

Title: The Cyber-Physical Metaverse – Where Dynamic Digital Twins are safe and timely

Abstract:

The concept of the Metaverse is gaining increasing traction and has been explored from different angles, usually centered around a human user, true to its original definition. This keynote will explore digital spaces resembling the Metaverse for Cyber-Physical Systems (CPS) and its applications.

Beyond social interactions, the CPS Metaverse offers possibilities to integrate layers of interconnected Dynamic Digital Twins (DTs) representing parts of and interacting with the real world in real-time, enabling not only analysis and representation of current state, but also feedback loops and control.

This keynote will address how the Metaverse can become the virtual world where DTs of humans and machines live and how to reliably connect DTs to the physical world. Insights in current activities of Bosch Research and its academic partners to move towards this vision will be provided.

CV:

Dr.-Ing. Philipp Mundhenk is currently a Project Director at Robert Bosch GmbH where he is heading the Corporate Research portfolio Information and Communication Technologies (ICT). There, over 130 researchers are improving cyber-physical systems (CPS) and the tools to create them, e.g., through the application of AI, improving safety, security, and privacy, as well as improving connectivity, and create new forms of CPS, such as Reliable Distributed Systems (RDS) and the CPS Metaverse. He studied Electrical and Computer Engineering in Germany, Singapore and Korea and obtained his doctorate in this field from Technical University Munich (TUM), Germany and Nanyang Technological University (NTU), Singapore in 2017. From 2016 to 2018 at Audi AG, he was driving the creation of vw.os in the role of Chief Architect, among others. From 2018 to 2020 he was responsible for multiple aspects of the infrastructure in autonomous vehicles at the Autonomous Intelligent Driving GmbH (AID) and Argo AI.