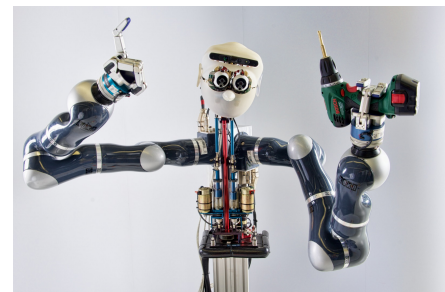
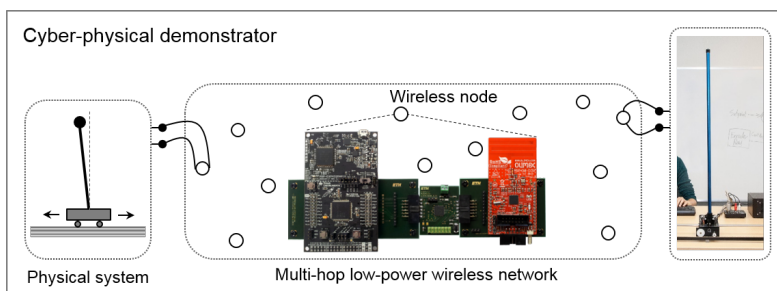


Distributed and Event-based Wireless Control for Cyber-physical Systems

PhD Position at the MPI for Intelligent Systems, Tübingen, Germany (Dr. S. Trimpe)
and KTH Stockholm, Sweden (Prof. K.H. Johansson)

The [Autonomous Motion department](#) (research group [Dr. S. Trimpe](#)) at the [Max Planck Institute for Intelligent Systems](#) in Tübingen, Germany and the Department of Automatic Control ([Prof. K.H. Johansson](#)) at KTH Stockholm are looking for an outstanding and highly motivated PhD researcher in **control**, **networks**, and **autonomous multi-agent systems**. The **fully funded position** is to be filled as soon as possible and initially offered for a duration of three years with employment contract according to the rules of the Max Planck Institute (MPI). The PhD researcher will be located at the MPI, with regular exchange visits, co-supervision and the option of obtaining a degree from KTH. This research is expected to have high impact both in science and industry.



About the project: The next generation of engineered systems will tightly integrate the physical world with computing and communication systems. In these *cyber-physical systems* (CPSs), estimation, control, and learning is distributed among multiple autonomous agents that interconnect to form large-scale dynamic networks. This project targets the joint design and tight integration of distributed event-based control and low-power wireless networking to demonstrate tangible benefits of CPS design over traditional systems design in terms of, for example, superior performance and robustness, reduced costs, and unprecedented flexibility. CPSs are widely anticipated to play a major role in future applications such as transportation, smart grid, or autonomous robotics.

Within this project, the PhD researcher will do cutting-edge research on novel methods and theory for distributed and event-based control and learning, a principled framework for the co-design of control and communication systems, theoretical guarantees for wireless control systems, and other topics depending on the candidate's interest and aptitude. For validating the developed theory, a novel CPS demonstrator will be developed (left figure), and also several state-of-the-art robotic platforms at MPI can be used (e.g., right figure).

Applicants should have Master's degree in engineering, computer science, mathematics, or related disciplines, with a strong background in dynamic systems and control. Successful candidates will typically have ranked at or near the top of their classes, have a good mathematical background, relevant computer programming skills, and are proficient in oral and written English. Experience with real-time control implementations is a plus.

Max Planck Institutes are internationally renowned and regarded as one of the world's foremost organizations for fundamental research. The [MPI for Intelligent Systems](#) is a young, highly dynamic, and internationally oriented institution with excellent research opportunities and close ties to several national and international partners (e.g., Univ. of Stuttgart, ETH Zurich, Univ. of Southern California). The working language is English. This PhD project will be carried out at the [Autonomous Motion department](#) in the research group of [Dr. Sebastian Trimpe](#) in collaboration with the group of [Prof. Karl Henrik Johansson](#) at KTH Stockholm. The Max Planck Society is committed to increasing the number of individuals with disabilities in its workforce and therefore encourages applications from such individuals.

Applications should be sent as a PDF file by e-mail to Dr. Sebastian Trimpe (strimpe@tuebingen.mpg.de) and include a research statement (indicating your motivation for a PhD with us and how your interests relate to this project, max. 2 pages), a CV, grade transcripts, two sample research documents (e.g., publication, thesis), and contact details of at least two references (letters of reference are not requested until possibly a later stage).

Please do not hesitate to contact Dr. Trimpe (strimpe@tuebingen.mpg.de) or Prof. Johansson (kallej@kth.se) with any questions. We look forward to receiving your application.