VINNOVA

2025-03-31
Dnr: 2023-00542

Competence Centre – SEDDIT annual report

1. Executive summary

- The General Assembly and kick-off of SEDDIT was held at Linköping University on January 23.
- Three student summer projects were arranged during the summer in collaboration with Actia Nordic, Sensorbee, and Safeline, respectively.
- Six PhD students have been recruited to SEDDIT, and the recruitment process for more PhD students is ongoing.
- In connection with the annual workshop a thematic workshop entitled *How to handle complex systems* was arranged with contributions from both industry and academia.
- The annual workshop was arranged on November 20 – 21. The first day included talks by Jacob Stoustrup and Maria Prandini, who are members of the International Scientific Advisory Board (ISAB), a poster session, and think tanks around topics of common interest. Day two focused on a study visit to Väderstad AB, which is one of the industrial partners in SEDDIT, including a company presentation, a guided tour in the production facilities, and possibilities to take a closer look at the products of the company.
- A new website for SEDDIT was launched in December.
- Lars Eriksson has spent several periods as guest researcher at Uppsala university in a joint research effort about future batteries.
- Initial discussions with potential new partners have been carried out.
- A Letter-of-Intent has been signed between SEDDIT and Agtech 2030, which is an innovation environment dealing with various aspects of agriculture.
- On March 7, the Center director and the Coordinator of SEDDIT participated in the kick-off for the sustainability efforts, which was arranged by Vinnova and AFRY in Gothenburg.
- On October 23 an internal workshop about sustainability and impact was held for the management team, and it was led by Karin Ackerholm and Susanne Pettersson from the International Affairs and Collaborations Division at Linköping University.
- During January and February, SEDDIT was visited by Neusa Maria Franco de Oliveira from ITA, Brazil.
- Daniel Axehill was promoted to full Professor in February 2024.

2. Centre projects

Core competences and Focus areas

Today, climate change and global stability and security are two of the most urgent global challenges facing the world. Digital transformation is critical to address these challenges as it enables environmental, economic, and governance actions – both on a local and global scale – to be based on reliable and up-to-date information. A key component in the digital transformation will be advanced mathematical methods for information extraction and decision-making from vast amounts of data. Therefore, the focus of the SEDDIT center is on the research and development of advanced mathematical methods for information extraction and decision-making from massive amounts of data and education and human resources development within this area. Hence, SEDDIT will contribute towards net-zero emissions and global stability and security, as well as the long-term competitiveness of the Swedish industry.

The scientific basis of the center is formed by the following Core competences

- Sensor fusion and sensor systems
- Data-driven modeling and diagnostics
- Learning methods for control
- Control-oriented physics-based modeling
- Optimization and planning for control and autonomy

and the activities within SEDDIT will be concentrated to the following two Focus areas

- Zero carbon emission and resilient transportation systems
- Societal security and environmental monitoring

The first focus area is primarily connected to the climate-change challenge. This is a challenge of enormous magnitude, and carbon-free propulsion and efficient and durable components and transportation systems give important and valuable contributions to the efforts to meet this challenge. The second focus area is primarily related to the global stability and security challenge. This is also an enormous challenge, and activities to meet this challenge involve, for example, systems for surveillance and monitoring of potential hazards for society and the environment, but also efficient and sustainable systems for food production. The two focus areas have both distinct aspects and common challenges, and the Core competences are crucial in both Focus areas. A graphical illustration of the connections between Focus areas, Core competences, and four of the most relevant sustainable development goals (SDGs) is given in Figure 1.

Figure 1: Connections between Focus areas, Core competences, and SDGs.

Projects

The projects within SEDDIT represent a range from projects run by senior researchers to summer projects for students. Most of the projects are of methodological nature, which means that they are of interest for several partners in SEDDIT, while a few projects have somewhat tighter connection to some Focus area or company. It should also be noted that since the report covers the first year of SEDDIT, some projects are still in a start-up phase. The information-sharing between projects is done via, for example, PhD student seminars, where the PhD students present their work and challenges for each other, poster session at the annual workshop, and co-supervision across the participating research groups.

- *Estimation and information handling in a heterogenous SoS*. The key person in the project is an adjunct senior researcher from Saab Aeronautics, but the systems-of-systems is highly relevant for other partners, such as Scania and Volvo Cars. (P1)
- *Robust decision-making under uncertainty and model errors*. Decision-making under uncertainty is a general problem in many contexts. The key person is industrial postdoc from Saab Aeronautics, but the problem is of importance for, for example, Saab Dynamics. (P2)
- *Collaborative localization in GNSS-denied environments*. The project involves an industrial PhD student from Saab Dynamics, but the problem is highly relevant for other companies developing products that rely on localization using GNSS, like, for example, Saab Aeronautics and Scania. (P3)
- *Autonomous farming – agricultural sensing and control*. The project involves an industrial PhD student from Väderstad and is focused on data-driven modeling and control, which are of interest also for, for example, Atlas Copco Industrial Technique and Volvo Cars. (P4)

- *Safe motion-planning with learning in the loop*. The intended main industrial partner is Scania, but motion-planning is of strong relevance also for companies such as Saab Aeronautics and Saab Dynamics. (P5)
- *Foundation model and reinforcement learning*. The project is in the start-up phase and is intended to be of methodological nature with relevance for several partners. (P6)
- *Collaborative decision-making in uncertain scenarios*. The project is in the start-up phase and is intended to be of methodological nature with relevance for several partners. (P7)
- *Robust large-scale estimation*. Robust estimation based on distributed sensors is a general problem in systems with multiple and collaborating platforms and sensors units, and the area is of importance for companies such as Saab Aeronautics, Scania, and Saab Dynamics. (P8)
- *Optimizing vehicle data transmission for accurate regional temperature mapping.* The project involves an academic PhD student and is focused on information-sharing with limited bandwidth of a fleet of vehicles that represents a distributed sensor network. The main partner in the project is Scania, but the area is of vital importance also for, for example, Saab Dynamics and Volvo Cars. (P9)
- *Human senses mimicking: Mechanical integrity self-assessment.* The project involves an industrial PhD student from Volvo Cars, but the key challenges in the project, data-driven modeling and diagnostics of mechanical faults, are also of key importance for Scania, Saab, Väderstad and others. (P10)
- *Thermotronic digital twins supporting the digital transformation of sustainable transport.* The main industrial partner in this project is Scania, but the area of electrification is important also for Volvo Cars. (P11)
- *Optimal control of tightening processes*. The key person is the project is an industrial PhD student from Atlas Copco Industrial Technique, but the main scientific and industrial challenges, i.e. modeling of friction and optimal control of the mechanical process, are very important also for Väderstad, Scania, Volvo Cars, and others. (P12)
- *Reinforcement learning for multi-agent systems under semantic and perceptual uncertainties*. The project is in the start-up phase and is intended to be of methodological nature with relevance for several partners. (P13)
- *2 axis motion test-rig.* Student summer project in collaboration with Actia Nordic.
- *Improving air quality sensors.* Student summer project in collaboration with Sensorbee.

