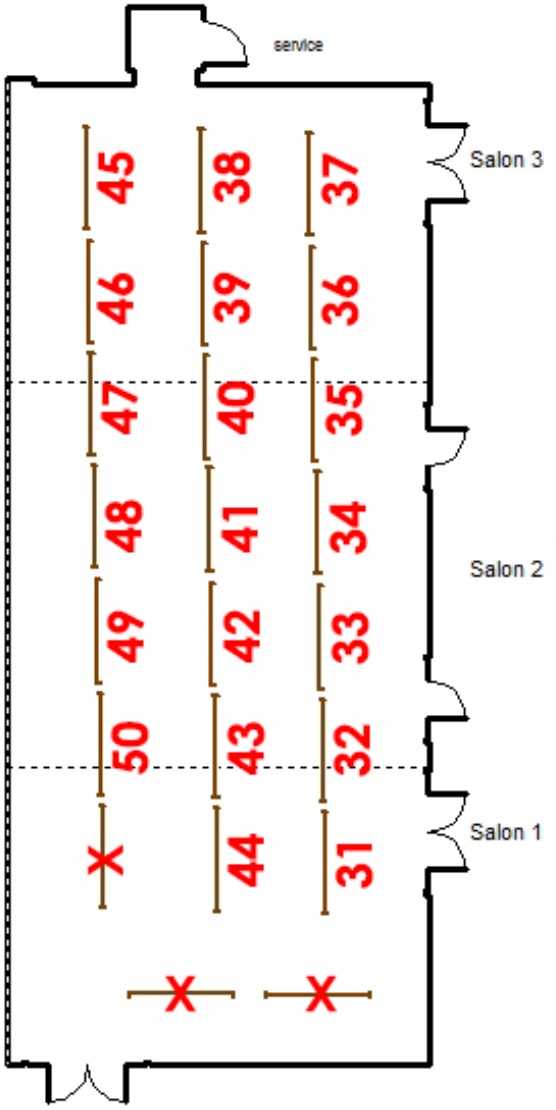

POSTER SESSION PARTICIPANTS

current as of 10/23/16

POSTER SESSION/ PARTICIPANTS

2016 NATIONAL SCIENCE FOUNDATION - CYBER-PHYSICAL SYSTEMS PRINCIPAL INVESTIGATORS' MEETING - POSTER SESSION

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
1-F-L	Monday	Ossama	Abdelkhalik	1446622	Ossama Abdelkhalik	CPS: Breakthrough: Toward Revolutionary Algorithms for Cyber-Physical Systems Architecture Optimization
1-F-R	Monday	Behcet	Acikmese	1624328	Behcet Acikmese	Autonomy Protocols: From Human Behavioral Modeling to Correct-by-Construction, Scalable Controla
1-B-L	Monday	Mohammad	Al Faruque	1546993	Mohammad Al Faruque	Cybermanufacturing: Defending Side Channel Attacks in Cyber-Physical Additive Layer Manufacturing System
1-B-R	Monday	Saurabh	Amin	1453126	Saurabh Amin	CAREER: Resilient Design of Networked Infrastructure Systems: Models, Validation, and Synthesis
2-F-L	Monday	James	Anderson	1239135	Namhoon Kim	Bringing the Multicore Revolution to Safety-Critical Cyber-Physical Systems
2-F-R	Monday	James	Anderson	1446631	Nathan Otterness	Doing More with Less: Cost-Effective Infrastructure for Automotive Vision Capabilities
2-B-L	Monday	Anuradha	Annaswamy	1135815	Anuradha Annaswamy	Co-design of Multimodal CPS Architectures and Adaptive Controllers
2-B-R	Monday	Aranya	Chakrabortty	1544871, 1544751	Anuradha Annaswamy	CPS: TTP Option: Synergy: Collaborative Research: Hardening Network Infrastructures for Fast, Resilient and Cost-Optimal Wide-Area Control of Power Systems
3-F-L	Monday	Chimay	Anumba	1544973, 1544999	Chimay Anumba	Safe and Efficient Cyber-Physical Operation System for Construction Equipment
3-F-R	Monday	Murat	Arcak	1446145	Murat Arcak	Efficient Traffic Management: A Formal Methods Approach
3-B-L	Monday	Todd	Murphey	1329891	Brenna Argall	Mutually Stabilized Correction in Physical Demonstration
3-B-R	Monday	Reza	Arghandeh	1640587	Reza Arghandeh	UHDNetCity: User-centered Heterogeneous Data Fusion for Multi-networked City Mobility

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
4-F-L	Monday	Ilya	Kolmanovsky	1544844	Ella Atkins	CPS: GOALI: Synergy: Maneuver and Data Optimization for High Confidence Testing of Future Automotive Cyberphysical Systems
4-F-R	Monday	Erwei	Bai	1239509	Erwei Bai	A Hybrid Detector Network for Nuclear and Radioactive Threat Detection
4-B-L	Monday	Ou	Bai	1552163	Ou Bai	CPS: Synergy: Sensor Network-Based Lower-Limb Prosthetic Optimization and Control
4-B-R	Monday	Calin	Belta	1446607	Curtis Madsen	CPS Frontier - Collaborative Research: bioCPS for Engineering Living Cells
5-F-L	Monday	Carolyn	Beck	1330077, 1329870	Carolyn Beck	CPS: Synergy: Collaborative Research: Engineering Safety-Critical Cyber-Physical-Human Systems
5-F-R	Monday	Carolyn	Beck	1544953	Carolyn Beck	Design of Network Dynamics for Strategic Team-Competition
5-B-L	Monday	Bir	Bhanu	1330110	Bir Bhanu	CPS: Synergy: Distributed Sensing, Learning and Control in Dynamic Environments
5-B-R	Monday	Alper	Bozkurt	1239243	Alper Bozkurt	Cyborg Insect Networks for Exploration and Mapping (CINEMa)
6-F-L	Monday	Philip	Brisk	1545907, 1544686	Philip Brisk	Cyber-physical Digital Microfluidics based on Active Matrix Electrowetting Technology: Software-programmable High-density Pixel
6-F-R	Monday	Sam	Burden	1565529	Sam Burden	Provably-safe interventions for Human-Cyber-Physical Systems
6-B-L	Monday	Linda	Bushnell	1544173	Linda Bushnell	Certifiable, Attack-resilient Submodular Control Framework for Smart Grid Stability
6-B-R	Monday	Jaime	Camelio	1446804, 1446304, 1447237	Jules White	CPS: Synergy: Collaborative Research: Cyber-Physical Approaches to Advanced Manufacturing Security

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
7-F-L	Monday	Álvaro	Cárdenas	1553683	Álvaro Cárdenas	CAREER: Practical Control Engineering Principles to Improve the Security and Privacy of Cyber-Physical Systems
7-F-R	Monday	Krishnendu	Chakrabarty	1135853	Mohamed Ibrahim	Cyberphysical Integration for Digital Microfluidic Biochips
7-B-L	Monday	Krishnendu	Chakrabarty	1543872	Michael Zavlanos	A Manufacturing Exchange for Modular, Composable, and Interoperable Mass Customization
7-B-R	Monday	Aranya	Chakrabortty	1329780	Aranya Chakrabortty	CPS: Synergy: Collaborative Research: Distributed Asynchronous Algorithms and Software Systems for Wide-Area Monitoring of Power Systems
8-F-L	Monday	Thidapat	Chantem	1658225, 1544601	Thidapat Chantem	CPS: Synergy: Collaborative Research: Semi-Automated Emergency Response System
8-F-R	Monday	Nilanjan Ray	Chaudhuri	1657024	Nilanjan Ray Chaudhuri	CRII: CPS: Architecture and Distributed Computation in the Networked Control Paradigm: An Autonomous Grid Example
8-B-L	Monday	Viktor P.	Prasana	1637372	Charalampos Chelmis	EAGER: Safer Connected Communities Through Integrated Data-driven Modeling, Learning, and Optimization
8-B-R	Monday	Maggie	Cheng	1545063, 1545046	Maggie Cheng and Mihai Anitescu	Real-time Data Analytics for Energy Cyber-Physical Systems
9-F-L	Tuesday	Wendi	Heinzelman	1239423	Tolga Soyata	CPS: Synergy: Self-Sustainable Date-Driven Systems In the Field
9-F-R	Monday	Jorge	Cortes	1329619	Jorge Cortes	Event-triggered Control for Nonlinear Systems with Time-Varying Input Delay
9-B-L	Tuesday	Munther	Dahleh	1135843	Daria Madjidian	Emulating Batteries with Flexible Electricity Loads
9-B-R	Monday	William	Griswold	1446912	Sanjoy Dasgupta	Calibration of Personal Air Quality Sensors in the Field
10-F-L	Monday	Ming	Dong	1637312	Ming Dong	Prioritization of Risk Factors for the Prevention and Treatment of Pediatric Obesity

