ASSA ABLOY Master Thesis Program

Spring 2026, Landskrona

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Each year, we welcome Master Thesis students from diverse engineering disciplines – mechanical, electronics, computer science, industrial engineering, and more. Over six months, you'll dive into real-world challenges, supported by experienced managers and our vibrant student community, former thesis students who now work with us. Social activities like breakfasts and after works will help you build your network and feel at home from day one.

Applications are open

Oct 27 – Nov 19:

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Why complete your Master Thesis with us?

💡 **Innovation & Impact** – Work on projects that matter, contribute to real solutions, and help shape the future of access.

🌍 **Global Opportunities** – We're part of a large international group where you can build a career to be proud of

🤝 **Supportive Culture** – Our student community, buddy system, and regular social activities ensure you're never alone and always feel connected

🚀 **Career Development** – Many of our students go on to join us full-time – your thesis could be the first step in a long and exciting journey.

Available Master Thesis Assignments Spring 2026

Master Thesis.

1 Find a disruptive method to install a Sliding door.

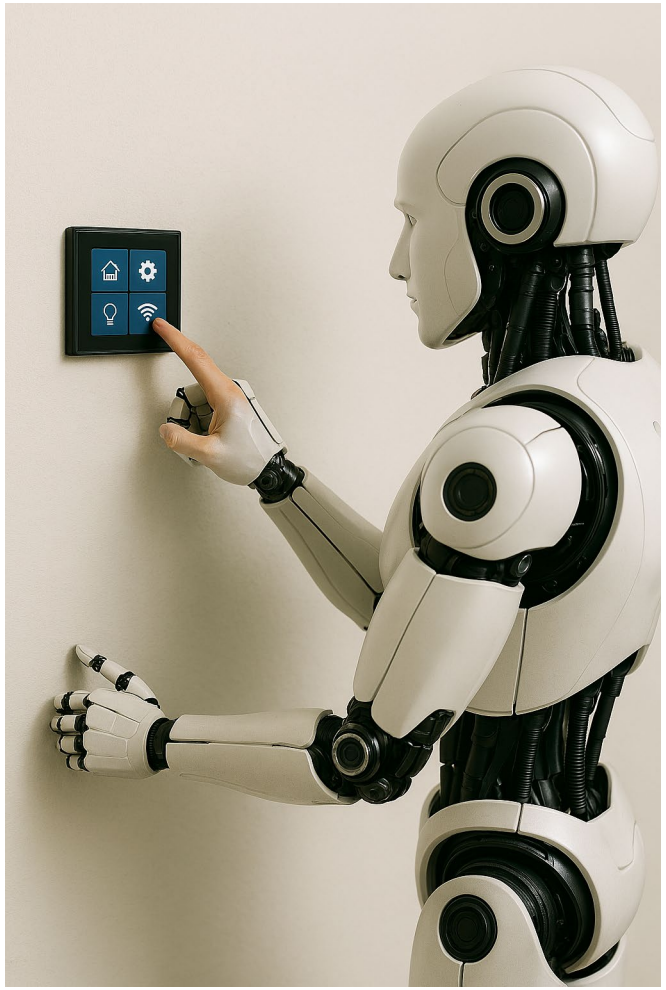
- Visit a couple of installation sites to understand the installation process and learn what's difficult about installing sliding doors.
- Brainstorm ideas of solutions to increase efficiency & reduce the need of two installers for every door.
- Target is 2 doors per installer per day.
- Get the ideas reviewed by subject matter experts.
- Create prototype of the most viable solution.
- Test the solution on site if possible.

Supervisor; **Pontus Heijdenberg**

Master Thesis.

2 Automated test of a Touch Panel without a robot with a human finger.

- Investigate the touch panel to understand its complexity.
- Identify most critical functionality to verify after each new firmware update.
- Suggest methods of verification and how to automate.
- Implement test setup and verify the test coverage.
- Hand over a usable solution to our developers for further development.



Supervisor; **Roger Dreyer / Jonathan Vesterlund**

Master Thesis.