- *Monitoring elevator usage with a ToF camera*. Student summer project in collaboration with Safeline.

Connections between projects, Core competences and Focus areas

Figure 2 illustrates the connections between the different projects and the Core competences of SEDDIT (summer projects are not included). The number, or intensity of the color, indicates the strength of the connection. Several observations can be made based on the figure. There are several projects within all Core competences, which show that there is strong potential for contact and collaboration between the projects. Also, most of the projects involve several Core competences.

Projekt	Sensor fusion and sensor systems	Data-driven modeling and diagnostics	Learning methods for control	Control-oriented physics-based modeling	Optimization and planning for control and autonomy
Estimation and …	5	1	1	1	5
Robust decision-making …	5	1	1	2	5
Collaborative localization …	5	1	1	1	1
Autonomous farming …	2	5	3	1	2
Safe motion-handling …	1	3	4	1	5
Foundation Models and Reinforcemen	3	3	5	1	4
Collaborative decision …	2	1	1	1	5
Robust large-scale est. …	5	1	1	1	3
Optimal control of …	4	3	1	5	4
Optimizing vehicle data …	5	3	1	3	3
Humans senses mimicking ..	2	5	1	2	1
Thermotronic digital twins …	3	3	1	5	3
Reinforcement learning …	3	2	5	2	1

Figure 2: Connections between projects and Core competences. The number and intensity of the color represent the strength of the connection.

Figure 3 illustrates the connections between the project and the Focus areas. The number and the intensity of the color represent the strength of the connection. The figure shows that there is a good balance between the Focus areas, and that several projects have relevance for both Focus areas.

Estimation and …	2	3
Robust decision-making …	1	4
Collaborative localization …	2	3
Autonomous farming …	2	3
Safe motion-handling …	3	2
Foundation Models and Reinforc	2	3
Collaborative decision …	4	1
Robust large-scale est. …	2	3
Optimal control of …	2	3
Optimizing vehicle data …	2	3
Humans senses mimicking ..	4	1
Thermotronic digital twins …	4	1
Reinforcement learning …	1	4

Figure 3: Connections between projects and Focus areas. The number and intensity of the color represent the strength of the connection.

Expected results and impact goals

The expected results and impact goals of SEDDIT are summarized in the keywords **People**, **Processes** and **Products**. These keywords act as a rationale to think about and describe the preferred outcomes and expected impact of the activities in relation to the participating companies and society at large.

People

For Swedish system-building industry to stay competitive, access to highly educated people on PhD or MSc level with a relevant combination of knowledge and skills is crucial. SEDDIT will contribute to this in several ways. First, via PhD student education and the research projects in collaboration with the companies, the PhD students will obtain deep insight into the industrial challenges and needs and contribute to the knowledge exchange. Second, through the strong involvement in the engineering education at LiU and UU, SEDDIT researchers will influence the content as well as execution of the courses given at MSc level. Finally, the MSc theses that are performed in collaboration with the Swedish system-building industry constitute excellent links between academia and industry, and, in many cases, lead to employment by the company after graduation.

Processes

Processes refer to research results that are used to make the product development process faster and more efficient, for example *simulation models* (digital twins) of the entire propulsion system of a heavy vehicle, including batteries, fuels cells, electrical machine, and driveline. Access to high-fidelity models will enable large-scale optimization of individual vehicles as well as entire fleets of vehicles.

Another example is optimization methods for *experiment design* useful in the process of data collection for data-driven modeling. Data collection experiments with real systems (airborne vehicles, robots, ships, etc.) is a very costly process. Formulating this as an optimization problem and implementing it in user-friendly software can have a significant impact on the efficiency of the development process. Implementing the methods in simulation models, software packages or other types of computational software is hence an important part of the research and the knowledge transfer.

Products

Products refer to research results that are implemented in the product and contribute to improved properties of the product in terms of, e.g., higher degree of autonomy, increased performance, reduced emissions, safer operation, and more reliable products. There is a clear trend that products are equipped with more and more sensors, and this puts increased demand on advanced processing and interpretation of data, and optimized decisions based on sensor information. For SEDDIT the combination of mastering advanced mathematical tools together with physical insight is an important success factor.

3. Communication plan

The overall primary purposes of the communication plan are to position SEDDIT as the leading research environment within sensor informatics and decision-making control with focus on benefits and applications for Swedish system building industry and to ensure good internal communication among the SEDDIT-partners and researchers. The external communication focuses on dissemination of the research results and activities within the center, including the more general knowledge/contributions/solutions that are created and are of interest for the wider research as well as industrial community. External communication from the center has the following target groups:

- National and international researchers within relevant research areas
- Swedish system-building industry
- Students (Master’s students within engineering education)
- Funding agencies including VINNOVA
- Public audience

The key component of communication from the center is the website www.seddit.se enabling access to the following information:

- Presentation of the center in terms of partners, core competences, and application areas.

- Information about upcoming workshops and seminars.

The website will be expanded and include presentations of publications, available Master's thesis projects, etc.