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
10-F-R	Monday	Bing	Dong	1637249	Ahmad Taha	EAGER: Collaborative Research: Empowering Smart Energy Communities: Connecting Buildings, People, and Power Grids
10-B-L	Monday	Geir	Dullerud	1329991	Matthew West	Statistical Verification of the Toyota Powertrain Control Verification Benchmark
10-B-R	Monday	Magnus	Egerstedt	1544332	Magnus Egerstedt	Safe and SecureOpen-Access Multi-Robot Systems
11-F-L	Monday	Randall	Erb	1329649	Randall Erb	CPS: Breakthrough: A Cyber-Physical Framework for Magnetic Resonance Imaging (MRI) Guided Magnetic NanoParticles
11-F-R	Monday	Georgios	Fainekos	1350420	Georgios Fainekos	Robustness Guided Testing and Verification for Cyber-Physical Systems
11-B-L	Monday	Massimo	Franceschetti	1446891	Massimo Franceschetti	CPS: Synergy: Triggered Control of Cyber Physical Systems with Communication Channels Constraints
11-B-R	Monday	Vanessa	Frias-Martinez	1636915	Vanessa Frias-Martinez	Crowdsourcing Urban Bicycle Level of Service Measures
12-F-L	Monday	John	Gallagher	1239196, 1239171, 1239229	John Gallagher	Methodologies for Engineering with Plug-and-Learn Components: Synthesis and Analysis Across Abstraction Layers
12-F-R	Monday	Dharmalingam	Ganesan	1446583	Mikael Lindvall	Automated Specification Extraction and Testing of Autonomous Systems
12-B-L	Monday	Vijay	Gupta	1239224, 1239408, 1312390	Vijay Gupta	CPS: Synergy: Collaborative Research: Architectural and Algorithmic Solutions for Large Scale PEV Integration into Power Grids
12-B-R	Monday	Dennice	Gayme	1544771	Dennice Gayme and Vijay Gupta	CPS: Synergy: Collaborative Research: Beyond Stability: Performance, Efficiency and Disturbance Management for Smart Infrastructure Systems
13-F-L	Monday	Ao	Tang	1544761	Ao Tang	Time-Aware Congestion-Free Routing Reconfiguration
13-F-R	Monday	Steven	Low	1545096	Enrique Mallada, Dennice Gayme, Steven Low	CPS: Synergy: Collaborative Research: Beyond Stability: Performance, Efficiency and Disturbance Management for Smart Infrastructure Systems

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
13-B-L	Monday	Chris	Gill	1136073, 1136075	Arun Prakash	CPS Medium: Collaborative Research: CyberMech, a Novel Run-Time Substrate for Cyber-Mechanical Systems
13-B-R	Monday	Eugene	Goldfield	1329363	Wen-Hao Hsu	Multi-Robot Cyber-Physical System for Assisting Young Developmentally-Delayed Children in Learning to Walk
14-F-L	Monday	Humberto	Gonzalez	1646579, 1646449	Humberto Gonzalez	Holistic Control and Management of Industrial Wireless Processes
14-F-R	Monday	Richard	Gray	1446832	Richard Gray	Estimability Analysis and Optimal Design in Dynamic Multi-scale Models of Cardiac Electrophysiology
14-B-L	Monday	Ramesh	Govindan	1330118, 1329939	Marco Gruteser	Harnessing the Automotive Infoverse
14-B-R	Monday	Anthony	Rowe	1329644	Adwait Dongare	Pulsar: Wireless Propagation-Aware Clock Synchronization
15-F-L	Monday	Rajesh	Gupta	1329644	Zhou Fang	NoQueue Real-Time Offloading Framework
15-F-R	Monday	Joao	Hespanha	1329650	Joao Hespanha	CPS: Frontiers: Collaborative Research: ROSELINE: Enabling Robust, Secure, and Efficient Knowledge of Time Across the System Stack
15-B-L	Monday	Jianghai	Hu	1329875	Jianghai Hu	CPS: Synergy: Plug-and-Play Cyber-Physical Systems to Enable Intelligent Buildings
15-B-R	Monday	Dryver	Huston	1640687	Dryver Huston and Tian Xia	EAGER: Underground Infrastructure Sensing, Mapping and Modeling for Smart Maintenance, Sustainability and Usage
16-F-L	Monday	Petros	Ioannou	1545130	Maged Dessouky	Cyber Physical Regional Freight Transportation
16-F-R	Monday	Ravishankar K	Iyer	1545069	Zbigniew Kalbarczyk	Towards Resiliency in Cyber-physical Systems for Robot-assisted Surgery
16-B-L	Monday	Murtuza	Jadliwala	1637290	Murtuza Jadliwala	EAGER: A Cloud-assisted Framework for Improving Pedestrian Safety in Urban Communities using Crowd-sourced Mobile Device Data
16-B-R	Monday	Christine	Julien	1239498	Christine Julien	Physically-Informed Assertions for CPS Development and Debugging

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
17-F-L	Monday	Rajesh	Kavasseri	1544621, 1544645	Rajesh Kavasseri	CPS: Breakthrough: Collaborative Research: WARP: Wide Area assisted Resilient Protection
17-F-R	Monday	C. Mani	Krishna	1329831	Israel Koren	CPS: Synergy: Thermal-Aware Management of Cyber-Physical Systems
17-B-L	Monday	Xenofon	Koutsoukos	1238959	Xenofon Koutsoukos	Optimal Configuration of Intrusion Detection Systems for Cyber-Physical Systems
17-B-R	Monday	S. Shankar	Sastry	1239166	Larry Rohrbough	CPS: Frontiers: Collaborative Research: Foundations of Resilient CybEr-Physical Systems (FORCES)
18-F-L	Monday	Panganamala	Kumar	1239116	Abhishek Halder	Boolean Microgrid
18-F-R	Monday	Panganamala	Kumar	1646449	Abhishek Halder	Holistic Control and Management of Industrial Wireless Processes
18-B-L	Monday	Thomas	Kurfess	1646013	Thomas Kurfess	CPS: Synergy: CNC Process Plan Simulation, Automation and Optimization
18-B-R	Monday	Denise	Lach	1637334	Judith Cushing	Connecting Communities Through Data, Visualizations, and Decisions
19-F-L	Monday	Sanjay	Lall	1544199	Alexander Lemon	Sufficient Statistics for Team Decision Problems
19-F-R	Monday	Kincho	Law	1446330	Seongwoon Jeong	Cyber-Physical System for Bridge Lifecycle Monitoring
19-B-L	Monday	Akos	Ledeczi	1239355	Akos Ledeczi	CPS: Synergy: Integrated Modeling, Analysis and Synthesis of Miniature Medical Devices
19-B-R	Monday	Ji-Woong	Lee	1329422	Constantino Lagoa	Digital Control of Hybrid Systems via Simulation and Bisimulation
20-F-L	Monday	Edward	Lee	1446619	Edward Lee	CPS: Breakthrough: A Mathematical Theory of Cyber-Physical Systems
20-F-R	Monday	Wenchao	Li	1646497, 1646381	Wenchao Li	A Framework for Extensibility-Driven Design of Cyber-Physical Systems
20-B-L	Monday	Hai	Lin	1446288	Hai Lin	Dependable Multi-robot Cooperative Tasking in Uncertain and Dynamic Environments

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
20-B-R	Monday	Kaikai	Liu	1637371	Kaikai Liu	Creating a Community Infrastructure for Interoperable Emergency Connectivity
21-F-L	Monday	Zhenhua	Liu	1464388	Zhenhua Liu	Optimal Energy Procurement for Geo-distributed Data Centers in Multi-timescale Markets
21-F-R	Monday	Edgar	Lobaton	1552828	Edgar Lobaton	CAREER: Data Representation and Modeling for Unleashing the Potential of Multi-Modal Wearable Sensing Systems
21-B-L	Monday	Robyn	Lutz	1545028	Robyn Lutz	Robust Biomolecular Finite Automata
21-B-R	Monday	Jerome	Lynch	1446521	Jerome Lynch	Corridor-based Highway Bridge Monitoring and Control using a Cyber Physical System Architecture
22-F-L	Tuesday	Manel	Martinez-Ramon	1637092	Manel Martinez-Ramon	The Next-Generation Connected and Smart Cyber-Fire Fighter System
22-F-R	Tuesday	Nuno	Martins	1446785	Nuno Martins	Designing semi-autonomous networks of miniature robots for inspection of bridges
22-B-L	Tuesday	Nuno	Martins	1135726	Nuno Martins	Collaborative Research: Remote Imaging of Community Ecology via Animal-borne Wireless Networks
22-B-R	Tuesday	Nicholas	Maxemchuk	1329593	Nick Maxemchuk	Safe Collaborative Driving Systems
23-F-L	Tuesday	Sudip	Mazumder	1239118	Sudip Mazumder	Boolean Microgrid
23-F-R	Tuesday	Sharad	Mehrotra	1545071	Sharad Mehrotra	CPS: Synergy: Collaborative Research: Extracting time-critical situational awareness from resource constrained networks
23-B-L	Tuesday	Christoph	Meinrenken	1524628	Ali Mehmani	Advanced peak demand forecast and battery dispatch algorithms to integrate storage-based demand response with BAS
23-B-R	Tuesday	Pitu	Mirchandani	1239396	Pitu Mirchandani	CPS: Synergy: Collaborative Research: A Cyber Physical System for Proactive Traffic Management to Enhance Mobility and Sustainability

POSTER SESSION PARTICIPANTS

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
24-F-L	Tuesday	Urbashi	Mitra	1446901	Ashutosh Nayyar	Energy and Delay: Network Optimization in Cyber Physical Human Sensing Systems
24-F-R	Tuesday	Bashir	Morshed	1637250	Bashir Morshed	EAGER: Events of Interest (EoI) Capture Using Novel Body-worn Fully-passive Wireless Sensors for S&CC
24-B-L	Tuesday	Necmiye	Ozay	1446298	Necmiye Ozay	CPS: Breakthrough: Development of Novel Architectures for Control and Diagnosis of Safety-Critical Complex Cyber-Physical Systems
24-B-R	Tuesday	Necmiye	Ozay	1553873	Necmiye Ozay	CAREER: A Compositional Approach to Modular Cyber-Physical Control System Design
25-F-L	Tuesday	Umit	Ozguner	1446735	Arda Kurt	CPS: Synergy: Collaborative Research: Collaborative Vehicular Systems
25-F-R	Tuesday	Anil	Pahwa	1136040, 1544705	Anil Pahwa	Architecture for Future Distribution Systems Including Active Consumers with Rooftop Solar Generation
25-B-L	Tuesday	Nikos	Papanikolopoulos	1544887	Ted Morris	A Framework for Evaluating Dynamic Methods of Multimodal Arterial Traffic Control
25-B-R	Tuesday	Frank	Pfenning	1446725	Md Ariful Islam	Bifurcation Analysis of Cardiac Alternans using delta-Decidability
26-F-L	Tuesday	Pierluigi	Pisu	1544910	Pierluigi Pisu	Security of Distributed Cyber-PSecurity of Distributed Cyber-Physical Systemshysical Systems with Connected Vehicle Applications
26-F-R	Tuesday	Radha	Poovendran	1446866	Radha Poovendran	Towards a Science of Attack Composition, Mitigation and Verification in Cyber Physical Systems: A Passivity Based Approach
26-B-L	Tuesday	Pavithra	Prabhakar	1552668	Pavithra Prabhakar	CAREER: Robust Verification of Cyber-Physical Systems

