

IEEE 2017 International Symposium on Technology & Society (ISTAS 2017)
From Good Ideas to Practical Solutions
10 - 11 August 2017, The Sydney Boulevard Hotel, Sydney, NSW, Australia

Draft Programme as at 26 July 2017, Subject to change

Thursday 10 August 2017

09:00	Welcome Paul Cunningham, SSIT President (2017 - 2018)
09:15	<i>Humans, Machines, and Work: The Future is Now</i> Moshe Vardi, George Distinguished Service Professor in Computational Engineering and Director of the Ken Kennedy Institute for Information Technology, Rice University, United States
09:45	<i>Bringing Technology Benefits to All: Opportunities and Challenges Panel</i> <i>Panelists include:</i> Dr. Kathleen A. Kramer, Professor of Electrical Engineering, University of San Diego, United States; and 2016-17 Director of IEEE Region 6 (Western USA) Prof. San Murugesan, Director, BRITE Professional Services; Editor-in-Chief, IEEE IT Professional; Adjunct Professor, Western Sydney University (<i>Moderator</i>)
10:30	Coffee Break & Networking
11:00	Build Environment <i>Chair: Lyria Bennett-Moses, University of New South Wales, Australia</i> <i>From Good Idea to Practical Reality – Citizens’ role in making of a Smart City in a Developing Economy</i> Mani GS, IEEE Pune Section, India <i>Smart CITY Patterns: Creating Environmental Stylesheets to Template ‘inclusivity’ on Cardiff Bay Barrage</i> Fiona Carroll, University of South Wales, United Kingdom <i>Lesson from Mobile Broadband for IoT Adoption</i> Sobee Shinohara, KDDI Research, Japan <i>Urban Flood Modelling Using Geo-social Intelligence: What Can we Deduce About the Relationship between Tweets and Floods?</i> Katina Michael, University of Wollongong, Australia <i>A Theory of Exposure: Measuring Technology System End User Vulnerabilities</i> Lindsay Robertson, University of Wollongong, Australia
12:45	Lunch & Networking
13:45	Trust

	<p>Chair: Katina Michael, University of Wollongong, Australia</p> <p><i>Dangerous Algorithms</i> Lyria Bennett-Moses, University of New South Wales, Australia</p> <p><i>The Issue of User Trust in Decentralized Applications Running on Blockchain Platforms</i> Vanessa Bracamonte, NII, Japan</p> <p><i>Designing and Evaluating Two Interventions to Improve Identity Theft Recovery Outcomes</i> Sigi Goode, Australian National University, Australia</p> <p><i>Human Behaviour in Online Social Networks</i> Joshua Gillen, University of Wollongong, Australia</p> <p><i>A Model of Socio-technical Systems Enhancing Creativity</i> Wornchanok Chaiyasoonthorn, King Mongkut's Institute of Technology Ladkrabang, Thailand</p> <p><i>The Big Data Analytics for National Security: the Epistemological Challenge</i> Lucy Resnyansky, Defence Science and Technology Group, Australia</p>
15:45	Coffee Break & Networking
16:15	<p>Healthy Living & Accessibility</p> <p>Chair: Paul Cunningham, IIMC, Ireland</p> <p><i>Collaboration and co-location: Making Sense of Digital Design for Early Childhood Games</i> Holly Tootell, University of Wollongong, Australia</p> <p><i>Using Information Management systems and processes to support Shared Care for Colorectal Cancer Survivors</i> John Lewis, UNSW, Australia</p> <p><i>Low-cost Smart Automated Electric Wheelchair with Destination Mapping</i> Shaikh Anowarul Fattah, Bangladesh University of Engineering & Technology, Bangladesh</p> <p><i>Smart-Hat: Safe and Smooth Walking Assistant for Elderly People</i> Celia Shahnaz, Bangladesh University of Engineering & Technology, Bangladesh</p> <p><i>Accessibility Design for Enterprise Touchscreen Printers</i> Cecille Mata Pantonial, Lexmark R&D Corp, Philippines</p>

ISTAS 2017 Draft Programme, 26 July 2017

The Sydney Boulevard Hotel, 90 William Street, Sydney

Please check website for most up to date program: <http://ieeessit.org/istas2017/>

17:45	<i>Science Diplomacy: A Path for Scientists and Engineers to Make Global Societal Impact</i> Fahmida N. Chowdhury, National Science Foundation, United States
18:15	Close of Day One
19:00 for 19:15	Networking Dinner, Chinatown, Sydney

