

Robots in society: Current robotics

9.30am – 5.30pm | 8th November 2017
London South Bank University



Speaker bios

Professor Bryan Bridge

Professor Bryan Bridge BSc DSc FInstNDT CEng FIET CPhys FInstNDT FRSA is a Physics and Engineering Research Consultant with his own name company. In that capacity he has been involved in recent awards of funding to clients of more than 35 collaborative research projects in materials processing and engineering, in the renewables, offshore, nuclear, aerospace, transport and manufacturing sectors; with a strong focus on automated and robotic deployment of NDE and Continuous On Line Structural Health Monitoring. In 1965, after a DSIR research studentship in low temperature solid state physics at the University of Leeds, he became lecturer and then senior lecturer in physics at Brunel University and was awarded a Higher Doctorate for his collected works on non-destructive Characterisation of Materials. This EPSRC Funded work included:

1. Physical acoustics and quantum 2-well studies of electronic glasses from 4-600K
2. Design and characterisation of electrically conducting polymers and composites.
3. Pioneering work on novel ultrasonic, electromagnetic and radiological measurement instruments including a world first portable 3D Compton Scatter imaging collimator for underwater off shore inspection.

In 1989 he moved to the now London South Bank University as Professor and Head of the Department of Electrical and Electronic department and subsequently Head of the School of Electrical, Electronic and Information Electronic, the School of Engineering and a Deputy Dean of the Faculty of Engineering, Science and the Built Environment. In 1992 He founded the Research Centre of Automated and Robotic NDT with a Centre of Excellence Award from the then PCFCE and was Co-Director until 2008. He has been Principal Investigator of more than 70 externally funded research projects since 1974 and published over 320 research papers. He is a Trustee and Director of the CLAWAR Association Ltd and a permanent Honorary Member of The Physical Society Club whose elected members are limited to 31 and celebrates its 100th Anniversary in 2019.



Dr Raphael Grech

Dr Raphael Grech is an engineer and research scientist (PhD) with over 15 years of industrial and academic experience in the fields of automation systems, algorithm design, robotics research and development, electrical and electronic design, embedded software design, strategy planning and project management. As a Technical Specialist on Intelligent Automation at the Manufacturing Technology Centre in Coventry, Dr Grech provides technical leadership, guidance and strategic planning to identify and resolve various robot design, sensing and production issues for the UK manufacturing sector.

His previous job was with Dyson Ltd. UK as an Advanced Robotics Algorithms and Systems Engineer, working on intelligent robotics research and development mostly in the areas of robot control and computer vision. Earlier positions included those of Senior Electrical Design Engineer at Methode Electronics Malta Ltd. (Subsidiary of Methode Electronics, Inc. Chicago, USA), which is an automotive electronics design and manufacturing company; and Product Specialist within Carlo Gavazzi Malta Ltd., which designs and manufactures Solid State power components and Smart Home automation products.

Dr Grech is a UK chartered engineer, IET Member and Senior IEEE Member. Dr Grech is also an Executive Member of the IET Robotics and Mechatronics TPN and a Committee Member on AMT/10 – UK National committee on Robots and Robotic Devices.



Satwik Mehta

Satwik Mehta manages the Virtual Engineering Team at HSSMI. He has extensive experience in manufacturing predominantly in the automotive sector. After graduating from the University of Pune in Mechanical Engineering, he worked for the Volkswagen Group on multidimensional facets of planning new products and processes. Satwik has also acquired an MSc in Manufacturing Engineering from the University of Warwick where he developed a framework for operations sustainability. Satwik oversees delivery of research and commercial programmes for the Virtual engineering team at HSSMI. He is also leading an industrial working group for developing design and installation guidelines for collaborative robots.



Professor Tariq Sattar

Professor Tariq Sattar is a pioneer in the development of robotic Non-Destructive Testing. He leads the research in this area in his role as the TWI chair and Director of the London South Bank Innovation Centre (LSBIC) based in Cambridge which collaborates with TWI Ltd, the National Structural Integrity research Centre and London South Bank University to research and develop automation and robotics for non-destructive testing. He has led the development of mobile wall-climbing and swimming robots that provide access to very large safety critical structures to deploy a range of non-destructive testing techniques. These robotic systems have addressed the problems of performing robotic inspection in petrochemical storage tanks, in nuclear plant for inspection and decommissioning, on aircraft fuselage and wings, inside floating production oil storage tanks, on the hulls of ships, on large steel plates, on wind turbine blades, on aircraft turbine blades, on large buildings while operating on brick, concrete and glass surfaces and on off-shore mooring chains, oil and gas risers. His research has won eleven awards for best papers and industrial innovation in the field of robotics. It was selected by the Royal Society for its 350th anniversary summer science exhibition and again by the Royal Academy of Engineering as an interactive display in its zone at the Big Bang event, ICC ExCel Centre.



Dr Simon Watson

Dr Simon Watson is a Lecturer in Robotic Systems at the School of Electrical and Electronic Engineering at the University of Manchester. He obtained his MEng in Mechatronic Engineering in 2008 and his PhD in 2012, both from the University of Manchester. His research focus is on mobile robots for the exploration and characterisation of hazardous and extreme environments, and active areas of research include novel platform design, communications and localisation, sensing and navigation and multi-level control. His current research portfolio includes developing robots for the nuclear industry (for the Sellafield and Fukushima sites), power generation (offshore wind) and agriculture (pest control). He also works closely with industry to take robotic platforms from University prototypes through to commercially viable systems, such as the AVEXIS underwater vehicle, which was recently deployed on the Sellafield site.