3 Authorization method for door Touch Panel.

- Find different technical solutions to Authorize the user.
- Identify most critical areas to verify.
- Validate the feasibility of the technical solutions in relation to the appropriate use case.
- Create a prototype and verify the solution with real users.
- Hand over a verified solution to our developers for further development.

Supervisor; **Roger Dreyer / Mathias Navne**

Master Thesis.

4 Mechanical design of a plastic housing for a Bluetooth adaptor to Pedestrian door operators.

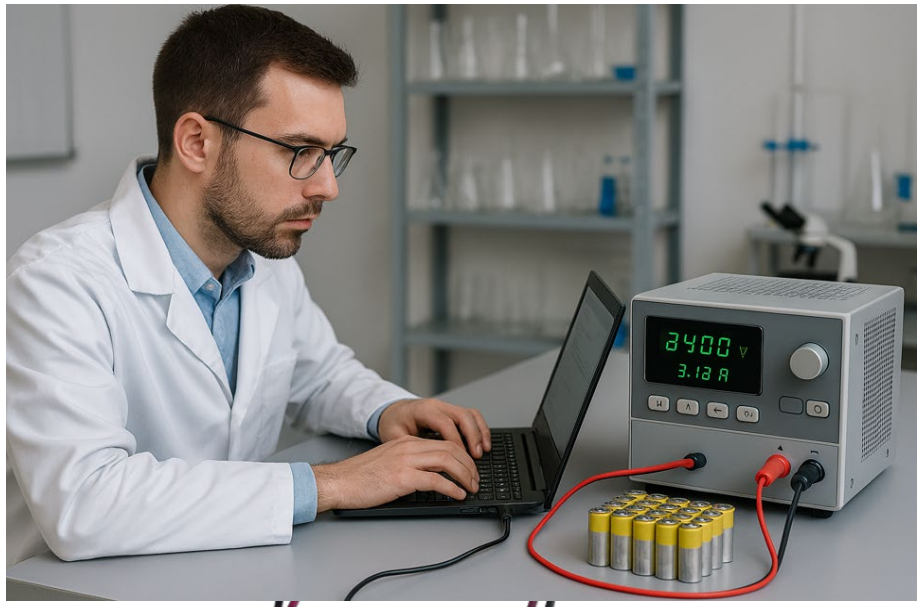
- Small user needs investigation to understand requirements.
- Summarize requirements and approval for next step.
- Concept development & selection.
- Prototype design & 3D-printing of 2-3 alternative concepts.
- User testing & Verification.

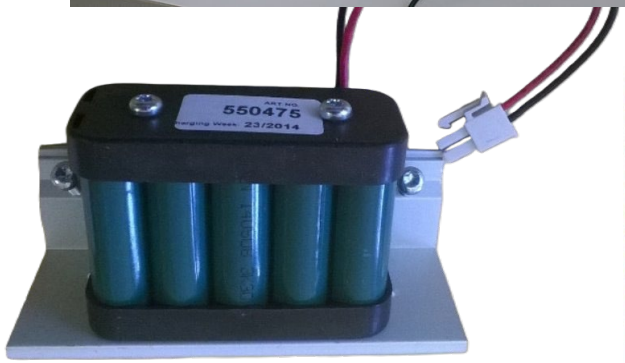
Supervisor; **Roger Dreyer / Louise Bannersten**

Master Thesis.

5 Battery simulation during test of door operator.

- Find technical solutions for simulating various battery performance, like inner resistance and charge level due to temperature and aging.
- To be able to test how our products behave under different battery states in a controlled way during automatic testing.
- Creating the necessary HW/SW to set the relevant parameters during charge/load cycles.
- The possibility to simulate various battery technologies would be very good.
- Focus would be on NiMh and NiZn batteries.