Friday 11 August 2017

09:00	<i>Robots that Need to Mislead: Biologically-inspired Machine Deception</i> Ron Arkin, Regents' Professor, College of Computing and Director of the Mobile Robot Laboratory, Georgia Tech, United States
09:30	<i>Autonomous Weapons: Impacts beyond Combat and Conscience beyond Poker</i> Philip Chmielewski, Loyola Marymount University, United States
10:00	<i>Technology, Humans, and Enclosure</i> Greg Adamson, University of Melbourne, Australia
10:30	Coffee Break & Networking
11:00	Ethics & Policy Chair: Greg Adamson, University of Melbourne, Australia <i>Human-Robotics/AI Interaction (HR(A)I)</i> Morgan Broman & Pamela Finckenberg-Broman, Griffith University, Australia <i>Balancing the Benefits and Concerns of Location-based services (LBS) Usage from the Perspective of Industry Stakeholders</i> Roba Abbas, University of Wollongong, Australia <i>Redesigning the Circuit Layouts Act 1989 (Cth) in anticipation of maker or remix culture and 3d printing of circuit boards</i> Thomas Green, University of Wollongong, Australia <i>Not OkCupid: An Ethical Analysis of Chris McKinlay's Hacking of OkCupid</i> Rebecca Krieger, UCAL, United States <i>Data: Friend or Foe</i> Anthony Nolan, G3N1U5, Australia
12:45	Lunch & Networking
13:45	Closing Panel – Trust and Social Implications of Technology Chair: Paul Cunningham, IIMC, Ireland Panelists include: Susan M. Brooks, Executive Director, IEEE Communications Society Russ Harrison, Director, Government Relations, IEEE-USA Bozena Pasik-Duncan, University of Kansas, United States Brian Traynor, Mount Royal University, Canada and IEEE Professional Communication Society Jeff Voas, IEEE Reliability Society, United States
16:00	Close of Event

Featured Speakers & Panelists - Biographies

Thursday 10 August 2017



Humans, Machines, and Work: The Future is Now

Dr Moshe Y. Vardi, FIEEE, George Distinguished Service Professor in Computational Engineering and Director of the Ken Kennedy Institute for Information Technology, Rice University, United States

Dr Vardi is the recipient of the ACM SIGACT Goedel Prize, ACM Kanellakis Award, ACM SIGMOD Codd Award, Blaise Pascal Medal, IEEE Computer Society Goode Award, and EATCS Distinguished Achievements Award. He is the author and co-author of over 500 papers and two books. He is a fellow of several societies, and a member of several academies, including US National Academy of Engineering and National Academy of Science. He holds honorary doctorates from Saarland University in Germany, Orleans University in France, UFRGS in Brazil, and University of Liege in Belgium. He is also the Senior Editor of the Communications of the ACM.

Bringing Technology Benefits to All: Opportunities and Challenges Panel



Dr. Kathleen A. Kramer is a Professor of Electrical Engineering at the University of San Diego. Professionally, she is driven by a passion of “advancing technology for humanity on many fronts” and, educationally, her enthusiasm is to educate the “complete engineer”. She received the B.S. degree in electrical engineering magna cum laude with a second major in physics from Loyola Marymount University, and M.S. and Ph.D. degrees in electrical engineering from the California Institute of Technology. At the University of San Diego, she served as Director from 2004-2013

and teaches in an engineering program where all undergraduate engineering degrees are dual bachelor of arts & bachelor of science degrees with liberal arts and engineering components.

She is the 2016-17 Director of IEEE Region 6 (Western USA), responsible for developing and supporting technical, educational, professional and humanitarian activities in the region. She is a member of the board of IEEE and of IEEE-USA. She is an IEEE member of the Engineering Accreditation Commission of ABET. She is a Vice-President of IEEE Aerospace & Electronics Systems Society and chairs the society’s Technical Panel on Cyber Security.

She has also been a Member of Technical Staff at several companies, including ViaSat, Hewlett Packard, and Bell Communications Research. She is the author or co-author of over 100 publications, carrying out research in the areas of multisensor data fusion, intelligent systems, information assurance and neural and fuzzy systems.