Dr Sarah Fletcher

Dr Sarah Fletcher leads the Industrial Psychology and Human Factors (IPHF) group in the Centre for Structures, Assembly and Intelligent Automation at Cranfield University. She has been conducting social science research in manufacturing/automated systems for over 17 years and has published and presented papers in the UK and internationally; and has taught and supervised related topics at Masters and Doctoral level. Her funded research specialises in understanding human requirements for the design and implementation of safe and efficient industrial work

systems, particularly focusing on factors that impact on users' trust and acceptance of industrial human-robot collaboration, and on applying novel and traditional methods to capture and analyse cognitive processes and tacit knowledge in human behaviour and performance. To develop ethics and standards for design and integration of people with intelligent automation and informatics Sarah is an active member of national and international standards development as part of the BSI AMT/10 Robotics committee and the ISO Robotics Technical Committee 299, Working Group 3: Industrial Safety.



Professor Gurvinder S. Virk

Professor Gurvinder S. Virk (BSc, PhD, DIC, FIET, FCIBSE, CEng, CMath, FIMA, MIEEE) is Technical Director at InnotecUK Ltd in with responsibility to lead R&D projects and technical innovations for realising intelligent inspection robot systems for hazardous applications; in addition he is Adjunct Professor at IIT Ropar, India. He holds a PhD in Control theory from Imperial College, University of London, UK and his current interests are in commercialisation of NDT inspection robots, wearable exoskeleton robots for health and wellbeing, medical robots for rehabilitation, active and assistive living applications, robot safety standardisation, robot modularity and inter-operability, social robotics and robot ethics. He has held senior academic leadership roles in UK (Universities of Bradford, Portsmouth and Leeds), New Zealand (Massey University) and Sweden (University of Gävle) as well as visiting professor positions in China (Zhejiang University), France (Université Pierre et Marie Curie, Paris), and Germany (Fachochschule Südwestfalen, Soest). He is also Trustee and Treasurer of the UK registered charity CLAWAR whose mission is to advance robotics for the public benefit (see www.clawar.org). He has been awarded, the Freedom of the City of London for his work in promoting Information Technology and is a Freeman of the Worshipful Company of Information Technology.

He has held several grants from national and European sources (total value €20m), as well as industry. He has produced over 350 papers in these areas and 14 books, and 16 successfully supervised PhDs. Professor Virk is also a key actor in robot standardisation and has led or is leading several international robot standardisation groups, namely:

- ISO TC299/ SG1 Gaps and structure
- ISO TC299/ WG2 Personal care robot safety, 2006-2016
- IEC TC62/SC62A & ISO TC299/ JWG9 Medical electrical equipment and systems using robotic technology
- ISO TC299/ JWG5 Medical robot safety
- ISO TC299/ WG6 Modularity for service robots

These groups are developing important standards for new emerging robots.



Luke Hares

Luke Hares is Technical Director at Cambridge Medical Robotics (CMR). He a physicist with practical multidisciplinary engineering skills and, for the past 20 years, has been involved in the conception and development of many products and medical devices. Luke was responsible for the Versius concept, created in response to the need for a better way to perform laparoscopic surgery. Before co-founding CMR he worked for Cambridge Consultants and Sagentia in the UK and the US, where he worked on medical devices, robotics, ASIC developments and consumer products.

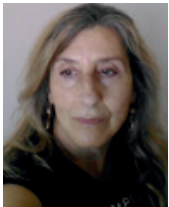
Luke believes the best devices are created by combining a detailed knowledge of the unmet needs of the users with the creative application of a broad knowledge of available technology. Regular contact and interaction with the users of the product is essential for this process. Luke is responsible for leading the CMR technology team and has overall responsibility for the technology strategy of the company. He is accustomed to championing ideas, communicating technically

complex ideas and designing and managing the development of complex systems. He regards his particular areas of expertise as imagination, a focus on the user and the application, and multi-disciplinary system design.



Dr Peter O'Neill

Dr Peter O'Neill is Senior Lecturer at Sheffield Hallam University since 2009 where he has run four modules in the area of programming and has research interests in assistive technology and how this can be realised via robotics. He holds a BSc (Hon) in Software Engineering and PhD focussed on human-computer interaction, both from Sheffield Hallam University. He has worked in the Department of Medical Physics and Clinical Engineering at Barnsley Hospital where his duties included developing software assistive technology applications, one of which would drive an electric wheelchair. He was also involved in a start up on software development. In addition, he was required to use his own personal knowledge of disability (he was born disabled) to enhance the quality of service and understanding of service staff providing for the residents of those living within the Barnsley hospital catchment area.



Dr Isabel Ferreira

Maria Isabel Aldinhas Ferreira is a Portuguese linguist and semiotician. She is a member and researcher of the Centre of Philosophy of the University of Lisbon, Portugal and a researcher at the Institute of Intelligent Systems and Robotics of Instituto Superior Técnico, University of Lisbon. Her present work comprehends the analysis of the linguistic and social phenomena involved in Human Robot Interaction; the assessment and benchmarking of user-experience and the definition of guidelines and roadmaps for the safe and ethical deployment and use of ICT, namely of robotics. Maria has a Masters in Anglo-American Studies, a Masters in Linguistics and a PhD in Linguistics (University of Lisbon). She has also attended a course in Lexicology, Lexicography and Computational Linguistics at the University of Pisa and an Advanced Course in Artificial Intelligence by the University of Stanford.