

EPSRC Trustworthy Autonomous Systems-Security Node Workshop.

‘Requirements, Approaches & Challenges in Trustworthy Autonomous Systems’

Speaker Bios

Nick Colosimo, BAE Systems

Nick started with BAE Systems (then British Aerospace) in 1990 as a technical apprentice. Over the past 32 years, a large proportion of Nick’s career has been within a research and development engineering environment where he has been instrumental in the research, development and demonstration of a number of state-of-the-art technologies, achieving company, UK and world firsts. He has worked on a wide range of defence projects and in a wide range of disciplines including as an electromagnetics specialist, sensors specialist, systems engineer, and as an experimental aircraft manager. He led the development of the BAE Systems Surrogate Unmanned Air Vehicle (the Jetstream Flying Test Bed) with Cranfield University conducting a wide range of sensing, communications, and ‘autonomous systems’ demonstrations. In 2013, he led the BAE Systems Future Mission Systems collaborative research programme that created a world leading ‘mixed reality’ solution applicable to future command centres and combat aircraft cockpits. Studying on a part-time basis, he has acquired graduate qualifications in; Mechanical & Production Engineering, Mechatronics, Applied Physics & Electronics (joint honours), and postgraduate qualifications in Computing and Avionics. He is now a Visiting Professor at Cranfield University. He continues to learn and is studying a new MSc course in Applied Artificial Intelligence (AI) that he has helped to curate with Cranfield University, industry, and the UK Government Office for AI. Within his current BAE Systems role, Nick defines technology strategy and planning, and provides innovative solutions to hard technical problems in the context of the future combat air system (FCAS) project. He is also a Global Engineering Fellow and Technology Cluster Co-Lead for Autonomy & Robotics.

Alex Tarter, Thales

Dr. Tarter has been working in the fields of Defence and Critical National Infrastructure Cyber security for over 15 years. As the CTO-Cyber, he is responsible for shaping the technical strategy and cyber capabilities of Thales UK. This includes leading the Thales UK Cyber Competence Centre, cyber-related R&D, and global product line management for our cyber security consulting offers.

Cora Perner, Airbus

Cora Perner is a Cybersecurity Aeronautics Architect with Airbus Cybersecurity and leads several research projects. She holds a PhD in Computer Science from the Technical University of Munich (DE) and a degree in Aerospace Vehicle Design from Cranfield University (UK). Her research focusses on the intersection between safety and security of unoccupied and autonomous aerial vehicles as well as the safe integration of new technologies and methods. She has been working on several national and European projects in the past years. In addition, she has published several papers at distinguished international conferences.

Michael Hardt, Boeing

Michael studied Mathematics at UCLA followed by a Ph.D. in Robotics, Control & Intelligent Systems from UCSD. His professional career has been dedicated to research & development work in highly multidisciplinary fields such as legged locomotion, space & military networked

robotics, and autonomous systems. He has been the past eight years with Boeing Research & Technology Europe working on GNC technologies for unmanned and autonomous flight systems, and is an Associate Technical Fellow. His current fields of investigation include: (a) contingency management and risk assessment for unmanned aircraft, (b) GPS-denied navigation solutions, (c) advanced air mobility traffic management.

Dejan Nickovic, Austrian Institute of Technology (AIT)

Priv. Doz. Dr. Dejan Nickovic is a Senior Scientist in AIT Austrian Institute of Technology GmbH, in the Center for Digital Safety and Security. He is with AIT since December 2011 and focuses on research in verification and testing of complex cyber-physical systems, including autonomous systems. He is the coordinator of the national FFG project "Autonomous Driving Examiner" (ADEX) and assumes the role of the Technical Manager in the H2020 project "Foundations for Continuous Engineering of Trustworthy Autonomy" (FOCETA). Dejan Nickovic has published more than 70 scientific papers that appeared in peer-reviewed international journals, conference and workshop proceedings.

Arthur van der Wees, Arthur's Legal

Arthur van der Wees is managing director of Arthur's Legal, Strategies & Systems, an international research-based strategic and legal organization that covers the unique combination of technology, strategy, impact, ethics & law focusing on (inter)national, regional and global strategy & policy aspects in this Digital Age. It has a global practice with multiple relevant programs/projects in the UK, EU and US in the public, private and public-private sectors, on security, sovereignty, safety, internet & identity of things, data sharing, human-centricity, nuances of trust, trustworthy cyber-physical ecosystems of ecosystems, dynamic assurance and accountability. He is (co-)author of various publications about innovation, digital transformation, data, computing, IoT, robotics, AI, manufacturing, autonomous systems, security, safety and privacy and trust. He has contributed to several regulations, standards and policy instruments for the Digital Age. Furthermore, he is advisory board member respectively partner in more than 15 European projects.