Prof. San Murugesan is Editor in Chief of IEEE *IT Professional*; Director of BRITE Professional Services, Sydney; and adjunct professor at Western Sydney University, Australia. He is also a corporate trainer and a former Senior Research Fellow of the US National Research Council. His areas of current interests includes the Internet of Things, cloud computing, green IT, smart systems, IT for Emerging Regions, and technology and society. He is co-editor of [*Encyclopedia of Cloud Computing*](#) (Wiley, June 2016) and [*Harnessing Green IT: Principles and Practices*](#) (John Wiley, 2012).

Dr Murugesan is Chair of Educational Products Committee of the IEEE CS Professional Educational Activities Board and Advisory Board Member of IEEE Computer Software and Applications Conference (COMPSAC). He is a Fellow of the Australian Computer Society and a Fellow of IETE.

Science Diplomacy: A Path for Scientists and Engineers to Make Global Societal Impacts



Dr. Fahmida N. Chowdhury is a Program Director in the Office of International Science and Engineering (OISE) at the US National Science Foundation (NSF). Prior to joining NSF in 2008, she was a Professor of Electrical and Computer Engineering at the University of Louisiana, Lafayette, LA, USA, where she held the W. Hansen Hall and Mary O. Hall Endowed Chair in Computer Engineering.

Dr. Chowdhury has been active in IEEE for many years; she served on the editorial boards of two IEEE Transactions: on Control Systems Technology and on Neural Networks. She has served as an elected member of the IEEE Control System Society's Board of Governors, and also on the IEEE Computational Intelligence Society's AdCOM. Her research interests include complex systems modeling and analysis, non-traditional applications of dynamic systems theory, and detection of abnormal conditions (faults) in dynamic systems. She was a Fulbright Scholar in 2001, a Visiting Professor at the Helsinki University of Technology (Finland) in 2004, and a US State Department Embassy Science Fellow in 2013. She has deep interest in international science, technology and educational collaborations, science diplomacy, and serving society through humanitarian technologies and policy-level engagements.

Friday 11 August 2017

Robots that Need to Mislead: Biologically-inspired Machine Deception



Dr Ron Arkin, FIEEE, Regents' Professor, College of Computing and Director of the Mobile Robot Laboratory, Georgia Tech, United States

Professor Arkin is the recipient of several awards, including the Outstanding Senior Faculty Research Award (College of Computing at Georgia Tech), and Outstanding Achievement in Research Award (University of Massachusetts Computer Science Department). He has also served as Associate Dean for Research and Space Planning in the College of Computing at Georgia Tech

since October 2008; a STINT visiting Professor at the Centre for Autonomous Systems at the Royal Institute of Technology (KTH) in Stockholm, Sweden; held a Sabbatical Chair at the Sony Intelligence Dynamics Laboratory in Tokyo, Japan, and served as a member of the Robotics and Artificial Intelligence Group at LAAS/CNRS in Toulouse, France.

His research interests include behavior-based reactive control and action-oriented perception for mobile robots and unmanned aerial vehicles, hybrid deliberative/reactive software architectures, robot survivability, multi-agent robotic systems, bio-robotics, human-robot interaction, robot ethics, and learning in autonomous systems. He has over 170 technical publications in these areas, and also written several text books.

Prof. Arkin serves/served as an Associate Editor for IEEE Intelligent Systems, International Journal of Social Robots, and the Journal of Environmentally Conscious Manufacturing, as a member of the Editorial Boards of Autonomous Robots, Machine Intelligence and Robotic Control, Journal of Intelligent Service Robotics, Journal of Field Robotics, International Journal of Advanced Robotic Systems, and the Journal of Applied Intelligence, and is the Series Editor for the MIT Press book series Intelligent Robotics and Autonomous Agents.

Prof. Arkin has served on the IEEE SSIT Board of Governors (2010-2012), the Administrative Committee of the IEEE Robotics and Automation Society (1999-2004), as a founding co-chair of the IEEE RAS Technical Committee on Robot Ethics (2004-2009), co-chair of the Society's Human Rights and Ethics Committee (2006-2011), and also served on the National Science Foundation's Robotics Council (2001-2002). He holds a B.S. Degree from the University of Michigan, an M.S. Degree from Stevens Institute of Technology, and a Ph.D. in Computer Science from the University of Massachusetts, Amherst.

