Robotics for industrial applications - internship

April 13, 2022

General conditions

100%, Zurich, fixed-term internship. The Automatic Control Laboratory at ETH Zurich offers this paid internship based in Zurich, Switzerland, within NCCR Automation. The duration of the internship is 3-6 months.

Project background

Research in robotics has seen incredible progress in the last years, driven by the incorporation of sensor data in the control algorithms of the robotic systems. Learning has enabled self-driving, autonomous flight, and humanoid robots to reach milestones that were previously unthinkable. While many robotics advancements have been applied to the field of manufacturing, there are still fundamental challenges that hinder development. adopted in modern manufacturing processes.

The current state of technology in manufacturing is mature enough to accommodate and benefit from data-driven, learning-based approaches. Incorporating efficient use of predictive models and advanced control using process data opens up new possibilities for emerging manufacturing processes.

The research activities within these projects will bring forward the integration of advanced control methods in combination with machine learning. We work towards creating a data-informed automation framework that will be demonstrated on high-performance industrial systems, unifying ideas from learning-based and adaptive control, iterative learning, and predictive control.

Job description

We offer an internship for building an experimental system consisting of robot arms, sensors, and suitable tools. The main activities during the internship will be:

• Research and select appropriate hardware for the project
• Robot calibration using external sensors
• Development of a modular software framework integrating state estimation, calibration, and first control implementation to reach improvement in the positioning accuracy of the robot

Your profile

Suitable candidates need a BSc or graduate degree in engineering (ideally mechanical engineering/robotics) or a related field from a recognized university. Strong background in programming
(Python, C++, Matlab), exposure to ROS, and an understanding of estimation, and control methods are essential for the successful completion of the internship. Previous experience in additive manufacturing, simulation model development, and spatiotemporal data analysis is a plus.

**Application**

Interested? We look forward to receiving your application including a CV, 2 reference letters/contacts, a short statement of objectives, and transcripts of all degrees in English. Contact for applications: Dr. Alisa Rupenyan, e-mail: ralisa@control.ee.ethz.ch.