

Master Thesis / Internship – Robotic Manipulation for Autonomous Trucks (6 months)

Zurich, Switzerland

Embotech is an award-winning software scale-up developing cutting edge autonomous driving technology and solutions for autonomous vehicles, with focus on private ground applications such as trucks at port terminals and passenger cars in factories. We are delivering safe autonomous transportation by leveraging the safe Physical AI technology that we have been developing since 2013.

We are looking for an intern or master thesis student who is passionate about robotics and autonomous systems in industrial environments.

Join us at Embotech in a fast-growing company with attractive conditions and flexible hours. You'll be part of a dynamic and international team, working alongside highly skilled colleagues passionate about excellence and efficiency. We're looking for motivated individuals to help us tackle one of the world's most complex challenges and propel our company forward.

Responsibilities:

- Design, implement, and evaluate a highly reliable and safe control system for a robotic arm that autonomously performs truck-trailer cable connection tasks.
- The cable connection task presents unique challenges: it requires millimeter-level precision, compliant force control during physical contact, robust perception of connector pose under variable lighting and vehicle positioning, and fail-safe behavior in the presence of humans and moving equipment.
- The student may choose between:
 - a classical control-theoretic approach, or
 - a reinforcement learning-based approach, or
 - a hybrid method combining model-based control with learning,with the overarching requirement that the final system demonstrates industrial-grade robustness, safety, and repeatability.

Requirements:

- Bachelor's degree in computer science, engineering, or robotics.
- Strong interest in robotics, autonomous systems, and manipulation.
- Demonstrated to have solved practical robotics problems already at least once.
- Knowledge of system modelling and analysis techniques.
- Familiarity with Reinforcement Learning.
- Familiarity with Robotic concepts (from perception and state estimation to controls).
- Familiarity with various programming languages (e.g. Python, C++, or Rust as well as ROS).
- Familiarity with physics simulation environments to train robots (e.g. Nvidia Omniverse) is a plus
- Excellent communication skills in English.
- Strong problem-solving and analytical skills.
- Ability to work effectively in a team environment with a hands-on mentality.

Our preferred starting time for this position is ASAP.
The duration of the internship is 6 months.

We look forward to receiving your application by e-mail:

careers@embotech.com