Tamás Haidegger
Situation Awareness: the key to safe autonomous systems

Human trust and Situation Awareness (SA) are safety critical components of partially and highly automated systems. May it be an autonomous surgical robot or a self driving car, independent decision making of the system based on complex, multi-sensory data will surly lead to some wrong conclusions and hazardous outcome. The aim of the development community is to establish processes and metrics for ensuring the safety of such systems. SA plays a key role there, as it defines the level of cognitive understanding and capability of a human operator in a given environment. Assessing, maintaining and regaining efficiently SA are core elements of the relevant research projects, reviewed and compared in this talk.

Bio

Tamás Haidegger received his MSc degrees from the Budapest University of Technology and Economics (BME) in Electrical Engineering and Biomedical Engineering in 2006 and 2008, respectively, then PhD in 2011. His main field of research is on medical technologies, control/teleoperation of surgical robots, image-guided therapy and assistive devices. Currently, he is associate professor at Óbuda University, serving as the director of the University Research, Innovation and Service Center (EKIK), and as the technical lead of medical robotics research at the Antal Bejczy Center for Intelligent Robotics. Besides, he is a research area manager at the Austrian Center of Medical Innovation and Technology (ACMIT), working on minimally invasive surgical simulation and training, medical robotics and usability/workflow assessment through ontologies. Tamás is the co-founder of a university spin-off—HandInScan—focusing on objective hand hygiene control in the medical environment, member of the World Health Organization POPS group. He is an active member of various other professional organizations, including the IEEE Robotics an Automation Society, IEEE SMC, IEEE EMBC and euRobotics aisbl, holding leadership positions in the IEEE Hungary Section as well. He is a national delegate to the ISO TC299 standardization committee focusing on the safety and performance of medical robots and the ISO TC 304 working on hand hygiene and patient safety standards, furthermore, also involved in the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems. Tamas is the author and co-author of over 150 books, articles and scientific papers across the various domains of biomedical engineering, with over 900 independent citations to his work. He has been running a professional blog on medical robotic technologies for 12 years: surgrob.blogspot.com.