Supervisor; **Roger Dreyer / Fredrik Brödje**

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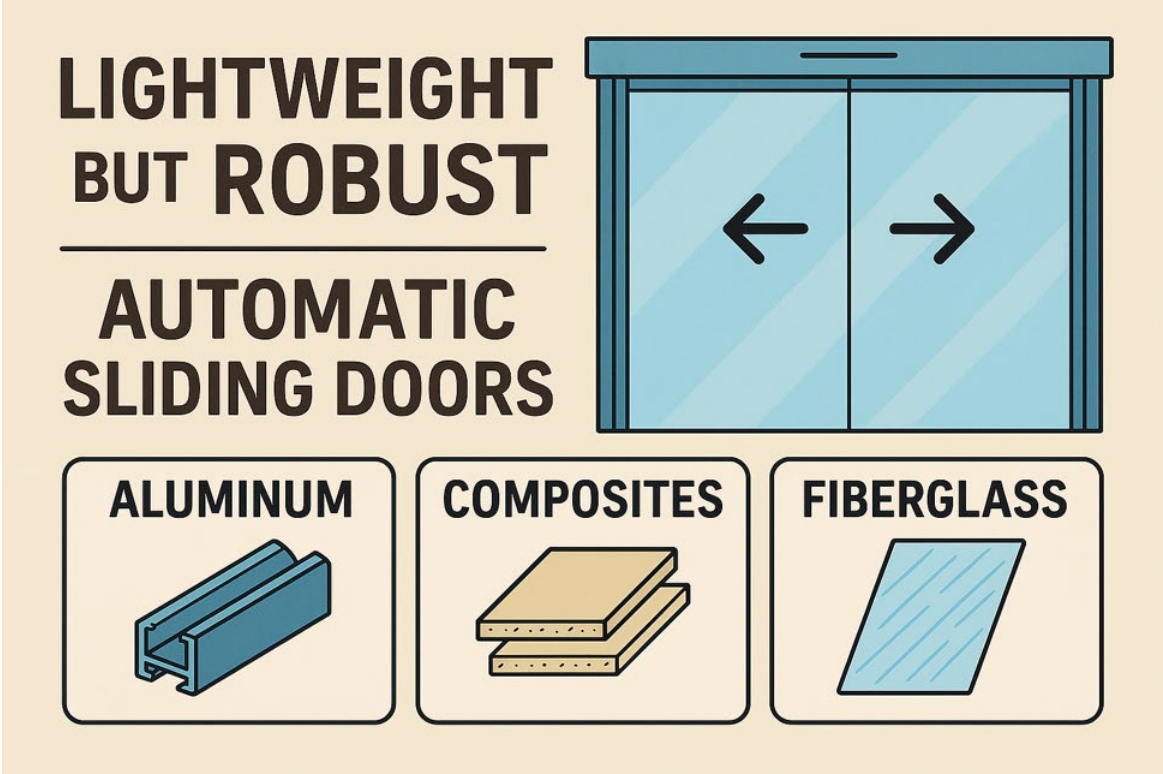
Master Thesis.

6 What materials can be used to drastically reduce the weight of automatic doors.

- Can we change material in the door leaves to gain weight and reduce CO2 footprint.
- What materials will withstand our requirements.
- What requirements do we need to change to be able to reduce the weight.
- What side effects can we see by doing this.



Supervisor; **Roger Dreyer / Michael Huber**

7 What can automatic doors contribute with in future smart buildings.

- If automatic doors are components in future smart buildings what is then important to contribute with.
- What data is available only from the entrance and what can the entrance control in the building.
- Is there a standardized building management system interface or will there be several different to follow?
- How can ASSA ABLOY differentiate their offering compared to competition.

Supervisor; **Roger Dreyer**

Master Thesis.