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
26-B-R	Monday	Sean	Qian	1544826, 1544835, 1545043	Sean Qian	Matching Parking Supply to Travel Demand towards Sustainability: a Cyber Physical Social System for Sensing Driven Parking
27-F-L	Tuesday	Hanz	Richter	1544702	Hanz Richter	Cyber-Enabled Exercise Machines
27-F-R	Tuesday	David	Roberts	1329738	David Roberts	Integrated Sensing and Control Algorithms for Computer-Assisted Training
27-B-L	Tuesday	Amit	Roy-Chowdhury	1544969	Srikanth Krishnamurthy	CPS: Synergy: Collaborative Research: Extracting time-critical Situational Awareness from Resource Constrained Networks
27-B-R	Tuesday	Kristin Yvonne	Rozier	1552934	Kristin Yvonne Rozier	CAREER: Theoretical Foundations of the UAS in the NAS Problem (Unmanned Aerial Systems in the National Air Space)
28-F-L	Tuesday	Walid	Saad	1446621	Walid Saad	Towards Secure Networked Cyber-Physical Systems: A Theoretic Framework with Bounded Rationality
28-F-R	Tuesday	Arman	Sabbaghi	1544841	Arman Sabbaghi	Smart Calibration Through Deep Learning for High-Confidence and Interoperable Cyber-Physical Additive Manufacturing Systems
28-B-L	Tuesday	Yasser	Sakr	1651858, 1651566	Yasser Shoukry Sakr	Collaborative Research: SOCIUS: Socially Responsible Smart Cities
28-B-R	Tuesday	Srinivasa	Salapaka	1544635	Srinivasa Salapaka	Resource Allocation For Traffic Modalities: Traveling-Salesman And Related Scheduling Problems
29-F-L	Tuesday	Ricardo	Sanfelice	1544396, 1544395	Ricardo Sanfelice	Synergy: Collaborative Research: Computationally Aware Cyber-Physical Systems
29-F-R	Tuesday	Sriram	Sankaranarayanan	1446900, 1446751	Sriram Sankaranarayanan	Synergy: In-Silico Functional Verification of Artificial Pancreas Control Algorithms
29-B-L	Tuesday	Christoffer	Heckman	1646556	Christoffer Heckman	CPS: Synergy: Verified Control of Cooperative Autonomous Vehicles
29-B-R	Tuesday	Soumik	Sarkar	1464279	Soumik Sarkar	A Knowledge Representation and Information Fusion Framework for Decision Making in Complex Cyber-Physical Systems

POSTER SESSION PARTICIPANTS

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Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
30-F-L	Tuesday	Curt	Schurgers	1344291	Curt Schurgers	Distributed Sensing Collective to Capture 3D Soundscapes
30-F-R	Tuesday	Peter	Seiler	1329390, 1329341	Peter Seiler	CPS: Synergy: Collaborative Research: Managing Uncertainty in the Design of Safety-Critical Aviation Systems
30-B-L	Tuesday	Sanjit	Seshia	1545126	Dorsa Sadigh	Planning for Autonomous Cars that Leverage Effects on Human Actions
30-B-R	Tuesday	Ness	Shroff	1446582, 1446478	Jia Liu	Cognitive Green Building: A Holistic Cyber-Physical Analytic Paradigm for Energy Sustainability
31-F-L	Tuesday	Shangping	Ren	1545008	Shangping Ren	An Executable Distributed Medical Best Practice Guidance System for End-to-End Emergency Care from Rural to Regional Center
31-F-R	Tuesday	Lui	Sha	1545002	Lui Sha	Executable Distributed Medical Best Practice Guidance System from Rural Hospital to Regional Center Hospital
31-B-L	Tuesday	Kang	Shin	1329702	Kang Shin	Thermal Management of Cyber Physical Systems
31-B-R	Tuesday	Kang	Shin	1446117	Kang Shin	CPS: Synergy: Adaptive Management of Large Energy Storage Systems for Vehicle Electrification
32-F-L	Tuesday	Scott	Smolka	1446312, 1446675	Elizabeth Cherry	Parameterizing Cardiac Models for Medical Cyber-physical Systems
32-F-R	Tuesday	Scott	Smolka	1446675, 1446312	Flavio Fenton	Near Real-Time Interactive Simulations of Complex Cardiac Dynamics in Tissue
32-B-L	Tuesday	Scott	Smolka	1446832	Scott Smolka	CPS Frontiers: Compositional, Approximate, and Quantitative Reasoning for Medical CPSs
32-B-R	Monday	Walter	Cleaveland	1446665, 1446365	Rance Cleaveland	Compositionality for Cyber-Physical Systems
33-F-L	Tuesday	Jonathan	Sprinkle	1253334	Jonathan Sprinkle	CAREER: Domain-Specific Modeling Techniques for Cyber-Physical Systems
33-F-R	Tuesday	Siddhartha	Srinivasa	1544797, 1544741	Henny Admoni	Learning Control Sharing Strategies for Assistive Cyber-Physical Systems
33-B-L	Tuesday	John	Stankovic	1646470	John A Stankovic	Smart Wearables with Feedback Control
33-B-R	Tuesday	Katia	Sycara	1329986	Katia Sycara, Meeko Oishi, Michael Lewis	Formal Models of Human Control and Interaction with CPS

POSTER SESSION PARTICIPANTS

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
34-F-L	Tuesday	Janos	Sztipanovits	1521617	Janos Sztipanovits	Open Source Tool Suites
34-F-R	Tuesday	Xiaobo	Tan	1446793	Xiaobo Tan	CPS: Synergy: Tracking Fish Movement with a School of Gliding Robotic Fish
34-B-L	Tuesday	Panagiotis	Tsiotras	1544814, 1545089	Panagiotis Tsiotras	Adaptive Intelligence for Cyber-Physical Automotive Active Safety: System Design and Evaluation
34-B-R	Tuesday	Umesh	Vaidya	1329915	Umesh Vaidya	CPS: Synergy: Collaborative Research: A Unified System Theoretic Framework for Cyber Attack-Resilient Power Grid
35-F-L	Tuesday	Yevgeniy	Vorobeychik	1640624	Yevgeniy Vorobeychik	Integrated Safety Incident forecasting and Analysis
35-F-R	Tuesday	Yan	Wan	1453722	Yan Wan	CAREER: Co-Design of Networking and Decentralized Control to Enable Aerial Networks in an Uncertain Airspace
35-B-L	Monday	Dong	Wang	1566465	Dong Wang	CRII: CPS: Towards Reliable Cyber-Physical Systems using Unreliable Human Sensors
35-B-R	Tuesday	Kamin	Whitehouse	1646501	Kamin Whitehouse	Collaborative Sensing: An Approach for Immediately Scalable Sensing in Buildings
36-F-L	Tuesday	Dan	Work	1446702, 1446715, 1446690, 1446435	Dan Work	CPS: Synergy: Collaborative Research: Control of Vehicular Traffic Flow via Low Density Autonomous Vehicles
36-F-R	Tuesday	Wencen	Wu	1446461, 1446557, 1446484	Wencen Wu, Pu Wang, and Zhi Sun	CPS: Synergy: Collaborative Research: Towards Effective and Efficient Sensing-Motion Co-Design of Swarming Cyber-Physical System
36-B-L	Tuesday	Wei	Yu	1350145	Wei Yu	Career: Towards Secured and Efficient Energy-based Critical Infrastructure
36-B-R	Tuesday	Hitten	Zaveri	1544986, 1544633	Ryan Adams	Fault-Tolerant Brain Implantable Cyber-Physical System
37-F-L	Tuesday	Baosen	Zhang	1634136	Baosen Zhang and Lillian Ratliff	CNS: EAGER: Congestion Mitigation via Better Parking: New Fundamental Models and A Living Lab
37-F-R	Tuesday	Baosen	Zhang	1544160	Baosen Zhang and Ramesh Johari	CPS: Breakthrough: Collaborative Research: The Interweaving of Humans and Physical Systems: A Perspective from Power Systems