The internal communication aims to be efficient and promote a collaborative culture by addressing the following target groups:

- SEDDIT board and International Scientific Advisory Board
- SEDDIT management team, funded faculty, PhD students, Master's students.
- SEDDIT industry partners consisting of contact persons as well as other company representatives.

For the internal communication the monthly meetings of the management team play an important role, complemented by the regular contacts between the Center director, the Center Coordinator, and the Chairman of the board. Essential documents from the projects and meetings are accessible for all members in the center through the common Teams platform. Information about upcoming events and project results is frequently disseminated through the center mailing lists, one directed towards the partner contact persons, and one directed towards all participants in the center, i.e., academic researchers at all levels as well as industrial stakeholders at all levels.

Additional activities for dissemination and knowledge sharing include the annual workshop, which is open to all center partners as well as a general audience. Also, SEDDIT PhD student seminars contribute to the knowledge sharing between the various activities in the center.

4. Development and changes of constellation

The activities in the center have developed well during 2024. The only change in staff is that Isaac Skog has left Uppsala University and that his role as main contact person from Uppsala University and member of the management team has been taken over by Roland Hostettler.

5. Goal completion

Vision, Misson, and Goals

The vision of SEDDIT is:

To be the leading research environment for the Swedish system-building industry within sensor informatics and decision-making for a resilient and sustainable society.

and the work towards this vision is summarized in the mission:

To contribute to a resilient and sustainable society and the competitiveness of Swedish industrial ecosystems by developing cutting-edge knowledge and competitive solutions within sensor informatics and decision-making.

-

Based on the vision and the mission, the strategy of SEDDIT has the following four components:

1. To contribute to new products and processes via the development of high-quality research results in industry-relevant areas, as well as fast knowledge transfer from academia to industry.
2. To produce highly qualified human resources (PhD and MSc degrees) with solid knowledge within sensor informatics and decision-making to the industry, and to impact the relevance of engineering education at Linköping University (LiU) and Uppsala University (UU) with up-to-date course content based on recent research results, as well as industrial and societal needs.
3. To positively influence the gender balance within the education and research connected to the center.
4. To ensure an international perspective through collaboration on industry-oriented research with a selected set of international partners

Societal security and environmental monitoring

Our society faces significant challenges related to societal security and environmental monitoring (SDGs 11 and 13) and SEDDIT researchers are actively addressing these challenges by developing innovative systems and methods to drive digital transformation across various critical sectors. For example, three SEDDIT projects, P3, P8, and P10, are focused on collaborative, distributed sensor systems in order to develop novel and robust methods for localization and situational awareness for both aerial and ground vehicles. These efforts contribute to societal security in several ways. In addition, two other projects, P1 and P2, focus on information exchange in systems-of-systems and decision-making under uncertainty. By combining sensor fusion and optimization, these projects build on two of SEDDIT's core competences.

Agriculture and food production are critical areas for societal security and the automation and digital transformation of these sectors will have a profound impact on future society. Project P4 is exploring innovative methods for environmental modeling of soil properties, integrating the SEDDIT core competences data-driven modeling and diagnostics and learning methods for control. Environmental modeling of weather conditions is also an application studied in project P10.

Reinforcement learning offers a powerful approach for the development of adaptive systems that can respond to environmental changes or security threats in real-time. Projects P6 and P13 are dedicated to developing such methods. Meanwhile, project P9 is focused on optimal control of tightening processes, which has crucial implications on societal security by improving the operational safety of vehicles, machinery, and critical infrastructure.

Projects P1, P2, and P9 have been running since the start of SEDDIT with two industrial postdoctoral researchers and one industrial PhD student leading the work. Projects P3, P4 and P10 were started in fall 2024 when two industrial and one academic PhD student joined SEDDIT. Recruitments of PhD students for projects P6, P8 and P13 are expected to be completed by spring 2025 such that the main research activities within these projects also can be initiated.

Zero carbon emission and resilient transportation systems

This focus area is aiming to contribute to the global efforts of achieving efficient land transportation systems and minimizing negative environmental impacts in line with the SDGs 9, 11, and 13. These SDGs concern sustainable industrialization and innovation, efforts to mitigate climate change, and a sustainable transport system where the SEDDIT research activities are focused primarily on methods that can improve the utilization and efficiency of transportation systems, including both personal cars and heavy vehicles.

Effective transportation requires planning and collaboration to enhance energy use, reliability, and resilience. Projects P5 and P6 explore learning-based safe motion planning, while P7 focuses on collaborative decision-making under uncertainty for adaptive driving. With modern vehicles equipped with sensors, Project P8 investigates using fleets as mobile sensor platforms, leveraging sensor fusion to estimate environmental conditions for energy prediction under bandwidth constraints. Modeling and optimal control are key to developing efficient products and solutions. Projects P9 and P12 use physics-based modeling and optimization. Project P9 explores modeling and optimization of tightening processes to enhance vehicle production and sustainability. Project P12 focuses on control and optimization of thermotronic systems to boost vehicle fuel economy. Fault diagnosis is crucial for reliable transportation, preventing increased emissions and roadside failures. While onboard systems exist, human drivers remain key in detecting issues. However, autonomous vehicles and car-sharing services eliminate this reliance. To address this, Project P11 develops vibration-based methods for detecting mechanical failures.

Four PhD students are working in projects (P9, P10, P11, P12) related to this focus area where three of them started in fall 2024. There is an ongoing recruitment process to find an additional three PhD students for the projects (P5, P6, P7).

Education

The research groups of the academic partners in the center have a strong involvement and commitment within the engineering education at Linköping and Uppsala University.

Master's level courses

The following Master's level courses with strong relevance for scope of the center have been given during the period covered by the report.