Wilfried Steiner, TTTech Labs

Wilfried Steiner is the Director of TTTech Labs, which acts as center for strategic research as well as the center for IPR management within the TTTech Group. He holds a degree of Doctor of Technical Sciences and the Venia Docendi in Computer Science, both from the Vienna University of Technology, Austria. From 2009 to 2012, Wilfried held a Marie Curie International Outgoing Fellowship that has been hosted by SRI International in Menlo Park, CA. His research is focused on dependable cyber-physical systems for which he designs algorithms and network protocols with real-time, dependability, and security.

Emyr Thomas, National Highways

Emyr Thomas is a Cyber Security Consultant and Chartered Engineer who has spent the last 10 years specialising in Transport Security. He has worked across Road, Rail and in Aviation leading teams and delivering innovative, pragmatic and successful security solutions. Emyr is currently working in Strategy and Innovation for National Highways' Cyber Security Team and is collaborating across Government, Industry and Academia to uncover and solve emerging challenges for the Safe, Resilient and Trusted adoption of Digital Roads. He leads BAE Systems' OT Capability, focussing predominantly on the increasing convergence of IT/OT and emerging technologies such as IoT. For his work on developing security solutions and

standards for Connected and Autonomous Vehicles, Emyr was awarded the 2019 winner of the ISC2 EMEA Information Security Leadership Award - Information Security Practitioner. He was also nominated by the Management Consultancies Association for Individual Thought Leader of the Year 2018.

Phil Koopman, Carnegie Mellon University

Prof. Philip Koopman is an internationally recognized expert on Autonomous Vehicle (AV) safety who has worked in that area at Carnegie Mellon University for 25 years. He is also actively involved with AV safety policy, regulation, implementation, and standards. His pioneering research work includes software robustness testing and run time monitoring of autonomous systems to identify how they break and how to fix them. He has extensive experience in software safety and software quality across numerous transportation, industrial, and defence application domains including conventional automotive software and hardware systems. He served as the lead author of the ANSI/UL 4600 standard for autonomous system safety.

Shiqiang Wang, IBM T.J. Watson

Shiqiang Wang is a Research Staff Member at IBM T. J. Watson Research Center, NY, USA. He received his Ph.D. from Imperial College London, United Kingdom, in 2015. His current research focuses on the intersection of distributed computing, machine learning, networking, and optimization, with a broad range of applications including data analytics, edge-based artificial intelligence (Edge AI), Internet of Things (IoT), and future wireless systems. He has made foundational contributions to edge computing and federated learning that generated both academic and industrial impact. He serves as an associate editor of the IEEE Transactions on Mobile Computing, IEEE Transactions on Parallel and Distributed Systems, and IEEE Transactions on Computational Social Systems. He has also been actively organizing workshops at the intersection of edge computing and machine learning, and regularly participates in technical program committees (TPCs) of prominent conferences and review panels of research grants. He received the IEEE Communications Society (ComSoc) Leonard G. Abraham Prize in 2021, IEEE ComSoc Best Young Professional Award in Industry in 2021, IBM Outstanding Technical Achievement Awards (OTAA) in 2019 and 2021, multiple Invention Achievement Awards from IBM since 2016, Best Paper Finalist of the IEEE International Conference on Image Processing (ICIP) 2019, and Best Student Paper Award of the Network and Information Sciences International Technology Alliance (NIS-ITA) in 2015. For further details, please visit: <https://shiqiang.wang/>

Oktay Arslan, Airbus (Silicon Valley)

Dr. Oktay Arslan is currently the AI/Robotics Research Engineer at the Acubed, the Silicon Valley innovation centre of Airbus, where he works on various autonomy projects in the Wayfinder team such as autonomous landing for commercial aircrafts, sensor fusion, ML software deployment, certification of autonomy software. His academic research focused on planning, machine learning, computer vision for robotic systems and autonomous vehicles. Previously, he was a Staff Autopilot Software Engineer at Tesla Inc. In this role, he contributed to the development of autopilot software, namely behaviour planning, path planning and controls, for Tesla's Model 3, S, X cars. He implemented the traffic-aware lane change and merging behaviours in navigate-on-autopilot feature and path planner for smart summon feature. Prior to his role at Tesla Inc, Oktay worked as the Robotics Technologist at NASA/Caltech Jet Propulsion Laboratory where he contributed to several autonomy projects for various robotic platforms such as quadrotors, Mars rovers, and spacecrafts.