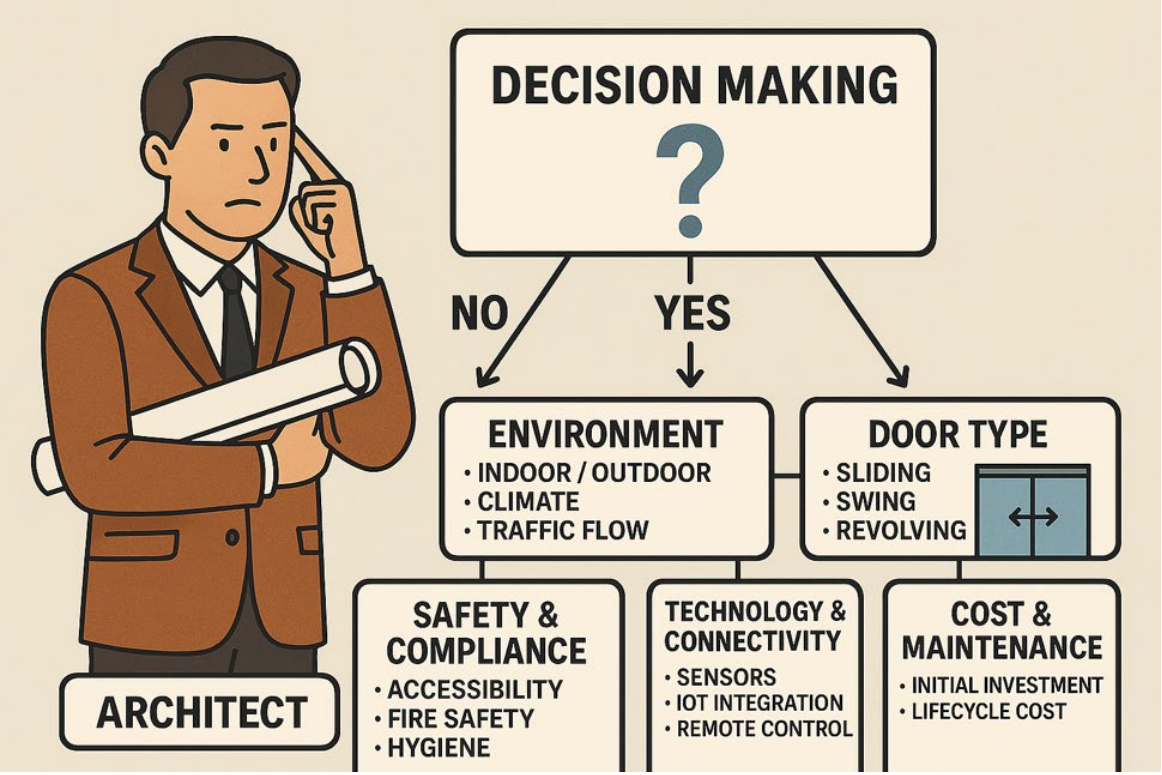
8 How will the Retail market develop the next 5-10 years and how can ASSA ABLOY contribute to that.

- Investigate current retail market with regards to their future needs.
- Identify needs that ASSA ABLOY could help providing solutions to.
- Set up a suggested business proposal that we can offer our Retail customers.
- Base the business proposal on a clear business case.

Supervisor; **Roger Dreyer / Thomas Böhler**

9 How does the decision-making process look like today for doors in new buildings vs. retrofitting doors in existing buildings.

- How does the decision-making process look like for new buildings vs old buildings and retrofit.
- What can be expected to change in the next 5-10 years.
- What is important for ASSA ABLOY to change or improve to stay relevant.
- Is there some golden opportunities that we should focus on.



