

# informatik-Kolloquium

The Department of Computer Science of Johannes Kepler University Linz<sup>1</sup> together with the Austrian Society of Computer Science (ÖGI) invites to the following talk:

Topic: **The Convergence of Safety and Security for Safety-critical Systems**

Presenter: **Prof. Dr. Sebastian Fischmeister**, University of Waterloo (Canada),  
Real-time Embedded Software Group

Date: **Tuesday, July 10th, 2018, 15:00-16:00**

Location: **JKU, Science Park 3, Room 218**

**Abstract:** For decades, safety was the dominating topic for cyber-physical systems. Safety of a system ensures that in the case of faults, the system is still highly unlikely to cause harm to users, capital infrastructure, or the environment. With the advent of connectivity, security is now becoming an equally important topic as connectivity creates scalable attacks. Unfortunately, the complexity of today's systems prevents engineers from gaining a deep understanding of systems and consequently new approaches for safety and security approaches are necessary.

The talk presents ongoing development of a framework for machine-based safety and security monitoring. The framework is based on specification mining, runtime verification, and anomaly detection using known but also novel data sources. The utility of the framework includes, besides online safety and security monitoring, providing insights to engineers, delivering prognostics and diagnostics, and demonstrating compliance with safety specifications. The results are promising and are supported by demonstrations on autonomous vehicles and other case studies.

#### **About the Presenter:**

<https://uwaterloo.ca/embedded-software-group/people-profiles/sebastian-fischmeister>

Sebastian Fischmeister performs systems research at the intersection of software technology, distributed systems, and formal methods. His preferred application area includes distributed real-time embedded systems in the domain of automotive systems, avionics, and medical devices. Key highlights of his research include a framework for scalable location-based pervasive computing systems and tree communication schedules for verifiable but flexible real-time communication. He received the Dipl.-Ing. degree in Computer Science at the Vienna University of Technology, Austria, in March 2000, and his Ph.D. degree in Computer Science at the University of Salzburg, Austria in December 2002. He continued working at the University of Salzburg as researcher and lecturer and was awarded the Austrian APART stipend in 2005. He subsequently worked at the University of Pennsylvania, USA, as Post Graduate Research Associate until 2008. Sebastian Fischmeister is currently Associate Professor at the Department of Electrical and Computer Engineering at the University of Waterloo, Canada.

**Organizer:** a. Univ.-Prof. Dr. Paul Grünbacher, *Christian Doppler Laboratory on Monitoring and Evolution of Very-Large-Scale Software Systems* ([mevss.jku.at](mailto:mevss.jku.at)), *Institute Software Systems Engineering* ([www.isse.jku.at](http://www.isse.jku.at))

The department consists of the following institutes:

Application Oriented Knowledge Processing (FAW), Bio Informatics, Computational Perception, Computer Architecture, Computer Graphics, Formal Models and Verification, Networks and Security, Integrated Circuits, Pervasive Computing, Software Systems Engineering, System Software, Telecooperation, Signal Processing