- Digital signal processing (LiU). Course with 36 students primarily from the Applied physics and electrical engineering program (4th year).
- Optimal control (LiU). Course with 22 students primarily from the Mechanical engineering program and the Applied physics and electrical engineering program (5th year).
- Automatic control, advanced course (LiU). Course with 32 students from the Mechanical engineering program (4th year)
- Control theory (LiU). Course with 22 students from the Applied physics and electrical engineering program (4th year)
- Industrial control systems (LiU). Course with 43 students from the Mechanical engineering program and the Applied physics and electrical engineering program (4th year)
- Sensor fusion (LiU). Course with 40 students from the Applied physics and electrical engineering program, Mechanical Engineering, and Computer science and engineering (4th year)
- Automatic Control - Project course (LiU). Final CDIO project course with 46 students from the Applied physics and electrical engineering program, and the Mechanical engineering program (5th year).
- Modelling and Learning for Dynamical Systems (LiU). Course with 43 students primarily from the Applied physics and electrical engineering program, and the Mechanical engineering program (4th or 5th year).
- Autonomous vehicles -- planning, control, and learning systems (LiU). Course with 83 students from the Applied physics and electrical engineering program,

the Mechanical engineering program, and the Computer Science program (4th or 5th year).

- Vehicle dynamics and control (LiU). Course with 34 students from the Mechanical engineering program and the Applied physics and electrical engineering program (4th year).
- Diagnosis and supervision (LiU). Course with 22 students from the Applied physics and electrical engineering program, and the Mechanical engineering program (4th year).
- Vehicle propulsion systems (LiU). Course with 21 students from the Applied physics and electrical engineering program, and the Mechanical engineering program (4th year).
- Signal processing (UU). Course with 47 students from the Electrical engineering, Engineering physics, and Information technology programs (4th/5th year).
- Digital communications (UU). Course with 27 students mainly from the Engineering physics program (4th year).

PhD level courses

The following PhD level courses with strong relevance for the center's scope have been given during the time frame covered by the report.

- System identification (LiU)
- Robust multivariable control (LiU)
- Optimization for learning (LiU)
- WASP Autonomous Systems (Entire WASP program)

Academic leadership within undergraduate education

Several members of the Management team have deep involvement in education development through important academic leadership positions concerning the engineering education at Linköping University and Uppsala University.

- Martin Enqvist is vice chairman of the Program board for education programs within Electrical engineering, physics, and mathematics. He is also responsible for the Master’s specialization Control and information system within the Applied physics and electrical engineering program.
- Lars Eriksson is a member of the Program board for education programs within Mechanical engineering and design.

- Erik Frisk is manager of Zenith, a research funding program at the technical faculty directed at young researchers.
- Gustaf Hendeby, deputy member of the Program board for education programs within Mechanical engineering and design.
- Roland Hostettler is a member of the Program board for the 5-year program in Information technology at Uppsala University.
- Johan Löfberg is Director of Studies for the area Control systems at Linköping University, encompassing the Divisions of Automatic Control and Vehicular Systems.
- Svante Gunnarsson is CDIO coordinator within the Faculty of Science and engineering within Linköping University and involved in initiatives for new international educational structures and pedagogics based on challenge-based learning.
- Svante Gunnarsson is responsible for the specialization in Autonomous systems within the Engineering mathematics program.
- Ayca Özcelikkale is member of the Program board for the 3- and 5-year programs in Electrical engineering at Uppsala University.

Academic leadership within research and PhD education

In addition to academic leadership on undergraduate level, there is also engagement from the Management team in management of PhD level education and research on both national and international level.

- Daniel Axehill is the director of the WASP Graduate School.
- Daniel Axehill is a member of the WASP Executive Committee.
- Daniel Axehill is a member of the WASP Arena Management Group.
- Daniel Axehill is a member of the ELLIIT Program Group.
- Daniel Axehill was the chair of the Swedish Research Council evaluation panel for International Post-doc 2024.
- Daniel Axehill was area chair at the 8th IFAC Conference on Nonlinear Model Predictive Control NMPC 2024.
- Gustaf Hendeby is elected member of the board of directors of the International Society of Information Fusion (ISIF)
- Gustaf Hendeby is Associate Editor in Chief of Journal of Advances in Information Fusion (JAIF).
- Gustaf Hendeby is Associate Editor of IEEE Transactions on Aerospace and Electronic Systems (TAES).
- Roland Hostettler is elected member of the IEEE Machine Learning for Signal Processing Technical Committee

SME Activities

The center works actively to include the small and medium size companies in the activities of the center, and one activity was a set of student projects that were carried out during the summer. Three of the companies offered tasks of development or investigation, and the center recruited five students with suitable backgrounds to work with the tasks for six weeks. The outcome was very positive, both from the company and student side, and the results were presented during the poster session of the SEDDIT workshop in November 2024. The projects were:

- Improving Air Quality Sensors. (With Sensorbee)
- Monitoring Elevator Usage With a ToF Camera. (With Safeline)
- 2 Axis Motion Test Rig. (With Actia Nordic)

The process for arranging student summer projects during 2025 has been initiated.

Diversity and gender balance

Diversity and gender balance are important issues, and Linköping University is working actively on all levels with these questions. The Faculty of Science and Engineering has an action plan for questions related to diversity and gender balance, and the plan is revised and approved annually. SEDDIT is also working actively with these questions, and there is always a point related to diversity on the agenda for the board meetings. One action of the center has been to ensure a good gender balance in the International Scientific Advisory Board. One of the plans for 2025 is to re-establish contacts with the organizations Yvette, Emma, and Donna for female engineering students.

Sustainability aspects

As discussed above and illustrated in Figure 1 the activities within SEDDIT have strong connections to several aspects of sustainable development via, e.g., the SDGs included in Figure 1. The connections are also illustrated via the choice of focus areas of SEDDIT. However, since a separate Sustainability plan is under development these aspects will not be discussed in more detail here.

Key Performance Indicators

The following Key Performance Indicators (KPIs) will be used as quantitative measures to follow up the impact of the competence center.