During his doctoral studies, Oktay had the opportunity to work as the research intern at Mitsubishi Electric Research Labs and completed a Co-op as the Guidance, Navigation, and Controls Engineer at Aurora Flight Sciences where he implemented the high-level route planner for Boeing's Unmanned Little Bird H-6U during Autonomous Aerial Cargo Utility System (AACUS) project.

Oktay obtained his Ph.D. degree in Robotics, dual M.S. degrees in Computer Science and Aerospace Engineering all from the Georgia Institute of Technology. He also earned an M.S. degree in Defense Technologies and dual B.Sc. degrees in Computer Engineering and Electrical Engineering all from the Istanbul Technical University. For further details, please visit <http://arslan.ai> and <https://acubed.airbus.com/projects/wayfinder>

Heather Roff, Centre for Naval Analysis, UCB

Heather Roff is a senior research scientist at Center for Naval Analysis. Her research interests include the law, policy, and ethics of emerging military technologies, such as autonomous weapons, artificial intelligence, robotics, cybersecurity, and more recently quantum, as well as international security and human rights protection. Her recent work focuses on generating normative principles for the use of AI for national defense, as well as particular epistemological issues with AI for defense related applications. She is author of "Global Justice, Kant and the Responsibility to Protect" (Routledge 2013), as well as numerous scholarly articles.

Roff received her doctorate in political science from the University of Colorado at Boulder (2010). She served as a senior research analyst at the Johns Hopkins Applied Physics Lab (APL) in the National Security Analysis Department. Prior to joining APL, she was a senior research scientist at DeepMind, one of the leading artificial intelligence companies, in their ethics & society team. Prior to DeepMind, she was a senior research fellow in the Department of Politics and International Relations at the University of Oxford, was a research scientist in the Global Security Initiative at Arizona State University, and held faculty positions at the Korbel School of International Studies at the University of Denver, the University of Waterloo, and the United States Air Force Academy. She has also held multiple fellowships at New America (2015-17).

She has provided expert testimony and advice regarding lethal autonomous weapons and artificial intelligence to the United Nations Convention on Certain Conventional Weapons and the International Committee of the Red Cross, as well as the United Nations Institute for Disarmament Research, the United Kingdom Ministry of Defense, the Canadian Department of National Defense, and the U.S. Department of Defense.

Moreover, she has received funding awards from the Future of Life Foundation and the Canadian Department of National Defense for her work on meaningful human control, a concept generated with the disarmament NGO Article 36, that calls for structures and limits to the design, development, and deployment of autonomous technologies in armed conflict. "Meaningful human control" has sparked international attention from both scholars, practitioners, and industry.

She blogs for the Huffington Post, the Duck of Minerva, and has written for the Wired Magazine, Bulletin of the Atomic Scientists, Slate, Defense One, the Wall Street Journal, the National Post, and the Globe and Mail. She is currently working on various projects related to the ethics of artificial intelligence for national security and defense.

Hector Figueiredo, QinetiQ

Hector Figueiredo is the Head of Technology, UAS Business, at QinetiQ. He is experienced in leading cross-site research and development teams, utilising excellent communication skills to collaborate with commercial, financial and business development functions.

He has a history of cultivating an Open Innovation environment to deliver technology, capability against challenging orders, sales and margin targets. His technology focus includes Autonomous Systems, Systems Engineering and Stores and Aircraft Aerodynamics.

Richard Holland, Connected Places Catapult

Richard Holland is a principal engineer and the team leader heading up the Regulations, Safety and V&V team at the CPC. Reporting to the Director of New Mobility Services, Richard is accountable for a portfolio of projects developing and trialling new technologies and validation methods for safety assurance of automated systems across transport sectors.

Richard qualified as a Chartered Engineer in the automotive sector where, prior to joining the CPC, was a test manager at an OEM responsible for the validation and verification of partially automated Advanced Driver Assistance Systems.

Michael Braisher, Department for Transport

During his career in both industry and Government, Michael has developed a diverse skill set, borne out of broad experience from research and teaching through to leading technical projects, engaging with regulators in the development of regulations, team leadership and performance coaching. His strengths include a strong technical mindset, developing strong working relationships and communication (especially distilling and explaining complex concepts in easy-to-understand language). He is motivated by helping others through teaching and coaching, learning new technical subjects, acquiring new skills and applying his skill set to new situations and subjects.