Dr Taufiq Rahman

Team Lead, CAV| National Research Council Canada

Taufiq Rahman leads the Connected & Autonomous Vehicle (CAV) Team at the National Research Council Canada (NRC). Before joining NRC, he conducted engineering research and development for various organizations, including Rolls-Royce Marine Ltd, Boeing Phantom Works, and Agile Sensor Technologies. He holds master's and PhD degrees in engineering from Memorial University of Newfoundland, specializing in mechatronic system design, robotics, and machine vision. In the current role at NRC, his research focus includes multi-modal sensor fusion, robust perception systems, SLAM systems, V2X application development, driver intentionality prediction, and the development of automated inspection systems for the railway industry. He also holds adjunct faculty status at the University of Western Ontario and the Ontario Technical University. Taufiq's research work has been published in top journals and conferences. Over the past four years, he has secured approximately CAD 2.5 million in external and internal funding to support research and development activities aimed at enhancing the safety, resiliency, and efficiency of surface transportation in Canada.

Dr Ciarán Eising

Associate Professor| University of Limerick

CIARÁN EISING holds a B.E. and Ph.D. from the University of Galway, Ireland. He worked at Valeo in Ireland from 2009 to 2020, serving as a Computer Vision Team Lead, Architect, and Senior Expert. He joined the University of Limerick in 2020 and is an Associate Professor in Artificial Intelligence and Computer Vision, where he leads the Intelligent Transportation team in the DiCE research group. He has more than 80 publications and 170 patents in computer vision applied to ADAS and autonomous driving, and related fields.

Dr Kashif Siddiq

Founder & CEO| Oxford RF

Dr Kashif Siddiq is the Founder & CEO of Oxford RF Solutions Ltd in the UK – a company providing the world's first solid-state 360 and 270 ADAS and ADS sensors enabling higher-precision localisation/imaging and signal resilience through multi-look sensing. He won the 2015 British Engineering Excellence Award for co-designing a Radar-based automatic incident detection (AID) system for Highways England (now the NHA, UK). In the same year he was nominated for the Business Leader of the Future Award by Innovate UK. Dr Siddiq has invented key components in the Radar sensors for companies like Oxbotica (now OXA Autonomy Ltd), Navtech Radar, and Raymarine. Dr Siddiq was selected by OxLEP to be featured in the B4 Business Magazine and is a regularly invited speaker at various conferences.

Recently, Dr Siddiq has completed a 1-year tenure as a Radar Subject Matter Expert for the National Highways Authority (NHA), UK, where he helped the NHA optimise the performance of the Smart Motorway sensor systems. He holds a PhD in Electronics Engineering with a focus on Commercial Radar Technology.

Dr Anthony Huggett

Senior Member of Technical Staff | Onsemi

Anthony Huggett is a Senior Member of Technical Staff at onsemi, based in Bracknell, UK. He has a wide range of technical interests in the field of signal processing, including forward error correction, image processing for digital cameras and video compression. He is listed as an inventor on 25 US patents.

PRESENTATION TITLE: Overcoming Disbelief – Detection of Unlikely Objects in Automotive Images

Abstract: Can we give a simple measure of object image quality such as Signal to Noise Ratio of the Ideal Observer (SNRI) or Contrast to Noise ratio that will guarantee that a detector performs well? In medical imaging it is accepted that a value of SNRI between 5 and 6 will be sufficient to guarantee a detector accuracy >99%. Previous papers have accepted this figure for automotive images but this ignores at least two important differences between the derivation of these measures and the automotive case. We explore the effect of one of these differences, the low prior probability of the object we wish to detect, showing that this means we will need a much higher SNRI or CNR from our camera.

Luca Cenciotti

Head of Systems Engineering
Chapters | Jaguar Land Rover

Luca Cenciotti is an automotive engineering executive leader specialized in Systems Engineering, Driver Assistance Systems, Autonomous Driving, and Safety Systems with 20+ years of experience in leading the design and industrialisation of innovative systems at major OEMs. Having joined Jaguar Land Rover in 2012, he has since contributed to key achievements including 10 EuroNCAP 5 star projects, and award winning technologies such as Clearsight Rear View and ClearSight Ground View. He is currently Head of System Engineering Chapters in Jaguar Land Rover, UK.

PRESENTATION TITLE: Sensing in the era of the Software Defined Vehicle

Abstract: Automotive architectures are evolving from traditional Domain-based architectures to Software Defined Vehicle (SDV) architecture, where the entire set of functionality and operations of the vehicle are enabled by an integrated and connected software architecture. With this talk and the panel session we want to explore the impact of this trend on the automotive sensors and their applications: Can we still refer to radars, cameras, lidars as “just” automated driving sensors?

Dr Ghazal Farhani

Research Officer | Automotive and Surface Transportation Research Centre

Ghazal received her Ph.D. in physics from the University of Western Ontario, Canada in 2019. Currently, she serves as a research officer at the Automotive and Surface Transportation Research Centre within the National Research Council Canada. Her research interests encompass machine learning, physical modelling, optimisation, and data analytics.

PRESENTATION TITLE: Virtual Test Platform Qualification for Automated Driving Systems

Abstract: Comprehensive testing of automated driving systems must include simulation testing and validation because physical testing alone cannot generate the required test coverage. In this talk, we will present how the simulation tools can be evaluated to ensure that their outputs are indeed valid and representative of reality.

