We work with control systems and analysis, model based development and software development. Our assignments contain challenges at the highest technical level and in our engineers you’ll find analytical minds, inventive souls and a can-do attitude.

Master’s Thesis

Autonomous positioning and navigation of underwater vehicle

Background

Combine Control Systems is an engineering company in the field of control systems, analysis, model-based development, software and product development. We have experience working with methods for model-based development, to ensure higher quality and a more efficient development process.

A growing interest at Combine lately is the development of a remotely operated underwater vehicle, a ROV. During the spring of 2016, a master’s thesis was performed at Combine Control Systems in collaboration with Linköping University, LiU. The objectives of the thesis were to create a plant model of the ROV and to develop a robust controller for it supported by that model. The ROV was then developed further in a CDIO project at LiU during the autumn. The main focus of this project was positioning of the ROV, but also to improve the previously developed model and control system as well as developing a simulation environment.

As a master’s thesis student at Combine Control Systems; your assignment will be to continue the development of the ROV, especially the work of camera based positioning and navigation worked upon in the CDIO project. The CDIO project ends in the middle of December and the outline of this master’s thesis will be greatly influenced by the outcome of that project. It is therefore important to be adjustable since the objects of this thesis may change initially.

Hardware will be provided by Combine Control Systems, including one computer (Ubuntu) which include existing GUI for the ROV.

Main Tasks

These will be discussed by students and supervisors at the start of the master’s thesis, since they will be greatly influenced by the CDIO project. Probable tasks:

1. Positioning & navigation using camera
2. Autonomous modes
3. Map surroundings

Qualifications

- Experience with Matlab/Simulink.
- Experience with control systems and model-based development.
- A keen interest in technology!

Contact

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The Master Thesis can be performed by two students at Combine Control Systems office in Linköping. Questions and applications are referred to Rikard Hagman. Applications should include resume, cover letter and transcript of records.

For information about the previous master’s thesis and CDIO project, visit:
http://www.isy.liu.se/edu/projekt/tsrt10/2016/rov/