POSTER SESSION PARTICIPANTS

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
37-B-L	Tuesday	Wei	Zhang	1552838	Wei Zhang	CAREER: Hierarchical Control for Large-Scale Cyber-Physical Systems
37-B-R	Tuesday	Minghui	Zhu	1505664	Minghui Zhu	Breakthrough: CPS-Security: Towards Provably Correct Distributed Attack-Resilient Control of Unmanned-Vehicle-Operator Networks
38-F-L	Tuesday	Qi	Zhu	1553757	Qi Zhu	CAREER: SOISTICe: Software Synthesis with Timing Contracts for Cyber-Physical Systems
38-F-R	Tuesday	Qi	Zhu	1646641	Qi Zhu	Synergy: Securing the Timing of Cyber-Physical Systems
38-B-L	Monday	Paul	Bogdan	1453860	Paul Bogdan	Modeling and Analysis of Complex Interdependent Networks
39-F-L	Tuesday	Michael	Zink	1350752	Michael Zink	CAREER: Sensing as a Service - Architectures for Closed-Loop Sensor Network Virtualization
39-F-R	Monday	Husheng	Li	1543830	Husheng Li	An Entropy Framework for Communications and Dynamics Interdependency in Cyber Physical Systems: Analysis, Design and Implementation
39-B-L	Tuesday	Tian	He	1446640	Tian He	Improving the Rebalancing operation in Bike Sharing Systems with Data-Driven Cyber-Control
39-B-R	Monday	Qiang	Huang	CMMI-1544917	Qiang Huang	Smart Calibration Through Deep Learning for High-Confidenceand Interoperable Cyber-Physical Additive Manufacturing Systems
Located next to demo	Both days	Juan Pablo	Bello	1544753	Anish Arora	CPS: Frontier: SONYC: A Cyber-Physical System for Monitoring, Analysis and Mitigation of Urban Noise Pollution
Located next to demo	Both days	Ashish	Deshpande	1135949, 1135916	Priyanshu Agarwal, Evan Pezent, and Chad Rose	Design and Development of a Cybernetic Rehabilitative Hand-Wrist Exoskeleton
Located next to demo	Both days	Abhishek	Dubey	1528799	Fangzhou Sun	Public Transportation Decision System with Multi-timescale Analytical Services
Located next to demo	Both days	Rajesh	Gupta	1329766	Zhou Fang and Mulong Luo	ROSELINE: Enabling Robust, Secure and Efficient Knowledge of Time Across the System Stack

POSTER SESSION PARTICIPANTS

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
Located next to demo	Both days	Derek	Hoiem	1446765	Derek Hoeim	Autonomous Vision-based Construction Progress Monitoring and Activity Analysis for Building and Infrastructure Projects
Located next to demo	Both days	Yu Hen	Hu	1329481	Yu Hen Hu	Smart Flexible Camera Sheet: Ultra-Thin Semantic-Guided Cooperative Micro-Camera Array
Located next to demo	Both days	Neil	Johnson	1522693	Neil Johnson	Understanding Sub-Second Instabilities in a Global Cyber-Physical System
Located next to demo	Both days	Gabor	Karsai	1329803	Ajay Kumar Chokra	Diagnostics and Prognostics Using Temporal Causal Models for Cyber Physical Systems – A Case of Smart Electric Grid
Located next to demo	Both days	Xenofon	Koutsoukos	AFRL SURE	Himanshu Neema	SURE: An Experimentation and Evaluation Testbed for Security and Resilience of CPS
Located next to demo	Both days	Xenofon	Koutsoukos	FA8750-14-2-0180	Himanshu Neema	CPSWT-TE: A Reusable and Extensible Web-Based Co-Simulation Platform for Transactive Energy Systems
Located next to demo	Both days	Thomas	Kurfess	1329742	Thomas R. Kurfess	Subtractive 3D Printing with Machine Tools using HPC
Located next to demo	Both days	David	Lary	1541227	David Lary	GASP: Geolocated Allergen Sensing Platform
Located next to demo	Both days	Insup	Lee	1035715	Hyonyoung Choi	CPS: Large: Assuring the Safety, Security and Reliability of Medical Device Cyber Physical Systems
Located next to demo	Both days	Srinivasa	Narasimhan	1446601	Robert Tamburo	Synergy: Anytime Visual Scene Understanding for Heterogeneous and Distributed CPS
Located next to demo	Both days	Umit	Ozguner	1528489	Umit Ozguner	A Unified Solution of Mixed Traffic Sensing, Tracking and Acceptable Active Accident Avoidance for On-Demand Automated Shuttles
Located next to demo	Both days	Jitesh	Panchal	1329979	Siva Chaitanya Chaduvula	CPS: Synergy: Foundations of Cyber-Physical Infrastructure for Creative Design and Making of Cyber-physical Products
Located next to demo	Both days	Andre	Platzer	1446712/ 1054246	Nathan Fulton	Knowledge-Aware Cyber-Physical Systems
Located next to demo	Both days	Umakishore	Ramachandran	1446801	Harshit Gupta	SDO - Software Defined Orchestration for Fog Computing

POSTER SESSION PARTICIPANTS

F= Front|B=Back R=Right|L=Left

Poster Location	Day Presenting	Lead PI First Name	Lead PI Last Name	NSF Project Award Number(s)	Poster Session Presenter	Poster Title
Located next to demo	Both days	Umakishore	Ramachandran	1446801	Zhuangdi Xu	Real-time tracking using camera networks and multi-modal sensing with the Foglets Framework
Located next to demo	Both days	Lalitha	Sankar	1449080	Oliver Koust and Lalitha Sankar	A Verifiable Framework for Cyber- Physical Attacks and Countermeasures in a Resilient Electric Power Grid
Located next to demo	Both days	Siddhartha	Sikdar	1329829	Nima Akhlaghi, Clayton Alex Baker	CPS: Synergy: A Novel Biomechatronic Interface Based on Wearable Dynamic Imaging Sensors
Located next to demo	Both days	Oleg	Sokolsky	1135630	Oleg Sokolsky	Co-Design of Multimodal CPS Architectures and Adaptive Controllers
Located next to demo	Both days	WenZhan	Song	1135814	WenZhan Song	Information and Computation Hierarchy for Smart Grids
Located next to demo	Both days	Mani	Srivastava	1329755	Fatima Anwar, Mani Srivastava, and Anh Luong	ROSELINE: Enabling Robust, Secure and Efficient Knowledge of Time Across the System Stack
Located next to demo	Both days	John	Stankovic	1527563	John A Stankovic	Eager: Detecting and Addressing Adverse Dependencies Across Human-in-the-Loop In-Home Medical Apps
Located next to demo	Both days	Janos	Sztipanovits	1521617	Chris vanBuskirk	CPS-VO 2: Active Resources
Located next to demo	Both days	Adam	Tagert	Related to 1521617	Adam Tagert	NSA 5th Annual Best Scientific Cybersecurity Paper Competition
Located next to demo	Both days	Stavros	Tripakis	1329759	Stavros Tripakis	CPS: Breakthrough: Compositional System Modeling with Interfaces (COSMOI)
Located next to demo	Both days	Yan	Wan	1544863, 1522458	Shengli Fu and Yan Wan	EAGER: Aerial Communication Infrastructure for Smart Emergency Response
Located next to demo	Both days	Saman	Zonouz	1446471	Saman Zonouz	Just-Ahead-of-Time Controller Recovery
Located next to demo	Both days	Manimaran	Govindarsu	1446831	Manimaran Govindarsu	High-Fidelity, Scalable, Open-Access Cyber Security Testbed for Accelerating Smart Grid Innovations and Deployments
Located next to demo	Both days	Walid	Saad	1524634	Walid Saad	Cyber-Physical Fingerprinting for Internet of Things Authentication
Located next to demo	Both days	Nalini	Venkata-subramanian	1450768	Qiuxi Zhu, Nalini Venkatasubramanian	SCALE2: Resilient IoT-Based Safe Community
Located next to demo	Both days	Nalini	Venkata-subramanian	1528995	Qing Han, Nalini Venkatasubramanian	AquaSCALE: Exploring Resilience of Community Water Systems