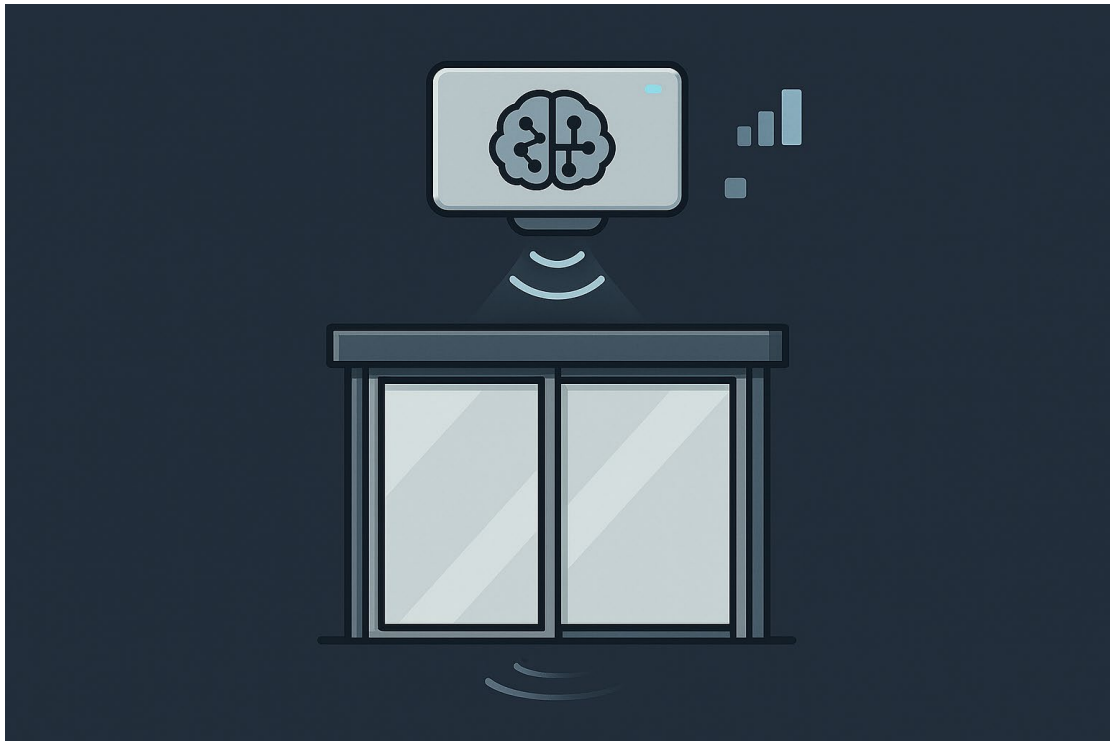
Supervisor; **Roger Dreyer / Thomas Böhler**

Master Thesis.

10

Efficient Online Learning on Resource-Constrained Devices for Intelligent Door Systems

- Select an online learning algorithm optimized for resource-constrained hardware.
- Create a dataset suitable for pre-training and real-world scenarios.
- Train lightweight models for efficiency and accuracy.
- Deploy the model on embedded or low-power devices.
- Design a system for continuous online data collection.
- Implement an on-device online learning loop for incremental updates.
- Benchmark against alternative models and deterministic approaches.



Supervisor; **Roger Dreyer / Jacob Henningsson**

Master Thesis.

11 Refurbished parts strategy

In the area of sustainability this master thesis are focusing on investigating how we can develop for circular business with focus on refurbishment for pedestrian doors.

Topics to be considered:

- Market investigation to identify circular best practices and regulatory demands with focus on refurbishment
- Internal review of circular solutions and businesses
- Crystalize a refurbished parts strategy from a business idea to technical solution including the financial business case, technical feasibility, operations solutions and sales strategy
- Suggest a roadmap to optimize cost and emissions reduction

Supervisor; **Ida Ydremo**

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Master Thesis.

