MAX PLANCK INSTITUTE FOR INTELLIGENT SYSTEMS
Max Planck Research Group on Intelligent Control Systems

MAX-PLANCK-GESELLSCHAFT

HiWi/Part-Time Student Assistant/Internship Position

Intelligent Control of Cyber-physical Systems

Support Research in Machine Learning, Control, and Networked Systems

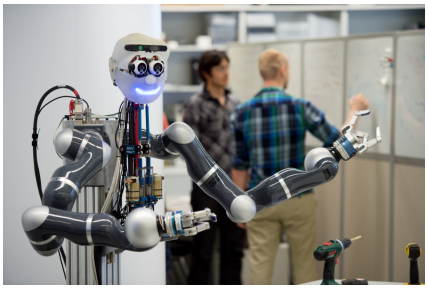
The next generation of intelligent systems will tightly integrate the physical world with computing and communication systems. These cyber-physical systems (CPSs) will exceed present day systems in complexity, performance, and their level of autonomy. Applications include, but are not limited to, multi-robot systems, autonomous driving, or quadcopter swarms flying in formation.

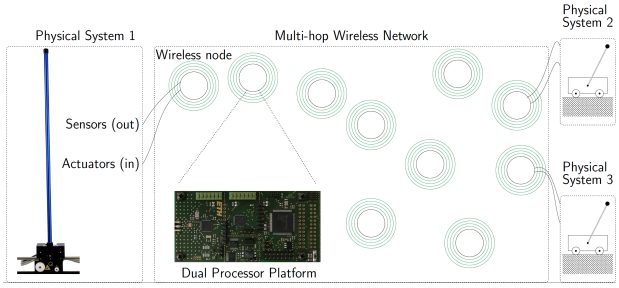
Controlling these systems poses various challenges. The examples mentioned above represent complex systems with multiple degrees of freedoms. Modelling such systems and deriving controllers is a difficult task, which can be simplified by introducing machine learning methods to allow the agents to autonomously learn models and controllers from data. Enabling the agents to communicate with each other adds the possibility of flexibly sharing data, allows for coordination, and increases the collective information. Communication, which in the above mentioned examples should occur over wireless networks, introduces additional challenges such as transportation delays, probabilities of packet losses, and bandwidth limitation. Research in the Intelligent Control Systems Group integrates control, machine learning, and modern networked systems to develop novel algorithms for future intelligent systems.

In order to address these challenges we have various testbeds, one of them is a unique wireless multi-hop testbed, depicted in the right figure below. For further development of these testbeds, as well as for implementation of current research and experimentation on them, we are offering a HiWi/student assistant/internship position. Possible tasks could include, for example:

- Programming of embedded devices (in C/C++);
- Development, startup, and maintenance of testbed hardware (electrical and mechanical);
- Assistance with preparation and conduction of research experiments.

The HiWi/student assistant/internship position will allow the student to gain hands-on experience with hardware systems, as well as be exposed to ongoing intelligent control systems research. The concrete position and tasks are subject to discussion with interested candidates.





MPI for Intelligent Systems, Intelligent Control Systems Group (`https://ics.is.mpg.de/`)

The project will be carried out at the Intelligent Control Systems (ICS) Group of the Max Planck Institute for Intelligent Systems (MPI-IS) located in Stuttgart and Tübingen, Germany. The MPI-IS is a young, highly dynamic, and internationally oriented research institution with close ties to several national and international partners (e.g. University of Stuttgart, University of Tübingen, ETH Zürich, KTH Stockholm). The ICS group is located at both institute sites, Stuttgart and Tübingen, and we have positions available at both locations.

Prerequisites: High motivation and excellent technical skills. Relevant experience with, for example, embedded programming (C/C++), electronics (e.g., soldering), or general hardware systems is a plus.

Contact: If you are interested in this position or have any question, please contact us. When applying, please include your CV, grade transcript, and optionally other documents helpful to evaluate your background.

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