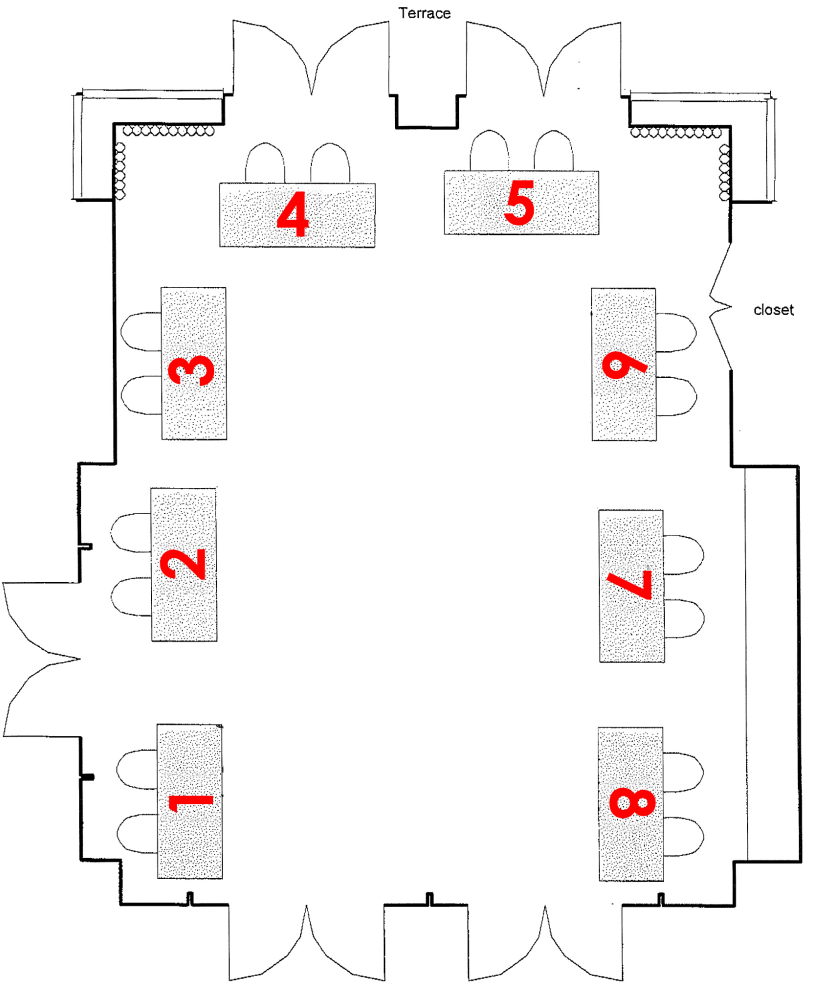
DEMON-STRATION DIAGRAMS

current as of 10/22/16

2016 NSF CPS PI MEETING
DEMONSTRATION SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View, Arlington, VA

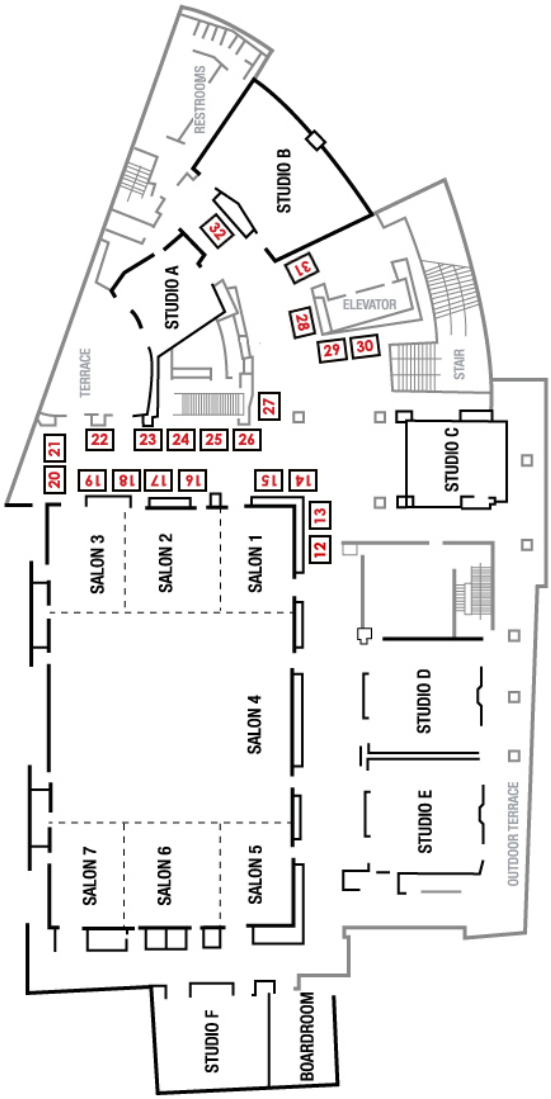
STUDIO C



2016 NSF CPS PI MEETING
DEMONSTRATION SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View, Arlington, VA

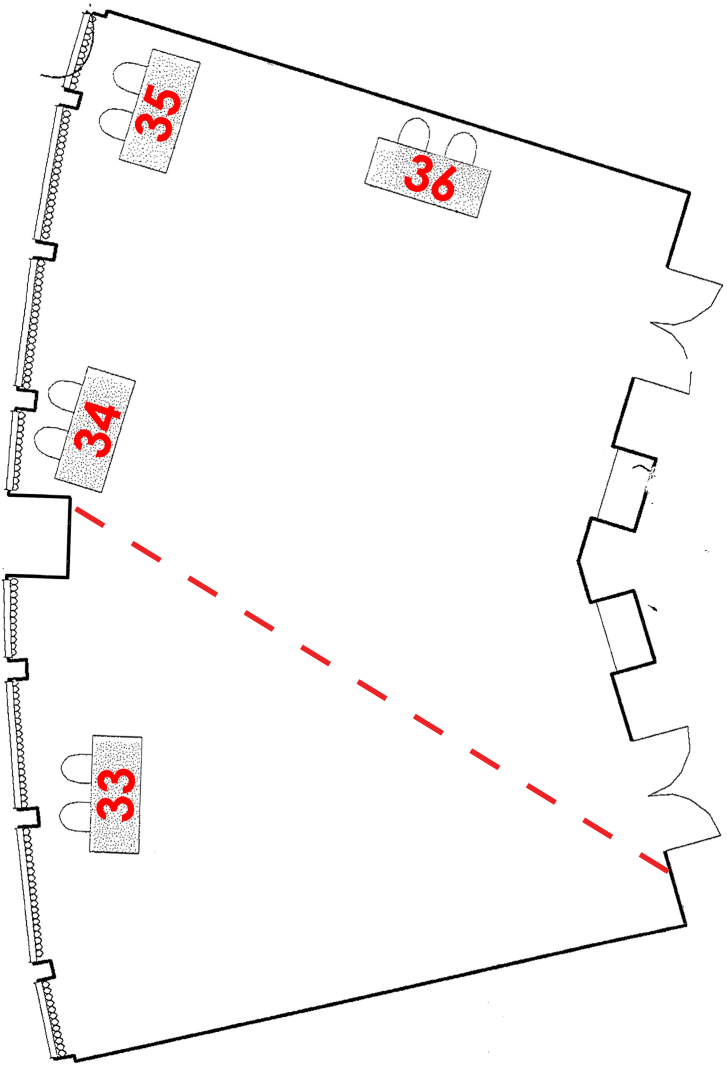
FOYER & HALLWAYS



2016 NSF CPS PI MEETING
DEMONSTRATION SESSION

October 31 - November 1, 2016
Renaissance Arlington Capital View, Arlington, VA

STUDIO B (OCT. 31 ONLY)