- PhD and Licentiate degrees
- Publications:
    - Journal papers
    - Conference papers

    - Master’s theses
- Knowledge exchange:
    - Workshops
    - Meetings between academia and industry
- Transfer of personnel between industry and academia
- Gender balance in board, ISAB and center.
- International exchange

During 2024, SEDDIT has been in its start-up phase, which means no PhD or Licentiate degrees have been generated. Nevertheless, activities within the core competences of SEDDIT have generated research outputs presented in peer-reviewed scientific journals as well as conference papers. The principle has been to include all publications where the researchers in SEDDIT have contributed with their competence and are co-authors. This resulted in 29 journal papers and 27 conference papers based on the Core competences of SEDDIT published during 2024. For the MSc theses the principle has been to include theses where SEDDIT researchers have been examiners. Consequently, Master’s theses carried out in collaboration with both SEDDIT companies and other external partners have been included, resulting in 31 Master’s theses in total during 2024. Two workshops have been arranged during 2024, and several meetings between academia and industry. When it comes to transfer of personnel, we would like to highlight that the center has had two adjunct associate professors, four industrial PhD students and one industrial postdoc during 2024, sharing the time between academia and industry. When it comes to gender balance of board structures, there has been a 50-50 gender balance in ISAB, and a slight imbalance in the center board with higher percentage of male board members. There have been several examples of international exchange during 2024, both in terms of participation at conferences and roles in various networks, as well as in terms of having one international visitor to the center, spending longer time withing the SEDDIT environment.

6. Experiences and lessons learned

The activities in the center have developed well during 2024. SEDDIT has experienced a positive start with strong engagement from the partners, and several new PhD student projects have started. Three student summer projects were carried out in a successful way. The annual workshop and the thematic workshop which was arranged in connection were highly appreciated by all participants. One drawback has been that the recruitment process has been more challenging than expected.

Publications

Journal papers

Svante Gunnarsson, Inger Erlander Klein, Including Sustainable Development in Automatic Control Courses, SEFI Journal of Engineering Education Advancement, Vol. 1, nr 1, s. 5-13.

Zainab Saleem, Fredrik Gustafsson, Eoghan Furey, Marion McAfee, Saif Huq, A review of external sensors for human detection in a human robot collaborative environment, Journal of Intelligent Manufacturing (2024) https://doi.org/10.1007/s10845-024-02341-2

Armin Spreco, Örjan Dahlström, Dennis Nordvall, Cecilia Fagerstrom, Eva Blomqvist, Fredrik Gustafsson, Christer Andersson, Rune Sjödahl, Olle Eriksson, Jorma Hinkula, Thomas Schön, Toomas Timpka, Integrated Surveillance of Disparities in Vaccination Coverage and Morbidity during the COVID-19 Pandemic: A Cohort Study in Southeast Sweden, Vaccines 12:763 (2024) https://doi.org/10.3390/vaccines12070763

Farnaz Adib Yaghmaie, Hamidreza Modares, Fredrik Gustafsson, Reinforcement Learning for Partially Observable Linear Gaussian Systems Using Batch Dynamics of Noisy Observations, IEEE Transactions on Automatic Control 69:6397-6404 (2024) https://doi.org/10.1109/TAC.2024.3385680

Magnus Malmström, Anton Kullberg, Isaac Skog, Daniel Axehill, Fredrik Gustafsson, Extended Target Tracking Utilizing Machine-Learning Software–With Applications to Animal Classification, IEEE Signal Processing Letters 31:376-380 (2024) https://doi.org/10.1109/LSP.2024.3353165

Florine L. Bachmann, Joshua Kulasingham, Kasper Eskelund, Martin Enqvist, Emina Alickovic, Hamish Innes-Brown, Extending Subcortical EEG Responses to Continuous Speech to the Sound-Field, TRENDS IN HEARING 28:23312165241246596 (2024) https://doi.org/10.1177/23312165241246596

Fredrik Ljungberg, Martin Enqvist, Consistent estimators for nonlinear vessel models, Automatica 165:111660 (2024) https://doi.org/10.1016/j.automatica.2024.111660

Joshua Kulasingham, Florine L. Bachmann, Kasper Eskelund, Martin Enqvist, Hamish Innes-Brown, Emina Alickovic, Predictors for estimating subcortical EEG responses to continuous speech, PLOS ONE 19:e0297826 (2024) https://doi.org/10.1371/journal.pone.0297826

Joshua Kulasingham, Hamish Innes-Brown, Martin Enqvist, Emina Alickovic, Level-Dependent Subcortical to Continuous Speech, eNeuro 11:16-16 (2024) https://doi.org/10.1523/ENEURO.0135-24.2024

Stefanie Antonia Zimmermann, Stig Moberg, Svante Gunnarsson, Martin Enqvist, Using statistical linearization in experiment design for identification of robotic manipulators, Control Engineering Practice 150:106008 (2024) https://doi.org/10.1016/j.conengprac.2024.106008

Abhishek Dhar, Carl Hynén, Johan Löfberg, Daniel Axehill, Disturbance-Parametrized Robust Lattice-based Motion Planning, IEEE Transactions on Intelligent Vehicles 9:3034-3046 (2024) https://doi.org/10.1109/tiv.2023.3296691

Daniel Arnström, David Broman, Daniel Axehill, Exact Worst-Case Execution-Time Analysis for Implicit Model Predictive Control, IEEE Transactions on Automatic Control 69:7190-7196 (2024) https://doi.org/10.1109/TAC.2024.3395521

Magnus Malmström, Isaac Skog, Daniel Axehill, Fredrik Gustafsson, Uncertainty quantification in neural network classifiers—A local linear approach, Automatica 163:111563 (2024) https://doi.org/10.1016/j.automatica.2024.111563

Anton Kullberg, Frida Viset, Isaac Skog, Gustaf Hendeby, Adaptive Basis Function Selection for Computationally Efficient Predictions, IEEE Signal Processing Letters 31:2130-2134 (2024) https://doi.org/10.1109/lsp.2024.3445272

Chuan Huang, Gustaf Hendeby, Hassen Fourati, Christophe Prieur, Isaac Skog, MAINS: A Magnetic-Field-Aided Inertial Navigation System for Indoor Positioning, IEEE Sensors Journal 24:15156-15166 (2024) https://doi.org/10.1109/jsen.2024.3379932

Isaac Skog, Magnus Lundberg Nordenvaad, Gustaf Hendeby, Signals-of-Opportunity-Based Hydrophone Array Shape and Orientation Estimation, IEEE Journal of Oceanic Engineering (2024) https://doi.org/10.1109/JOE.2024.3357937