Yuri Poledna

Research Assistant | CARISSMA Institute of Automated Driving

Yuri Poledna works with Hardware in the Loop (HIL) and data collection for measuring the simulation-to-reality gap at the Technische Hochschule Ingolstadt (Ingolstadt, Germany) under the ROADVIEW project, which is developing a level 4 automated vehicle. During his career, he has developed algorithms to capture data from solar panels and performing vehicular fusion, with longstanding experience in Python and many other technologies.

PRESENTATION TITLE: Development of RADAR model under extreme weather conditions

Abstract: In the development of automated vehicles, the V-Model is a well-known and used methodology. This method delves deep into measuring the simulation-to-reality gap. Sensor models are a must to close the gap. This talk will describe the development of a 4D RADAR model based on the REHEARSE dataset.

Dr John F Molloy

Research and Innovation Fellow |
University of York

Dr John Molloy joined the AAIP as a Research Fellow in 2020, his work includes the Assurance of Understanding and Perception suites in Autonomous Systems, and the propagation of failure and uncertainty in perception systems.

Previously, he spent 10 years in the Electromagnetic Technologies Group at the National Physical Laboratory (NPL), where he was technical lead for Autonomous Systems, and Future Communications. Where he delivered several projects on perception in vehicular and marine autonomous systems and provided advice technical consultancy for external customers such as Lloyd's Register, CCAV and the USAF.

PRESENTATION TITLE: Safety Assurance of the understanding function in autonomous systems

Abstract: Autonomous Systems (AS) are increasingly proposed, or used, in Safety Critical (SC) applications. Many such systems make use of sophisticated sensor suites and processing to provide scene understanding which informs the AS' decision-making. The sensor processing typically makes use of Machine Learning (ML) and has to work in challenging environments. However, ML-algorithms have known limitations, e.g. the possibility of false-negatives or false-positives in object classification. The well-established safety-analysis methods developed for conventional SC systems are not well-suited to AS, ML, or the sensing systems used by AS. This presentation explores safety-analysis methods to address the specifics of perception-systems for AS, including addressing environmental effects and the potential failure-modes of ML. We explore use of well-established safety analysis methods and provide a rationale for choosing a particular set of guidewords, or prompts, for safety-analysis. The results of this analysis can be used to inform the design and verification of the AS.

Alan Walker

Manager | Syselek

Alan is a manager with over 25 years' experience of automotive electronics development, from R&D through to production and in-life product support. He has led work on policy and strategy, research, technology development, service, and organisational capability in the field of ADAS and CAV.

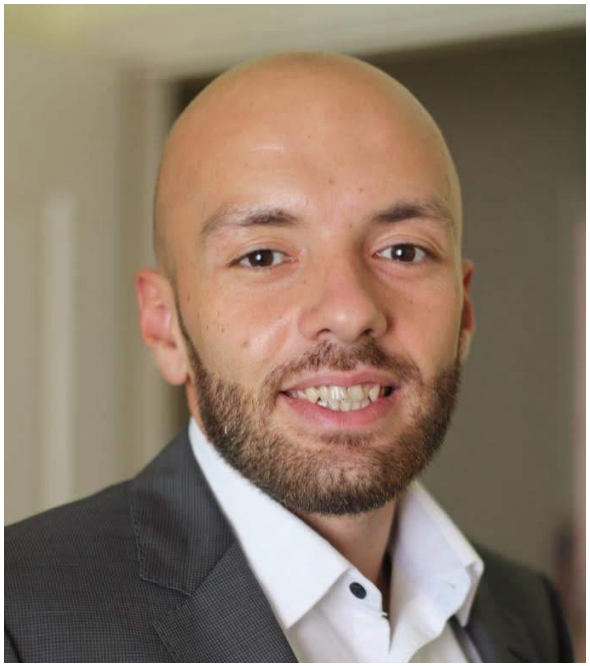
WORKSHOP TITLE: A catalogue of CAV perceptions systems and statistical insights from it

Dirk Parker

Systems Engineering Lead | Syselek

Dirk is an autonomous systems engineer with over 25 years' experience of automotive technology development. He has knowledge and experience of all aspects of the advanced engineering and product development processes for CAVs and ADAS, creating many new engineering processes for CAV development, relating to system engineering, functional safety, monitoring, and assurance methods. His career has also covered autonomous applications in Aerospace and Sub-Sea Search and Recovery.

WORKSHOP TITLE: A catalogue of CAV perceptions systems and statistical insights from it



Ahmed Yousif

System Simulation Expert and Simulation and HiL Team Leader | Valeo

As a visionary, I explore the universe of virtual worlds and automotive simulation, constantly pushing the limits of what is possible. I seek to craft the next generation of concepts that will astound and mesmerise all who experience them.

My passion lies in the intricate workings of artificial intelligence, a tool that allows me to create experiences that transport us to new frontiers. Through my work, I aim to safeguard the safety of autonomous driving vehicles while immersing users in a world of wonder.

PRESENTATION TITLE: Accurate LIDAR System Simulation for ADAS L3+ Development

Abstract: The session underscores the critical role of precise LIDAR system simulation in advancing the development, validation, and verification of Advanced Driver Assistance Systems (ADAS) beyond Level 3, particularly in the context of AI integration. This involves crafting and refining a detailed LIDAR sensor model tailored to current product specifications, ensuring resilience and robustness in sensing for automated transportation systems. Calibration of the model facilitates the generation of realistic point cloud data, enabling comprehensive comparison and validation against real-world products.