DEMON-STRATION PARTICIPANTS

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
1	Priyanshu	Agarwal	Evan Pezent, Chad Rose	1135949/ 1135916	Studio B/Table #36	We will demonstrate the actuation of the index and middle finger and thumb exoskeleton modules of our hand exoskeleton. A subject will don the device and the exoskeleton will actuate the three digits of the subject to show the effectiveness of the device. Additionally, we will demonstrate the actuation of the wrist module.
2	Fatima	Anwar	Sandeep d'Souza	1329755	Foyer and Hallways/ Table #20-21	We demonstrate choreographed applications through a timing abstraction, called a timeline. Timeline abstraction enables factored-coordination. Nodes that require some level of coordination bind to a common timeline and specify the accuracy with which they need to coordinate or choreograph their tasks. Timelines set up the resources and deliver the desired performance to the nodes.
3	Anish	Arora		1544753	Foyer and Hallways/ Table #16	Demo will show a small low power mesh network that discriminates people from non-people in the scene using a radar sensor. The demo is a precursor to the new type of wireless sensor network system which is being used to discriminate several types of sounds using a next generation mote, in the SONYC Frontiers Project. Some principles of data driven machine learning realized efficiently at mote scale will be carried over from this demo to the SONYC effort, the new effort will focus on the systems architecture for supporting much more computation while still being low power.
4	Siva	Chaduvula		1329979	Foyer and Hallways/ Table #25	The demo illustrates a framework for secure co-design using a Manufacturer-Supplier scenario. The scenario is as follows: Manufacturer and supplier do not want to reveal their designs to each other. However, they are interested to perform a mutually agreed analysis on their respective designs and determine their desired outputs.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
5	Hyonyoung	Choi	Insup Lee	1035715	Studio B/Table #35	We will demonstrate MIDAS which is a system that uses Software Defined Networking (SDN) to automatically reconfigure the low-level packet forwarding rules of the network to guarantee application specified timing requirements. MIDAS detects the timing properties specified by publishers & subscribers (e.g., period, maximum end-to-end latency, etc.), performs admission control, and then transparently reconfigures the network. The demo is a network control system that stabilizes a rotary inverted pendulum which consists of the inverted pendulum, an angle sensor with an embedded processor, a motor with an embedded processor, an SDN switch connected to a laptop running MIDAS, a laptop running a feedback control algorithm, and finally a separate "adversary" laptop running software designed to overwhelm the network.
6	Abhishek	Dubey	Martin Lehofer/ Fangzhou Sun	1528799	Foyer and Hallways/ Table #13	This demonstration will show the integration of smart city hubs with the transit hub real-time data analytics.
7	Abhishek	Dubey	Ajay Chokra, Gabor Karsai	1329803	Studio C/Table #5	We will demonstrate the efficient cascade prognostics and an optimal mitigation strategy for transmission systems.
8	Zhou	Fang	Mulong Luo	1329766	Foyer and Hallways/ Table #17	We will demonstrate a real-time offloading framework for embedded systems. The system leverages on execution/network latency estimation to predict multi-client influence, and adopts clock synchronization to coordinate all clients to reduce interference. Our demonstrates will set up a small testbed using 4 Rraspberry Pi boards and 1 server.
9	Shengli	Fu	Yan Wan	1522458	Foyer and Hallways/ Table #32	In this demonstration, we will show the long-range broadband aerial networks with directional antennae. While the directional antennae could increase the transmission range, it requires heading synchronization to maintain the connectivity. We will demonstrate the autonomous heading control through the received signal strength.
10	Nathan	Fulton		1446712/ 1054246	Studio B/Table #34	KeYmaera X is a theorem prover designed for reasoning about safety-critical properties of Cyber-Physical Systems. This demo will introduce the KeYmaera X prover by demonstrating how the tool can used to establish safety properties for interactions between software and the physical world that arise in modern Cyber-Physical Systems.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
11	Manimaran	Govindarasu		1446831	Foyer and Hallways/ Table #15	As part of this demonstration, we would showcase our remote access testbed framework that is designed based on several realistic storyboard scenarios for performing cyber attack-defense experimentation on power grid monitoring, protection and control applications. The demo will walk the audience through a few sample storyboard scenarios (Protection scheme, AGC, Ukraine attack-based) and showcase the various capabilities of the testbed framework.
12	Derek	Hoiem		1446765	Foyer and Hallways/ Table #23	I will demonstrate our Visual Production Management system.
13	Yu Hen	Hu		1329481	Foyer and Hallways/ Table #28	We will show a camera array emulator using off the shelf cameras to provide enlarged field of view using images captured in individual component cameras. We will bring some prototype components of the camera sheet (without lens installed) to show case progress of hardware development. We will also use poster to explain our hardware (mem-based camera array) development and algorithm.
14	Neil	Johnson		1522693	Foyer and Hallways/ Table #11	A computer visualization and accompanying explanatory model of the system-wide sub-second instabilities that arise spontaneously in the largest and fastest CPS system on the planet -- the distributed network of interconnected financial exchange networks whose operating speed is only bounded by the finite speed of light in the physical infrastructure. These sub-second instabilities lie beyond any human response time, making the regulatory and management issues in this system highly relevant to safety, regulation and design of a wide range range of other CPS systems including networks of driverless cars and commercial drones.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
15	Oliver	Kosut	Lalitha Sankar	1449080	Foyer and Hallways/ Table #12	We demonstrate the response of our high fidelity scalable simulation platform of an Energy Management System (EMS) of the electric power grid to a data integrity cyber-attack. We focus on the state estimator and bad data detection modules of the EMS to first show that our scalable implementation correctly recovers the state of a 300-bus test system known as Cascadia, and that the bad data detector correctly flags faulty data. We subsequently show that a sophisticated data integrity cyber-attack can circumvent the bad data detector and thereby result in misinformation provided to the operator.
16	Thomas	Kurfess	Richard Vuduc	1329742	Foyer and Hallways/ Table #29	The demonstration will show the use of high performance computing in machine tool trajectory generation. Several parts will be shown being machine on 5-axis systems. The parts will also be available for inspection.
17	Arda	Kurt	Michael Vernier	1528489	Foyer and Hallways/ Table #30	The team is planning to bring an automated electric wheelchair to the demo area. This will not be a mobile demo. The wheelchair will be parked in front of the table that is assigned, and it will stay there for the duration of the event. The team will also bring a flat-panel TV (size: ~40 inches) on a floor stand. This will be placed behind the table with the feet of the stand under the table to minimize the footprint. A laptop computer will be used to loop videos on this display. The team is also planning to have printed material (handouts) on the table. Some members of the research team will drive to RACV, so none of this equipment will be shipped.
18	David	Lary		1541227	Foyer and Hallways/ Table #14	This project is developing and field testing the first integrated IoT in-situ sensor package tracking pollution and pollen to provide airborne particulate mapping for Chattanooga. Longer term it is hoped that the data collection approach and initial visualization tools developed in Chattanooga can be used to support a nationwide, open access dissemination platform on the order of Google's StreetView, but called PollutionView.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
19	Anh	Luong		1329755	Foyer and Hallways/ Table #20-21	We will demonstrate the Chonos platform, a "playground" for time synchronization research. We will demonstrate how it can use a transceiver (TI CC1200) to perform wireless clock frequency synchronization across the embedded system. We will demonstrate its integration with a UWB-IR radio (Decawave 1000). The demo requires two of our Chronos boards, and an oscilloscope.
20	Rahul	Mangharam	Madhur Behl	No specific one	Studio B/Table #33	We would like to demonstrate the F1/10 Autonomous Racing Course and Competition. We did an earlier tutorial at CPSweek in Vienna, are hosting the 1st International F1/10 Competition on Oct 2 at ESweek. See more details at http://f1tenth.org
21	Himanshu	Neema		1420180	Studio C/Table #3	Abstract: Rapid evolution of energy generation technology and increasing usage of distributed energy resources (DER) is pushing utilities to adapt and evolve business models that are aligned with these changes. Energy pricing is becoming rather competitive and transactional, needing utilities to increase flexibility of grid operations and incorporate transactive energy systems (TES). However, a huge bottleneck is to ensure stable grid operations while gaining efficiency. A comprehensive platform is therefore needed for grid-scale multi-aspect integrated evaluations. For instance, cyber-attacks in a road traffic controllerâ€™s communication network can subtly divert electric vehicles in a particular area, causing surge in the grid loads due to increased EV charging and people activity, which can potentially disrupt, an otherwise robust, grid. To evaluate such a scenario, multiple special-purpose simulators (e.g., SUMO, OMNeT++, GridlabD, etc.) must be run in an integrated manner. To support this, we are developing a cloud-deployed web- and model-based simulation integration platform that enables integrated evaluations of transactive energy systems and is highly extensible and customizable for utility-specific custom simulation tools.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
22	Umakishore	Ramachandran	Enrique Saurez; Harshit Gupta; Zhuangdi (Andy) Xu	1446801	Foyer and Hallways/ Table #18-19	This demo showcases a system where video playback follows a user, allowing him to watch it as he moves. This is an interactive demo in which each person participating will be provided with a Bluetooth beacon. Multiple screens will be distributed in the conference area. The user would be able to select a topic of his/her interest when he registers for the demo. As the user wanders the conference floor, the screen closest to him/her will display a video related to the selected topic. If the user moves closer to a different screen, the video will start playing the same video from the position that was last seen in the previous screen. The switch-over from one screen to another is deliberately delayed a little to avoid excessive jitter (hysteresis).
23	Anthony	Rowe	Adwait Dongare	1329644	Foyer and Hallways/ Table #22	We will demonstrate a new platform that is able to perform wireless propagation-aware clock synchronization with better than 5 nanosecond accuracy.
24	Walid	Saad	Yaman Sharaf-Dabbagh (Graduate Student)	1524634	Studio C/ Table #1	We will show our Raspberry Pi-based IoT STEM education module that we developed with IoT-DC for the GCTC component of the project. The module allows students to easily build plug-and-play educational IoT experiments. We will also demonstrate a basic proof of concept on the IoT authentication research using a simple setting involving Raspberry Pis. We will show how one can authenticate IoT objects by estimating the physical environment surrounding them thus differentiating between malicious attackers and normal environmental changes.
25	Siddhartha	Sikdar	Nima Akhlaghi, Clayton Alex Baker	1329829	Foyer and Hallways/ Table #26	We will demonstrate real-time control of a virtual prosthetic hand using our novel ultrasound image analysis approach. An able-bodied subject will be instrumented with a portable ultrasound system to perform the real-time demonstration. We will demonstrate the ability to perform multiple dexterous control tasks, exceeding the capability of conventional myoelectric control systems.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
26	Oleg	Sokolsky		1135630	Foyer and Hallways/ Table #9	We study the concept of on-demand deployment of safety features in automotive systems. The demo presents an approach to check the feasibility of deploying an additional feature on a shared platform, to guarantee feasibility and resource availability of the deployment.
27	WenZhan	Song		1135814	Foyer and Hallways/ Table #31	Demonstrate the SmartGridLab emulator software functionality. SmartGridLab is a hybrid software-hardware micro grid testbed (http://sensorweb.engr.uga.edu/index.php/smartgrid/)
28	Mani	Srivastava	Fatima Muhammad	1329755	Foyer and Hallways/ Table #20-21	We would demonstrate Timeline, an operating system abstraction for time-aware applications developed in the Roseline project and implemented under Linux OS. Timelines realized a virtual temporal coordinate frame that is defined by an application to provide its distributed components with a shared sense of time, with a desired accuracy and resolution. It enables developers to easily write applications whose activities are choreographed across time and space.
29	John	Stankovic	Meiyi Ma and Sara Preum	1527563	Studio C/Table #6	We will demonstrate conflict detection for systems of systems for smart cities and wireless and mobile health apps. This is a 2 part demo and illustrates the need for and value of our solution.
30	Chris	vanBuskirk		1521617	Studio C/Table #4	The central objective of the Active Resources project is to transform the CPS-VO web portal from a collaboration platform and passive repository of information into an active resource that provides access to tools and methods emerging from the CPS research community. As a first step towards providing templates and infrastructure for the dissemination of open-source model libraries and a tool integration platform, we conducted a pilot CPS Design Challenge for undergraduate students from four universities, which was sponsored by Microsoft Research. Our demonstration will showcase that design challenge activity and some of the simulation tools used by students to co-design mechanical, electronic, and software controls in a cyber-physical systems design challenge, where the objective was to build and demonstrate autonomous deployment and recovery mechanisms for innovative biological sensors in nature.

DEMONSTRATION PARTICIPANTS

#	First Name	Last Name	Co-Presenter Name(s)	Project Award Number	Location and Table #	Demonstration Abstract (2-3 Sentences)
31	Robert	Tamburo	Marie Nguyen	1446601	Foyer and Hallways/ Table #10	We will present a preliminary prototype of a heterogenous computing architecture (FPGA and CPU) that can see and understand the visual world around us. A camera captures live imagery while parameters of the system can be changed or the system can be reconfigured to perform other tasks with no noticeable delay. We will have a live demonstration where people can interact with our system via a touch screen interface.
32	Stavros	Tripakis		1329759	Foyer and Hallways/ Table #27	We will demonstrate the Refinement Calculus for Reactive Systems framework (RCRS). Currently, the RCRS tool-chain includes a tool which translates Simulink block diagrams into compositional theories for the Isabelle theorem prover. The RCRS tool-chain also includes tools built within Isabelle which allow to: (1) check the diagram for block incompatibilities; (2) automatically synthesize system specifications in a bottom-up fashion; and (3) perform general verification tasks.
33	Nalini	Venkata-subramanian	Qiuxi Zhu, Nalini Venkatasubramanian	1450768	Studio C/Table #7	SCALE2: Resilient IoT-Based Safe Community
34	Nalini	Venkata-subramanian	Qing Han, Nalini Venkatasubramanian	1528995	Studio C/Table #8	AquaSCALE: Exploring Resilience of Community Water Systems
35	Peter	Volgyesi	Himanshu Neema	AFRL SURE	Studio C/Table #2	In this video demonstration, we present SURE, a CPS experimentation and evaluation testbed for security and resilience focusing on transportation networks. The testbed includes (1) a heterogeneous modeling and simulation integration platform, (2) a Web-based tool for modeling CPS in adversarial environments, and (3) a framework for evaluating resilience using attacker-defender games.
36	Saman	Zonouz		1446471	Foyer and Hallways/ Table #24	We will demonstrate our recent ICS security solutions.