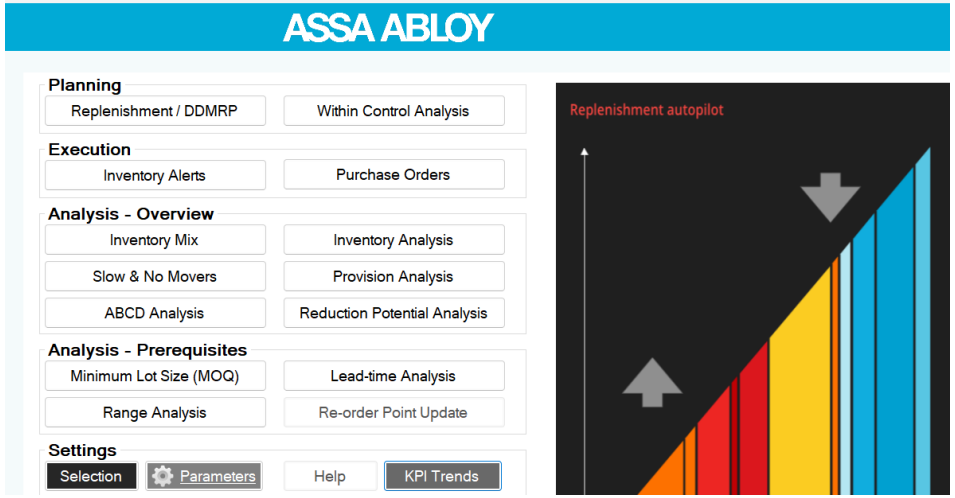
12 Sales & Operations Planning

Create a model to support Supply Chain focus on Resilience and Cost optimization

Managing the transition from relatively few optimized material flows to an increased number of delivery points– how to sustain product availability and relevant KPIs

Topics to be considered:

- Main challenges in securing material availability with an increase of material flows
- How does the shift impact inventory levels, lead times and delivery reliability
- How can suppliers and logistics partner support
- How can digitalization support the transition



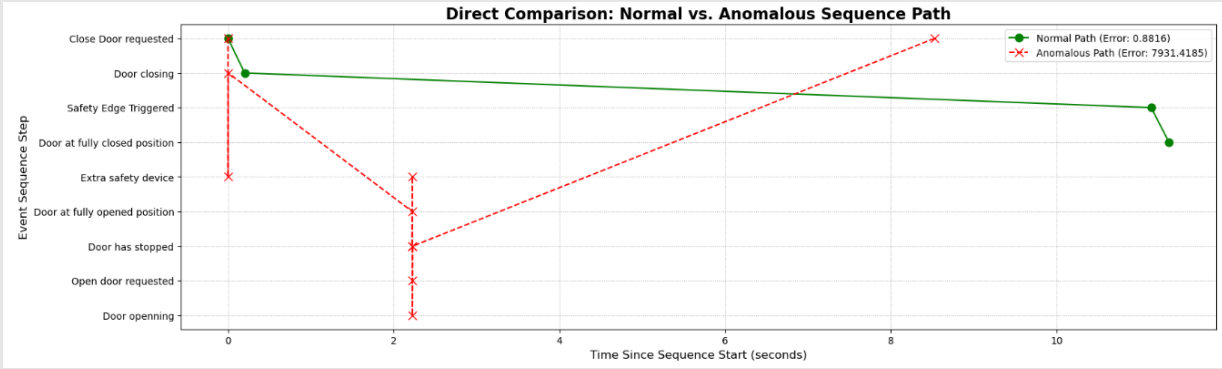
Supervisor; **Cecilia Wahlin**

Master Thesis.

13 Smart Service Identification with IoT & GenAI/Machine Learning

At ASSA ABLOY, we have collected tons of data from our modern IoT connected doors. Now we are looking for 1 or 2 students to work on a data science related master thesis project to harness the potential of big data. To optimize service dispatch and proactively improve the customer experience, a model which can intelligently identify customer needs is needed. Your thesis will be trying to answer some of these questions:

- How can we design a model that accurately sifts through **IoT event logs** to distinguish between normal door usage sequences and abnormal sequences that indicate service needs?
- Which approach—from classical **Machine Learning** to modern **transformer-**based **LLMs/GenAI**—is the most robust and efficient for identifying contextual customer pain points, and why?
- How do we empirically validate the model's accuracy, reliability, and computational efficiency when deployed in a live, high-volume data environment?
- What are the minimum input data prerequisites for the model to operate effectively, and how well can it generalize across different types of IoT devices?
- What is the optimal deployment architecture that balances factors like latency, security, and scalability for real-time service integration?



