



MS Thesis Project Opportunity

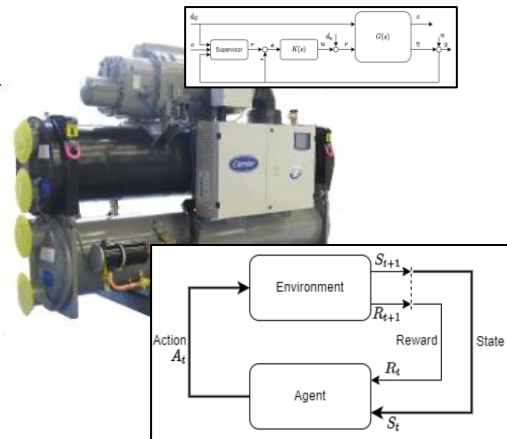
Carrier Corporation

Physics Enhanced Learning-Based Control of Energy Systems

Problem Description:

Chiller systems are devices that produce cooling for several commercial and industrial applications – contributing to roughly 10% of global electricity consumption. Carrier is a global leader in cooling products and improvement in their design and control has an immediate impact on electricity consumption and global emissions.

The purpose of this thesis project is to explore and evaluate the usage of data-based control and control design methods including the use of machine or reinforcement learning to shorten the design and commissioning time as well as improve operational efficiencies in chiller applications.



Carrier has recently opened an office in Lund and is interested in hiring students from successful MS Thesis projects.

Project Description:

This project will be a continuation of an LTH Licentiate thesis that addressed model-free design methods for multi-variable PI control of a chiller. The previous work identified several next steps including:

- Algorithm speedup: Achieve results from a reinforcement learning algorithm quicker
- Physics enhancement: As part of speedup, including physics knowledge in the algorithm is desired
- Method robustness: Further testing is needed at all operating scenarios including during overrides
- Lab testing: If complete, opportunity to witness your algorithm tested in lab environment

The student(s) will work closely with Carrier engineers that are currently designing and implementing control strategies for such equipment with ample opportunity to test and implement new and advanced algorithms.

Student profile:

Skilled students with interest in machine learning, automatic control, physics of energy equipment, and programming. Experience with thermofluid systems, python, and lab or field data will be beneficial.

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