AREA DINING DIRECTORY

Getting to Crystal City

Crystal City is located in Arlington, Virginia, just off Jefferson Davis Highway, along Crystal Drive between 12th and 23rd Streets, five minutes from downtown Washington, DC, Old Town and Reagan National Airport.

Take Metro's yellow or blue line to the Crystal City stop.

Hours

CRYSTAL CITY SHOPS AT 1750
Weekdays 10am – 7pm Saturday 10am – 6pm

CRYSTAL CITY SHOPS AT 2100
Monday – Saturday 10am – 6pm

All restaurants open longer.

Parking

Retail parking is free on weekends and after 4:00 PM weekdays.

For detailed driving directions or store hours visit us online at www.thecrystalcityshops.com

For information call (703) 922-INFO (4636).

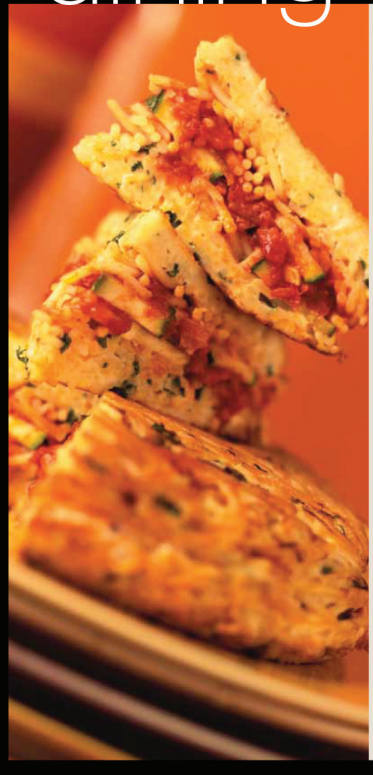
www.thecrystalcityshops.com

VORNADO
CHARLES E. SMITH

directory

CRYSTAL CITY SHOPS

dining



Bailey's Pub & Grille 703.416.0452
A hardy menu, spectator bar and a bevy of big screens make this sports central.

Hamburger Hamlet 703.413.0422
Simply great food with a broad menu of American favorites and a lively bar.

Jaleo Crystal City 703.413.8181
A sampling of Spanish specialties by culinary legend José Andrés.

King Street Blues 703.415.2583
Old- fashioned comfort food, ribs, bar-b-que and a bar that's hopping.

Kora Restaurant | Bar | Lounge 571.431.7090
A new modern Italian concept from the team who brought you Farrah Olivia by Morou. Highly noted for the 3-course power lunch.

McCormick & Schmick's 703.413.6400
A Washington classic, serious seafood, with standards and service second to none.

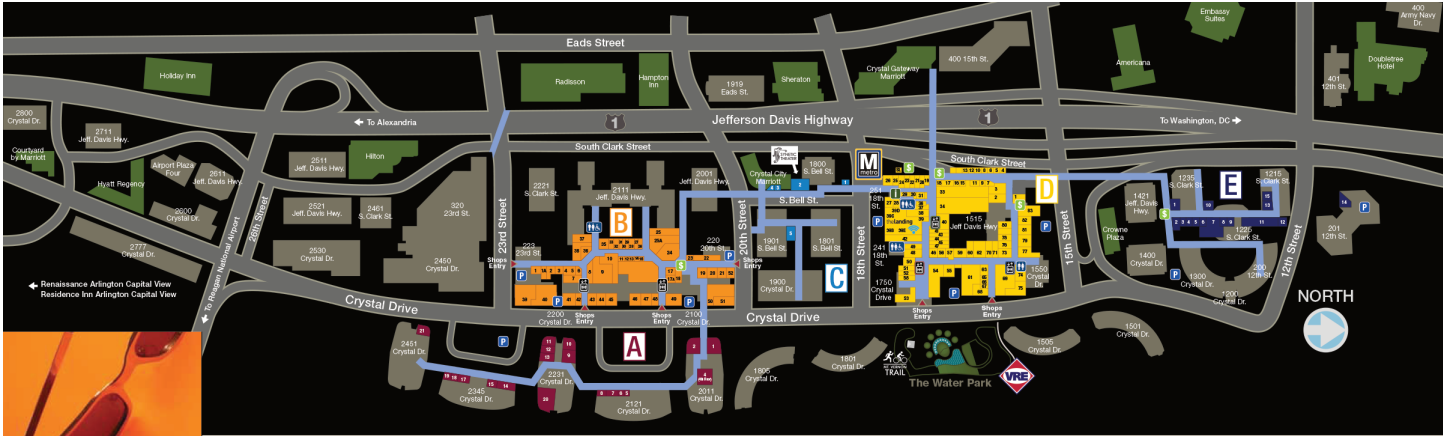
Morton's The Steakhouse 703.418.1444
Aged beef, Maine lobster, fish, veal or chicken in a rich, club-like setting.

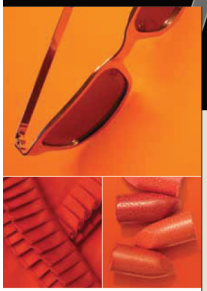
Neramitra Thai 703.413.8886
A contemporary take on traditional Thai, sophisticated and trendy.

Ruth's Chris Steak House 703.979.7275
Sophisticated New Orleans steakhouse with unbeatable food and beautiful city views.

San Antonio Bar & Grill 703.415.0126
Sizzling dishes from South of the Border and a can't miss margarita.

Ted's Montana Grill 703.416.8337
Ted Turner brings his Craftsman style restaurant of time-honored American fare to Washington.





legend

- A Shops at Crystal Park
- B Shops at 2100 Crystal Drive
- C Shops at the Mall
- D Shops at 1750 Crystal Drive
- E Shops at the Gateway
- Hotel Accommodations
- Interior Pedestrian Concourse
- Entrance/Exit
- Restroom
- Accessible Restroom
- ATM
- Elevators
- Free WiFi Hot Spot
- Information
- Parking

RESTAURANTS

B-50	Bailey's Pub & Grille	416-0452
D-09	Hamburger Hamlet	413-0422
B-39	Jaleo Crystal City	413-8181
D-50	King Street Blues	415-BLUE
B-40	Kora Restaurant Bar | Lounge	571-431-7090
B-51	McCormick & Schmick's	413-6400
D-54	Morton's The Steakhouse	418-1444
B-45	Neramitra Thai	413-8886
A-20	Ruth's Chris Steak House	979-7275
D-42	San Antonio Bar & Grill	415-0126
B-41	Ted's Montana Grill	416-8337

FOOD SPECIALTY

D-18	Auntie Anne's Pretzels	413-6408
B-24	Au Bon Pain	418-0715
D-51	Café Jenna	415-0061
A-15	Café Manna	418-0341
B-44	Chick-fil-A	415-7815
A-10	Chipotle Mexican Grill	920-8779
B-42	Cold Stone Creamery	418-2223
B-43	Corner Bakery Café	412-0131
A-2	Cosi	521-1904
B-26	Deli Works	415-1515
E-4	Dickey's Frozen Custard	416-2700
D-25	Dunkin' Donuts	412-8912
A-9	Fro.Zen.Yo	571-431-6103
B-46	Good Stuff Eatery	416-4663
E-10	Green Leaf Café	414-3788
D-23	Larry's Ice Cream & Cookies	418-2100
D-31	Lily Bubble Tea & Smoothie	Summer 2013
D-34	Market Basket & Grocery	412-3770
A-1	Noodles & Company	979-1525
A-18	The Perfect Pita	412-9440
D-22	The Perfect Pita	418-6656
D-38	Philadelphia Mike's	416-6640
B-9	Plaza Gourmet	414-3661
D-63	Potbelly Sandwich Works	415-0003
E-13	Quiznos	415-0900
D-27	Sbarro Italian Buffet	413-8244
B-8	Slice N Dice	418-4444
E-11	Soho Café & Market	415-1301
A-11	Starbucks Coffee	413-6226
D-46	Starbucks Coffee	418-0226
B-33	Subway	413-2233
D-39E	Subway	571-257-7878
D-30	Sushi Garden	413-5477

JEWELRY & ACCESSORIES

D-5	Gina's Fine Jewelry & Gifts	412-1198
D-10	Han Time Center	412-1142
B-15	L.A. Jewels	415-4444
D-41	Réal Jewelers	413-7117
B-7	Time Zone	413-0990
D-56	Woman In Motion	

FASHION

Men's Wear

D-44	D.C. Men's Wear	413-3434
B-17	Executive Menswear	413-8888

Women's Wear

B-35	Crystal Boutique	415-1400
D-57	Coqui Boutique	413-5441
D-55	Daniel's Boutique	412-1121
D-61	Dressbarn, Dressbarn Woman	412-6086
D-36	Garden Fantasy	413-5008
B-28	L.A. Moves	415-0500
D-59	Possessions	416-7839

Shoes

D-62	Shoes By Lara	416-4162

ELECTRONICS & PHOTOGRAPHY

D-13	Cellular & Personal Safety	415-0169
D-43	Metro Camera	412-2808
D-47	Radio Shack	413-0529

HEALTH & BEAUTY

D-21	Avon Beauty Center	418-1952
D-78	Beauty Encounters	413-4247
E-7	Crystal Gateway Sport & Health	416-4900
A-14	Crystal Park Sport & Health	486-3380
C-4	Dante's Barber	413-7994
D-37	General Nutrition Center	413-3223
D-45	Hair Cuttery	413-9289
C-3	Image Hairstylist	413-5550
D-71	La-Or Nail & Skin Care	413-0913
D-39B	Mind Your Body Oasis Wellness Center	567-1290
B-36	Nahid Spa & Salon	416-7721
E-6	Ono Salon	415-4740
B-32	Over the Rainbow Nail & Skin	415-0388
D-8	Perfect Eyebrows	571-216-1524
D-49	Perfume Paradise	412-5022
D-11	Relaxation Station	412-0698

