



Please join us on the 8th INCOSE/GfSE Webinar

When

Wednesday, June 1st, 2022 from 11:00am-12:00pm EST
(4:00pm-5:00pm UTC, 5:00pm – 6:00pm CET)

Topic

Safety assurance under uncertainty

Speaker

Prof. Simon Burton



Abstract

Assuring the safety of modern, highly automated systems presents huge challenges to existing Systems Engineering processes. Such systems are becoming increasingly complex. That is, they exhibit emergent behavior, coupled feedback, non-linearity and semi-permeable system boundaries. These drivers of complexity are further exacerbated by the introduction of AI and machine learning techniques. The result of these developments is an increase in uncertainty in our ability to argue their safety.

Using examples from the field of automated driving, this webinar introduces sources of uncertainty and emergent complexity in the safety assurance process of such systems and discusses why existing safety approaches are reaching their limits of effectiveness.

Simon's talk will illustrate how defining sources of uncertainty and acknowledging the impact of these risk factors at the governance, management and technical levels of the system is key to developing effective safety assurance strategies. State-of-the-art and current research in this area is summarized. Simon's talk will conclude with the hypothetical question of whether such systems will ever be "safe enough" and how we could go about arguing such a claim.

Take-Away Key Message

To understand the path to safe, highly automated AI-based cyber physical systems it is essential to acknowledge the root causes of complexity and uncertainty within the safety assurance process. This webinar will discuss how a holistic view of the system as well as dedicated measures during design and operation can be used to argue the safety of such systems de-spite these challenges.

Biography

Professor Dr. Simon Burton graduated in computer science at the University of York, where he also achieved his PhD on the topic of the verification of safety-critical software in 2001. Simon has a background in a number of industries but has spent the last two decades mainly focusing on the automotive sector, working in research and development projects as well as leading consulting, engineering service and product organizations. Most recently, he held the role of Director of Vehicle Systems Safety at Robert Bosch GmbH where, amongst other things, his efforts were focused on developing strategies for ensuring the safety of automated driving systems.

In September 2020, he joined Fraunhofer IKS in the role of research division director where he steers research strategy into "safe intelligence". His own personal research interests include the safety assurance of complex, autonomous systems, and the safety of machine learning. In addition to his role within Fraunhofer IKS, he has the role of honorary visiting professor at the University of York where he supports a number of research activities and interdisciplinary collaborations. Amongst his other activities, Simon is also convenor the ISO working group ISO TC22/SC32/WG14, responsible for developing a publicly available specification (ISO PAS 8800) on the topic of Road vehicles – Safety and Artificial Intelligence.

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Regards,
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