Kristin Nielsen, Gustaf Hendeby, Hypothesis selection with Monte Carlo tree search for feature-based simultaneous localization and mapping in non-static environments, The international journal of robotics research 43:750-764 (2024) https://doi.org/10.1177/02783649231215095

Robin Forsling, Benjamin Noack, Gustaf Hendeby, A Quarter Century of Covariance Intersection: Correlations Still Unknown? [Lecture Notes], IEEE CONTROL SYSTEMS MAGAZINE 44:81-105 (2024) https://doi.org/10.1109/MCS.2024.3358658

Amir Modares, Nasser Sadati, Babak Esmaeili, Farnaz Adib Yaghmaie, Hamidreza Modares, Safe Reinforcement Learning via a Model-Free Safety Certifier, IEEE Transactions on Neural Networks and Learning Systems 35:3302-3311 (2024) https://doi.org/10.1109/TNNLS.2023.3264815

Abhijeet Behera, Sogol Kharrazi, Erik Frisk, How do long combination vehicles perform in real traffic? A study using Naturalistic Driving Data, Accident Analysis and Prevention 207:107763 (2024) https://doi.org/10.1016/j.aap.2024.107763

Jian Zhou, Björn Olofsson, Erik Frisk, Interaction-Aware Motion Planning for Autonomous Vehicles With Multi-Modal Obstacle Uncertainty Predictions, IEEE Transactions on Intelligent Vehicles 9:1305-1319 (2024) https://doi.org/10.1109/TIV.2023.3314709 https://arxiv.org/abs/2212.11819

Luigi Romano, Ole Morten Aamo, Jan Åslund, Erik Frisk, Stability analysis of linear single-track models with transient tyre dynamics, Vehicle System Dynamics (2024) https://doi.org/10.1080/00423114.2024.2445163

Max Johansson, Arnaud Contet, Olof Erlandsson, Robin Holmbom, Erik Höckerdal, Oskar Lind Jonsson, Daniel Jung, Lars Eriksson, The Electrochemical Commercial Vehicle (ECCV) Platform, Energies 17:1742 (2024) https://doi.org/10.3390/en17071742

Inti Espinoza Ramos, Amina Coric, Boyang Su, Qi Zhao, Lars Eriksson, Mattias Krysander, Annika Ahlberg Tidblad, Leiting Zhang, Online acoustic emission sensing of rechargeable batteries: technology, status, and prospects, Journal of Materials Chemistry A, 12, 23280-23296 (2024)

Kai Li, Hong Chen, Shengyan Hou, Lars Eriksson, Jing Zhao, Shihong Ding, Jinwu Gao, A Novel Energy Management Strategy for PHEV Considering Cabin Heat Demand Under Low Temperature Based on Reinforcement Learning, IEEE Transactions on Transportation Electrification (2024)

Vishnu Renganathan, Qadeer Ahmed, Daniel Jung, Enhancing the Security of Automotive Systems Using Attackability Index, IEEE Transactions on Intelligent Vehicles 9:315-327 (2024) https://doi.org/10.1109/TIV.2023.3332006

Z. Purisha, A. Winkler, M. Emzir, R. Hostettler, P. Luukka, and S. Särkkä, “A virtual anti-scatter grid for multi-energy photon counting detector systems,” *Physica Scripta*, 2024.

R. Seifullaev, S. Knorn, A. Ahlén, and R. Hostettler, “Reinforcement learning based transmission policies for energy harvesting powered sensors,” *IEEE Transactions on Green Communications and Networking*, vol. 8, no. 4, 2024

O. Kaltiokallio, R. Hostettler, Y. Ge, H. Kim, J. Talvitie, H. Wymeersch, and M. Valkama, “A multi-hypotheses importance density for SLAM in cluttered scenarios,” *IEEE Transactions on Robotics*, vol. 40, pp. 1019-1035, 2024

Conference papers

Daniel Goderik, Albin Westlund, Gustav Zetterqvist, Fredrik Gustafsson, Gustaf Hendeby, Seismic Detection of Elephant Footsteps, 2024 27th International Conference on Information Fusion (FUSION), IEEE (ed.), Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.23919/FUSION59988.2024.10706452

Jakob Åslund, Fredrik Gustafsson, Gustaf Hendeby, Illustrative examples and possible explanation for an unexpected behaviour of the particle filter, 2024 IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.1109/MFI62651.2024.10705780

Johanna Wilroth, Emina Alickovic, Martin A. Skoglund, and Martin Enqvist. Nonlinearity detection and compensation for EEG-based speech tracking, In Proceedings of the 2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp. 1811-1815, 2024. https://doi.org/10.1109/ICASSP48485.2024.10448090

Anja Hellander and Daniel Axehill. On Methods for Improved Efficiency of Optimal Task and Motion Planning. In Proceedings of the 2024 63rd IEEE Conference on Decision and Control, pages 1657-1663, Italy, December 2024. https://doi.org/10.1109/CDC56724.2024.10886213

Hellander, Kristoffer Bergman, Daniel Axehill, Improved Task and Motion Planning for Rearrangement Problems using Optimal Control, 2024 IEEE Intelligent Vehicles Symposium (IV), pp. 2033-2040, IEEE (2024) https://doi.org/10.1109/iv55156.2024.10588789

Daniel Arnström and Daniel Axehill. A High-Performant Multi-Parametric Quadratic Programming Solver. In Proceedings of the 2024 63rd IEEE Conference on Decision and Control, pages 303-308, Italy, December 2024. https://doi.org/10.1109/CDC56724.2024.10886132

Anja Hellander, Gustaf Hendeby, On the feasibility of localization using DVB-T signals and combining TDOA and TWR measurements, 2024 27th International Conference on Information Fusion (FUSION), IEEE (2024) https://doi.org/10.23919/fusion59988.2024.10706446

Chuan Huang, Gustaf Hendeby, and Isaac Skog. An observability-constrained magnetic field-aided inertial navigation system. In Proceedings of Fourteens International Conference on Indoor Positioning and Indoor Navigation, Hong Kong, China, October 14–17 2024.