HOTELS

	Americana	979-3772
	Courtyard By Marriott	549-3434
	Crowne Plaza	416-1600
	Crystal Gateway Marriott	920-3230
	Crystal City Marriott	413-5500
	Doubletree Hotel	416-4100
	Embassy Suites	979-9799
	Hampton Inn	418-8181
	Hilton	418-6800
	Holiday Inn	684-7200
	Hyatt Regency	418-1234
	Radisson Hotel	920-8600
	Renaissance Arlington Capital View	413-1300
	Residence Inn Arlington Capital View	415-1300
	Residence Inn By Marriott	413-6630
	Ritz Carlton	415-5000
	Sheraton	486-1111

GIFTS & SPECIALTY

D-70	A Touch of Art Framing	413-3427
B-17A	Art Works	412-3754
B-17	As Seen on TV	313-6753
D-29	Carroll Richard Silver & Gifts	412-6070
B-6	Crystal Framing Gallery	415-1112
B-25A	Gallery Underground	571-483-0652
D-3	Dollar Plus	415-0026
D-17	The Engraving Shop	412-4914
A-12	Flowers With Love	979-4000
D-7	Golden Horn Gifts	415-0777
D-40	LuLu's Hallmark	413-2280
B-27	Off the Wall Cards and Gifts	415-0342
D-60	Puppet Heaven	414-7885
D-24	Schakolad Chocolate Factory	504-2200
D-20	Ship's Hatch	413-6289
B-22	Studios Underground BLUE	
B-30	Studios Underground CYAN	
B-37	Studios Underground RED	

NEWS & VARIETY

D-26	Crystal City News	413-6699
C-5	Crystal Mall Convenience	418-0967
A-8	Crystal Park Sundries	271-2710
E-1	Gateway Sundries	412-1500
E-14	Kim's Lobby Shop	416-1111
B-23	Plaza News	415-0637
D-33	Rite Aid	413-5430

MEDICAL SERVICES

C-1	Alfred J. Galiani, OD	413-1400
B-19	Axis Rehab & Chiropractic	416-0460
D-67	Crystal City Dental Arts Center	571-267-1400
D-48	Crystal Eye Care	413-9001
D-81	Dawne Carroll, MD - Family Practice & Weight Management	418-1870
B-20	Flavio W. Nasr, DDS	415-0555
D-79	Harvey Oaklander, Ph.D	323-8558
D-77	Holistic Point at Crystal City	413-0688
D-48	Jeff Chuh, OD	413-9001
C-1	Northern Virginia Doctors of Optometry	413-1400
D-80	Richard D. Grantz, DDS	412-1122
D-39C	Professional Sports Care & Rehab	Summer 2013
C-1	Theodora Vroustouris, OD	413-1400
A-13	William A. Goff, DDS	892-0883

BANKS

B-18	BB&T	415-0312
B-49	Capital One	418-3805
D-1	Navy Federal Credit Union	ATM
D-SL	Wells Fargo (on street level)	413-0944

SERVICES

A-21	Bright Horizons	416-0767
B-11	Buchanan Shoe Repair	418-3626
D-65	The Commuter Store	413-4287
D-9	Crystal Alterations & Formal Wear	413-2217
B-38	Crystal Cleaners	418-0080
B-1	Crystal Custom Tailor	418-1144
E-5	Crystal Gateway Cleaners	416-0469
D-75	FED-EX Office	413-8011
B-4	Minuteman Press	418-1700
A-19	Park Crystal Valet	414-3333
A-4	Power Space	682-6800
D-2	Shopping Center Mgt. Office	413-4380
E-15	Sparkles Child Care	571-312-1052
D-82	Crystal Square Valet	989-8338
D-66	Underground Cleaners	413-6015
D-19	Underground Shine	413-4111
B-3	University of Oklahoma	418-4800
D-53	U.S. Postal Service	416-0471
D-15	Village Cobbler	412-9881

THEATER

C-2	Synetic Theater	800-494-8497

SECURITY/LOST & FOUND/PARKING

D-74	Crystal City Security	413-0150
B-20	Crystal City Parking Office	414-5671

All numbers require a (703) area code unless otherwise noted.

CUSTOMER SEATING/WI-FI

D-39	The Landing	

LOCAL ATTRACTIONS

LOCAL ATTRACTIONS

THE PHILLIPS COLLECTION
1600 21st St NW, Washington, DC 20009
(202) 387-2151
Admission: $12.00 adults; $10.00 students
Hours: Tuesday -Saturday 10 AM- 5 PM; Thursday 10 AM-8:30 PM
Metro Stop: Dupont Circle Station - Q Street exit

INTERNATIONAL SPY MUSEUM
800 F St NW, Washington, DC 20004
(202) 393-7798
Admission: $20.95
Hours: Sunday-Saturday 10 AM-7 PM
Metro Stop: Gallery Place/Chinatown Metrorail Station

SMITHSONIAN NATIONAL ZOOLOGICAL PARK
3001 Connecticut Ave NW, Washington, DC 20008
(202) 633-4888
Admission: Free
Hours: Sunday-Saturday 10 AM-4:30 PM
Metro Stop: Woodley Park-Zoo/Adams Morgan or Cleveland Park

JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS
2700 F St NW, Washington, DC 20566
(202) 416-8000
Admission: Walk-in tours are free
Hours: Monday-Friday 10 AM-5 PM; Saturday & Sunday 10 AM -5 PM
Metro Stop: The Foggy Bottom/George Washington University Station

NATIONAL GALLERY OF ART
6th and Constitution Ave NW, Washington, DC 20565
(202) 737-4215
Admission: Free
Hours: Monday-Saturday 10 AM. - 5 PM.; Sunday: 11 AM - 6 PM
Metro Stop: Judiciary Square on the Red Line; Archives-Penn Quarter-Navy Memorial on the Yellow/Green Lines; and Smithsonian on the Blue/Orange Lines

SMITHSONIAN NATIONAL MUSEUM OF AMERICAN HISTORY
14th St and Constitution Ave, NW, Washington, DC 20001
(202) 633-1000
Admission: Free
Hours: Sunday-Saturday 10:00 AM - 5:30 PM
Metro Stop: The Federal Triangle and Smithsonian Stations

LINCOLN MEMORIAL
2 Lincoln Memorial Cir NW, Washington, DC 20037
(202) 426-6841
Admission: Free
Hours: Sunday-Saturday 24 Hours
Metro Stop: Foggy Bottom

LOCAL ATTRACTIONS

WORLD WAR II MEMORIAL
17th St SW, Washington, DC 20006
(202) 426-6841
Admission: Free
Hours: Sunday-Saturday 24 Hours
Metro Stop: Smithsonian Station

THOMAS JEFFERSON MEMORIAL
900 Ohio Dr. SW, Washington, DC 20242
(202) 426-6841
Hours: Sunday-Saturday 24 Hours
Metro Stop: Smithsonian Station

FRANKLIN DELANO ROOSEVELT MEMORIAL
1850 West Basin Dr. SW, Washington, DC 20242
(202) 426-6841
Admission: Free
Hours: Sunday-Saturday 24 Hours
Metro Stop: Smithsonian Station

KOREAN WAR VETERANS MEMORIAL
900 Ohio Dr. SW, Washington, DC 20024
(202) 426-6841
Admission: Free
Hours: Sunday-Saturday 24 Hours
Metro Stop: Foggy Bottom Station

NATIONAL AIR AND SPACE MUSEUM
600 Independence Avenue SW,
Washington DC 20560
(202) 633-2214
Admission: Free
Hours: Sunday-Saturday 10 AM-5:30 PM
Metro Stop: L'Enfant Plaza

LIBRARY OF CONGRESS
101 Independence Avenue SW,
Washington DC 20540
Admission: Free
Hours: Monday-Saturday 8:30 AM-4:30 PM; Sunday, Closed
Metro Stop: Capitol South

TRAVEL DIRECTIONS

TRAVEL DIRECTIONS

FROM DULLES AIRPORT:

Dulles International Airport
Head west on Saarinen Cicle and keep left to stay on Saarinen Circle
0.5 mi
Continue onto Dulles Access Road and keep left to stay on Dulles Access Rd.
14.2 mi
Merge onto VA-267 E
2.3 mi
Merge onto I-66 E
7.4 mi
Take exit 75 for VA-110 S toward I-395/US-1/ Pentagon City/Crystal City/Reagan National Airport/Alexandria
0.2 mi
Continue onto VA-110S
2.1 mi
Continue straight onto Jefferson Davis Highway
1.2 mi
Turn left on 27th Street South
446 ft.
Continue straight onto South Potomac Avenue
Destination will be on the right in 328 ft.

FROM REAGAN NATIONAL AIRPORT:

Head southeast on Aviation Circle
0.9 mi / 3 min
Turn right toward Airport Access Road and Continue to 27th Street South
0.8 mi/ 2 min
Continue on 27th Street South to South Potomac Avenue
0.1 mi /2 min

FROM BWI:

BWI-Thurgood Marshall Airport
Head southeast on Friendship Rd and continue straight onto Friendship Rd.
1.0 mi
Take MD-295 S and State Hwy 295 to N U.S. 1 S in Arlington. Take exit 8C from 1-395 S
35.4 mi
Continue on N US 1 S.
1.0 mi
Turn left onto 27th Street South
446 ft.
Continue straight onto South Potomac Avenue
Destination will be on the right
328 ft.

RENAISSANCE ARLINGTON CAPITAL VIEW HOTEL

2800 South Potomac Avenue
Arlington, VA 22202

NOTES