Autonomous Weapons: Impacts beyond Combat and Conscience beyond Poker



Dr. Philip Chmielewski, Professor and Sir Thomas More Chair of Engineering Ethics, Seaver College of Science and Engineering, Loyola Marymount University, United States

As the Sir Thomas More Chair of engineering ethics at the Seaver College of Science and Engineering of Loyola Marymount

University (Los Angeles), Chmielewski offers instruction in the ethics of design and production, research ethics, and the ethical assessment of contemporary technologies. His own research focuses on developing elements of a framework for international engineering ethics. He is a member of IEEE and of the Association of Asian Studies. Further, he is an affiliate member of ASME and the Hong Kong Institution of Engineers. Until recently he has been on sabbatical at the Centre for China Studies of the Chinese University of Hong Kong. He has lectured frequently in mainland China.

Technology, Humans, and Enclosure



Dr. Greg Adamson, Associate Professor, Department of Electrical & Electronic Engineering, The University of Melbourne, Melbourne VIC, Australia and 2015-2016 President, IEEE-SSIT

Dr Greg Adamson is the Past-President of IEEE's Social Implications of Technology, a risk manager in the financial services industry, and an Associate Professor at the University of Melbourne School of Engineering. He is Chair of the IEEE Board of Directors Ad Hoc Committee on Ethics. He also chairs the IEEE Special Interest Group in Blockchain. His research interests are: barriers to socially beneficial technology; Norbert Wiener, a founder of cybernetics and information ethics; and engineering motivation. He initiated the IEEE conference series Norbert Wiener in the 21st Century (Boston 2014, Melbourne 2016). He consults in blockchain, cyber security, and professional ethics.

Closing Panel – Trust and Social Implications of Technology

Susan M. Brooks, Executive Director, IEEE Communications Society

Russ Harrison, Director, Government Relations, IEEE-USA



Dr Bozenna Pasik-Duncan, FIEEE, Chancellors Club Teaching Professor, Professor of Mathematics and Courtesy Professor of AE & EECS, University of Kansas, United States

Dr Pasik-Duncan is the recipient of many awards, including the IEEE Third Millennium Medal and IEEE CSS Distinguished Member Award, and is an inducted member of the University of Kansas Women's Hall of Fame. She is a Fellow of both IEEE and IFAC, and has served in many capacities in several societies. Her current service includes Chair of IEEE Women In Engineering Committee, Chair of the AACC Education Committee, Deputy Chair of the CSS TC on Control Education, membership on the IEEE CSS and SSIT Board of Governors, and as a member of the SIAM Activity Group on Systems Theory and Control Conference Steering Committee. She is founder of Women in Control (WIC) and first chair of IEEE CSS Standing Committee on WIC. At the University of Kansas she is founder and faculty advisor of student chapters of AWM and SIAM, founder and coordinator of the Outreach Program, and founder and chair of Stochastic Adaptive Control Seminar. Her research interests are primarily in stochastic systems and stochastic adaptive control, and in STEM education. She holds a Master's degree in Mathematics from

the University of Warsaw, and Ph.D. and D.Sc. (Habilitation) degrees from the Warsaw School of Economics, Poland.



Brian Traynor, Mount Royal University, Canada and Treasurer, IEEE Professional Communication Society

Brian Traynor is an Associate Professor in the Information Design program in the Faculty of Business and Communication Studies at Mount Royal University. Courses taught include: Information Architecture, Usability, and Project and Content Management. Brian has research interests in user satisfaction measures and the attribution of blame by users. He is also a Canadian delegate on behalf of the Standards Council of Canada contributing to the ISO/IEEE/IEC Systems and Software Engineering Working Group 2 (Software Documentation) Brian has been an IEEE member since 2006 and has been actively involved in the IEEE Professional Communication Society since 2012. He is the PCS Treasurer and has supported the annual ProComm conference in a variety of roles over several years.



Jeff Voas, 2017 President, IEEE Reliability Society

Jeffrey Voas is currently a computer scientist at the US National Institute of Standards and Technology (NIST) in Gaithersburg, MD. Before joining NIST, Voas was an entrepreneur and co-founded Cigital that is now a part of Synopsys (Nasdaq: SNPS). He has served as the IEEE Reliability Society President (2003-2005, 2009-2010, 2017), and served as an IEEE Director (2011-2012). Voas co-authored two John Wiley books (Software Assessment: Reliability, Safety, and Testability [1995] and Software Fault Injection: Inoculating Software Against Errors [1998]). Voas received his undergraduate degree in computer engineering from Tulane University (1985), and received his M.S. and Ph.D. in computer science from the College of William and Mary (1986, 1990 respectively). Voas is a Fellow of the IEEE, member of Eta Kappa Nu, Fellow of the Institution of Engineering and Technology (IET), and Fellow of the American Association for the Advancement of Science (AAAS).