Henrik Nilsson, Joakim Rydell, Anton Kullberg, Gustaf Hendeby, Dronar: Obstacle Echolocation Using Drone Ego-Noise, Proceedings of 2024 IEEE International

Conference on Acoustics, Speech, and Signal Processing Workshops (ICASSPW), pp. 184-188, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.1109/ICASSPW62465.2024.10627342

Jeong Min Kang, Zoran Sjanic, Gustaf Hendeby, Visual-inertial odometry using opticalflow from deep learning, Proceedings of 27th International Conference on Information Fusion, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.23919/FUSION59988.2024.10706322

Viktor Deleskog, Oskar Jonsson, Jonas Nygårds, Gustaf Hendeby, Poisson Multi-Bernoulli Mixture Filtering with Multistatic Passive Bistatic Radar, Proceedings of 27th International Conference on Information Fusion, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.23919/FUSION59988.2024.10706528

Yuxuan Xia, Erik Stenborg, Junsheng Fu, Gustaf Hendeby, Bayesian Simultaneous Localization and Multi-Lane Tracking Using Onboard Sensors and a SD Map, Proceedings of the 27th International Conference on Information Fusion, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.23919/FUSION59988.2024.10706479

Niklas Allansson, Arman Mohammadi, Daniel Jung, Mattias Krysander, Fuel injection fault diagnosis using structural analysis and data-driven residuals, 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS 2024, pp. 360-365, ELSEVIER (2024) https://doi.org/10.1016/j.ifacol.2024.07.244

Theodor Westny, Arman Mohammadi, Daniel Jung, Erik Frisk, Stability-Informed Initialization of Neural Ordinary Differential Equations, Proceedings of the 41 st International Conference on Machine Learning, Vienna, Austria. PMLR 235, 2024, Neil Lawrence (ed.), Proceedings of Machine Learning Research, pp. 52903-52914, PMLR (2024)

Daniel Jung, Mattias Krysander, Assumption-based Design of Hybrid Diagnosis Systems: Analyzing Model-based and Data-driven Principles, Annual Conference of the PHM Society 16 (1) (2024)

Daniel Jung, David Axelsson, A Study on Redundancy and Intrinsic Dimension for Data-Driven Fault Diagnosis, 35th International Conference on Principles of Diagnosis and Resilient Systems (2024)

Daniel Jung, Christofer Sundström, Hampus Alfredsson, Jonas Hellgren, Jan Åslund, Placering av laddinfrastruktur för fullskaligt elektrifierad kollektivtrafik i Linköping Transportforum, Linköping, Sverige, 17-18 januari, 2024., 356-357

Oskar Lind Jonsson, Lars Eriksson, Robin Holmbom, A Dynamic Model for the Rolling Resistance Considering Thermal States and Conditions, SAE World Congress, Detroit, MI, USA, (2024) https://doi.org/10.4271/2024-01-2296

Arvind Balachandran, Tomas Jonsson, Lars Eriksson, Experimental Evaluation of Submodule Losses in Battery-Integrated MMCs with NLM and PSPWM, IEEE Applied Power Electronics Conference and Exposition (APEC), Long Beach, CA, USA (2024)

Abhijeet Behera, Sogol Kharrazi, Erik Frisk, Extraction of Lane Changes from Naturalistic Driving Data for Performance Assessment of HCT Vehicles, Proceedings of the 28th Symposium of the International Association of Vehicle System Dynamics, IAVSD 2023, August 21–25, 2023, Ottawa, Canada - Volume 2: Road Vehicles, Huang, Wei; Ahmadian, Mehdi (eds.), Lecture Notes in Mechanical Engineering (LNME), pp. 153-164, Springer Nature Switzerland (2024) https://doi.org/10.1007/978-3-031-66968-2_16

Abhijeet Behera, Sogol Kharrazi, Erik Frisk, Performance analysis of an A-double in roundabouts using naturalistic driving data, Setting the Wheels In Motion, International Forum for Heavy Vehicle Transport & Technology; The International Society for Weigh-In-Motion (2024)

Arezou Safdari-Vaighani, Erik Frisk, Olov Holmer, Mattias Krysander, Synthetic Generation of Streamed and Snapshot Data for Predictive Maintenance, IFAC PAPERSONLINE, pp. 270-275, ELSEVIER (2024) https://doi.org/10.1016/j.ifacol.2024.07.229

Fatemeh Hashemniya, Arvind Balachandran, Erik Frisk, Mattias Krysander, Structural Diagnosability Analysis of Switched and Modular Battery Packs, 2024 Prognostics and System Health Management Conference (PHM), 2024 Prognostics and System Health Management Conference (PHM), pp. 362-369, Institute of Electrical and Electronics Engineers (IEEE) (2024) https://doi.org/10.1109/phm61473.2024.00070

Fatemeh Hashemniya, Benoît Caillaud, Erik Frisk, Mattias Krysander, Mathias Malandain, Fault Diagnosability Analysis of Multi-Mode Systems, 12th IFAC Symposium on Fault Detection, Supervision and Safety for Technical Processes SAFEPROCESS 2024: Ferrara, Italy, June 4 – 7, 2024, pp. 210-215, Elsevier (2024) https://doi.org/10.1016/j.ifacol.2024.07.219

Jian Zhou, Arvind Balachandran, Björn Olofsson, Lars Nielsen, Erik Frisk, Homotopic Optimization for Autonomous Vehicle Maneuvering, 2024 35TH IEEE INTELLIGENT VEHICLES SYMPOSIUM, IEEE IV 2024, IEEE Intelligent Vehicles Symposium, pp. 2561-2568, IEEE (2024) https://doi.org/10.1109/IV55156.2024.10588609

Adeline Secolo, Paulo Santos, Patrick Doherty, Zoran Sjanic, Collaborative Qualitative Environment Mapping, AI 2023: Advances in Artificial Intelligence, Lecture Notes in Computer Science, pp. 3-15, Springer (2024) https://doi.org/10.1007/978-981-99-8391-9_1

O. Kaltiokallio, R. Hostettler, J. Talvitie, and M. Valkama, “Gaussian process for received signal strength-based device-free localization,” in *18th European Conference on Antennas and Propagation*, Glasgow, Scotland, March 2024.

