

Master Thesis Beckhoff Automation

Beckhoff Automation is a global provider of open automation systems based on advanced PC Control technology. The “New Automation Technology” philosophy at Beckhoff represents universal and open automation solutions used in a wide spectrum of high-tech applications around the world.

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Machine learning and optimal control for building automation

Beckhoff now offers a machine learning (ML) solution that is seamlessly integrated into TwinCAT 3. Building on established standards, it brings to ML applications the advantages of system openness familiar from PC-based control. In addition, the TwinCAT solution supports the execution of the machine learning models in real time, allowing it to handle demanding tasks.

This project aims to examine the benefits of incorporating machine learning to the field of building automation. Building automation is the centralized control of a building’s heating, ventilation, air conditioning, lighting and other systems and this thesis will cover the optimization of the heating in a building.

Today newer building’s heating systems are usually controlled by a BACS (building automation control system). During commissioning of these systems, general control parameters are set based on simplified models and guidelines. In reality these parameters are not always the optimal parameters due to a number of external factors such as outside temperature, humidity, windspeed and solar radiation. This often leads to unnecessary energy usage and undesired room temperatures.

In a step towards the true “Smart building”, our goal with this master thesis is to develop a general workflow based on machine learning to optimize energy usage of buildings, make them more environmentally friendly while increasing the comfort for the residents.

For a successful project we offer you.

- TwinCAT Building automation course to learn our software and the basics of BA
- Supervisor in Malmö
- A workplace in Malmö
- Necessary hardware and software for small scale practical tests

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