



# INDUSTRY CLUB

industryclub.control.lth.se // newsletter No 4



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*The Automatic Control Industry Club: Exploring, Expanding and Applying Control Technology*

Welcome to Newsletter Nr 4, May 2022

In the newsletter we present interesting new developments at our department, and report about advances in the field of automatic control, as well as opportunities for collaborations.

We welcome you to be a part of this!

## Industry Club

The Industry Club is an initiative to build an ecosystem around the Department of Automatic Control at Lund University. We want the Industry Club to be a forum for sharing ideas and getting feedback on the research we do. We want to reach out to the industry and other organizations to collaborate on new projects and initiate new research collaborations. The interface of the Industry Club will be a recurring newsletter, a webpage, and online and live events.

## Highlights from the department

Interesting topics are being discussed on a daily basis at the department. Here are a few examples of recent topics that we would like to highlight.

- *Industry day* - Our very first Industry Day took place on Thursday March 24th, and attracted people from industry and academia. Charlotta welcomed all and introduced Anton who presented the Department and our different research areas. Björn Olofsson then introduced us to Robotics, the Robotics Lab and the ongoing construction projects. We met Spot, an agile mobile robot used in the construction projects. The second half of the event was dedicated to round table discussions about mutual interests. The event ended with some more relaxing discussions over beer and snacks.
- *Activity Report 2021* - The printed version of this year's Activity Report is now available. If you want a copy – please send an e-mail to [monika.ramusson@control.lth.se](mailto:monika.ramusson@control.lth.se)
- *Focus period in April/May* - [ELLIIT](#) arranged the first in a series of focus periods, hosted by the Department of Automatic Control in Lund. The

theme, “Data-driven modelling and learning for cancer immunotherapy”, has attracted international top researchers within cancer immunology and scientific machine learning to a 3-day workshop. The department has also hosted early-career international researchers within the subjects, a hackathon with clinical dataset challenges, and a course in di-



mensionality reduction techniques.

- *Master Theses in June* - In their master thesis project with Ericsson, titled *Job Scheduling using Reinforcement Learning*, Elin Wilson Andersson and Johan Håkansson use reinforcement learning to improve scheduling of compute jobs in mobile base stations. Their algorithm manages a queue of jobs with several kinds of requirements, and schedules them on the many compute cores that reside inside the base station itself. More about published [Master Theses](#).

## Highlights from the control world

We frequently attend control conferences, events and meetings around the globe. Below you'll find a glimpse of what we consider the most valuable take-aways.

- *Conference on performance measurement and management* - Conference on Performance management

(Coperman) aims to bring together researchers and practitioners to present and discuss innovative contributions concerning the measurement and management of organizational performance in a modern business environment. The international [Coperman](#) conference will be held on October 13-14, 2022. Participation in online conference is free of charge. Selected conference papers will be published in a Special Issue of "International Journal of Engineering Business Management" (WOS, Scopus indexed). The conference is organized by University of Tor Vergata, Rome, Italy, Università degli studi Firenze, Florence, Italy and Università degli studi della Campania, Italy.

- *SciML - Scientific Machine Learning (SciML)* is one of several terms referring to mixing techniques from modern Machine Learning with established scientific methods like modelling using differential equations. A recent conference, [SciMLCon](#) was held and recorded talks are [available](#). Much of the work uses the Julia Programming Language, and Turing Award winner John Dongarra recently suggested the Julia language is one good candidate to take over because it could help making the scientist more productive, according to [ZDNet](#).

- *Carrier opens an office in Lund* - Carrier Corporation is one of the world's largest providers of building technologies. Its fire safety, security, building automation, heating, ventilation, air conditioning and refrigeration systems and services promote integrated, high performance buildings that are safer, smarter and more sustainable. Carrier recently established an office in Lund, at Ideon Gateway which is close to the LTH campus; access to a world leading academic institution in systems and control as well as strong talent are key factors for building a local presence. The areas of excellence of the Department is a perfect match with Carriers strategic evolution towards a systems solution provider, notably in smart buildings and connected cold chains, which drives needs in systems engineering and controls, machine learning/AI and computational engineering. Two master's thesis projects are currently in their final stages at the Carrier-Lund office in the area of performance diagnostics for cooling equipment using machine learning, and physics-informed learning of building systems dynamics (for MPC). A PhD project is also underway using Reinforcement Learning for optimal chiller controls. These projects are both critical technology areas at Carrier and leading research topics at the Department of Automatic Control – they represent a small portion

of the opportunities at Carrier and a growing collaboration with the Department.

## Upcoming opportunities

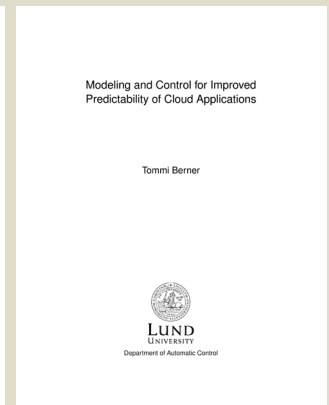
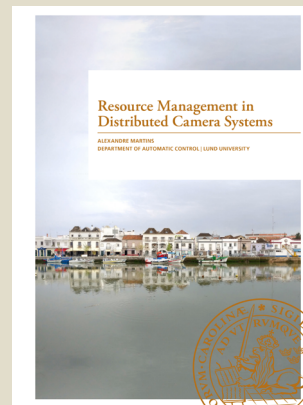
- *The season for recruiting students* - Many students present their Master Thesis projects in the final weeks of the spring, and go on to apply for jobs in industry. The presentations will be announced on our [webpage](#).

- *Upcoming dissertations* - There are two upcoming dissertations at the department before the summer holidays:

- Alexandre Martins, June 3rd: "Resource Management in Distributed Camera Systems"

- Tommi Berner, June 17th: "Modeling and Control for improved Predictability of Cloud Applications" More information is available on our [webpage](#).

- *Reglermöte in Luleå* - Reglermöte- 2022 is open to anyone interested in Control Engineering in the broad sense, from theory to practice. The conference is a forum for contacts between industry and universities. More info is available on [Reglermöte](#). Contact: [reglermote2022@lth.se](mailto:reglermote2022@lth.se).



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