Master’s theses

Simon Saber, “Battery Degradation and Health Monitoring in Lithium-Ion Batteries: An Evaluation of Parameterization and Sensor Fusion Strategies”, MSc thesis, Dept Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5634--SE, 2024.

David Wiman. “Surveillance Path Planning for Unmanned Ground Vehicles”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5640--SE. 2024.

Martin Nibell and Agaton Öberg, “Frequency Domain Analysis and Diagnosis of Faulty Vehicle Dampers”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5645--SE, 2024. (Performed at Nira Dynamics.)

Rebecka Hellberg and Jonna Jämte. Auto-generated Model Predictive Controller for Optimal Force Distribution, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5649--SE

Tomas Röjder, “Evaluation of Monocular SLAM Algorithms for Indoor Quadcopter”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5653--SE, 2024. (Performed at Syntronic.)

William Nordström, "Time Synchronization in Radio Communication Networks Using LTE Base Stations", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5658--SE, 2024. (Performed at Swedish Defence Research Agency (FOI).)

Felix Eriksson and Emely Björkkvist, "Data-Driven Diagnosis For Fuel Injectors of Diesel Engines in Heavy-Duty Trucks ", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5659--SE, 2024. (Performed at Scania.)

Hampus Ohlander, David Johnson, “Path Planning and Collision Avoidance for a 6-DOF Manipulator: A Comparative Study of Path Planning and Collision Avoidance Algorithms for the Saab Seaeye eM1-7 Electric Manipulator”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5667—SE

Michael Gilbert and Albin Helsing, ”Adaptive Hierarchical Decision Making for an Autonomous Underwater Vehicle”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5669--SE, 2024. (Performed at Saab Dynamics.)

Johan Lagerby, Assar Levin, Force Feedback Control for a 6-DOF Manipulator: A Comparative Study of Force Feedback Control Strategies for the 6-DOF Saab Seaeye eM1-7 Manipulator, LiTH-ISY-EX--24/5670—SE

Björn Lundberg, and Erik Sjödahl Wennergren, "Consistent and Communication-Efficient Range-Only Decentralized Collaborative Localization using Covariance Intersection", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5671--SE, 2024. (Performed at SAAB Dynamics.)

Alfred Andersson, “Distributed Map Creation and Planning for a Multi-Agent System with CARLA Environment”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5674—SE, 2024. (Performed at Syntronic.)

Filip Johansson and Dylan Patterson, “Modeling of Fuel Consumption in an Unmanned Aerial Vehicle: Estimation of Fuel Consumption to Determine Endurance and Range”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5675—SE, 2024. (Performed at UMS Skeldar.)

Oscar Maass and Theodor Vallgren. Multi-Agent Trajectory Planning for Nonholonomic UAVs, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5677—SE.

Karl Asklund and Martin Ling, “Optimal Combustion Engine Control Using MPC: A Collection Of Mean Value Engine Modeling, Parametrization And Model Predictive Control”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5680—SE, 2024. (Performed at Volvo Group.)

Isak Ederlöv and Viktor Mineur, “Diagnosis of a Precision-Planting System”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5686—SE, 2024 (Performed at Väderstad.)

Oskar Ramsberg and Elin Wigström, "Simultaneous Aircraft Localization and Mapping using Signals of Opportunity and Inverse Depth Parametrization", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5689--SE, 2024. (Performed at SAAB Aeronautics.)

Viktor Erlandsson and Max Idermark, “Vibration Health Monitoring Using a Flight-State Aware Autoencoder on a Helicopter Main Rotor”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5702—SE, 2024. (Performed at UMS Skeldar.)

Elias William, "Evaluation of Monocular SLAM Algorithms for Indoor Quadcopter", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5709--SE, 2024. (Performed at Swedish Defence Research Institute (FOI).)
Alvin Gustavsson Vester, ”Modeling of a Fighter Jet with Application to Fast Simulation”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5710—SE, 2024. (Performed at Swedish Defence Research Institute (FOI).)

Mohammadreza Sadeghi Naeini, “Fault Detection of Internal Combustion Engines – Exploring Dynamic Relations with SINDy and AR Models for Engine Sensor Fault Detection”, MSc thesis, Dept. Electrical Engineering. Linköpings universitet LiTH-ISY-EX--24/5711—SE, 2024.

Malva Eveborn, "Comparative Analysis of A* and Deep Q-Learning Algorithms for UAV Path Planning", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5713--SE, 2024. (Performed at Syntronic.)

Mikael Josefsson and Daihui Zhu, “Determining Dynamic On-resistance of Lateral Gallium Nitride Devices in Motor Driver Applications”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5717—SE, 2024. (Performed at Volvo Cars.)

Adam Roos and Rasmus Olofsson, "Decentralized Collaborative EKF-SLAM for UAV Fleets Utilizing Monocular Cameras and UWB Sensors", MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5721--SE, 2024. (Performed at SAAB Dynamics.)

Carl Steen, “System Identification of a Multirotor UAV Using a Prediction Error Method”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5709--SE, 2024. (Performed at Swedish Defence Research Institute (FOI).)

Anton Bossen, “Autonomous Drone Searching for People and Animals”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5690—SE, 2024.

Emil Björndahl and Ebba Edenheim, “Frekvensanalys av vibrationsmätningar med accelerometer för slitagedetektering av harvspetsar”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX-ET--24/0529--SE, 2024.

Jakob Ahokas, “Automated Animal Behavior Analysis using Accelerometer Activity Tags”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5688--SE, 2024.

Amanda Hult and Rebecca Sjödin, “Utvecklingen av ett fölningslarm med hjälp av en svansfäst accelerometer på hästar”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5654--SE, 2024.

Max Eriksson, “From Pixels to Predators: Wildlife Monitoring with Machine Learning”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5660--SE, 2024.

Martin Agebjär, “Model Based Road Roughness Estimation”, MSc thesis, Dept. Electrical Engineering, Linköpings universitet. LiTH-ISY-EX--24/5673--SE, 2024.