Supervisor; **Anders Löfgren/Nils Maltesson**

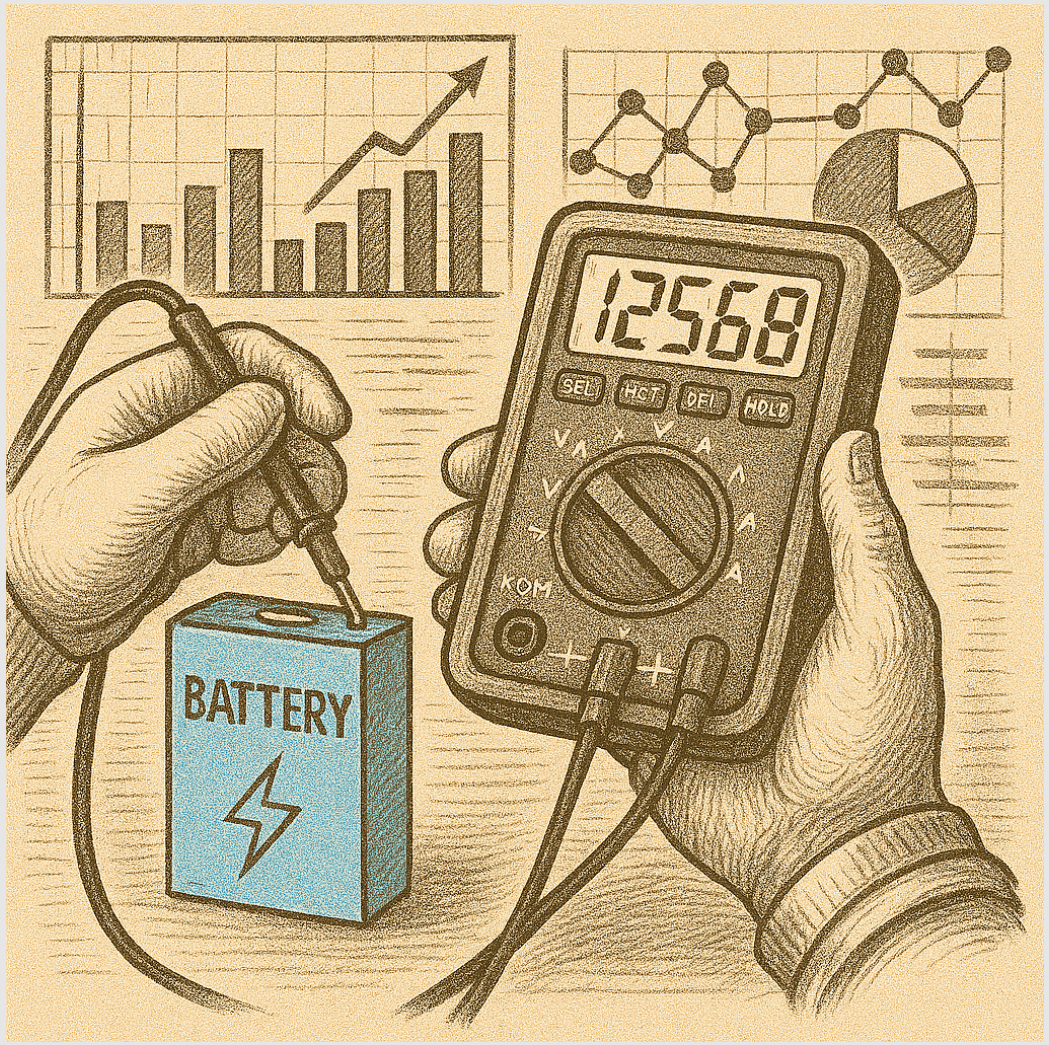
Master Thesis.

14 Battery Lifetime and Capacity variation in Industrial Doors

Our innovative industrial door, is equipped with a lithium-ion battery that plays a key role in driving the door. The battery is charged and discharged during each door cycle, and we need your help to investigate the charging criterias and predict the lifetime of our batteries.

We would like you to:

- Explore ways to optimize the battery charging parameters to extend the overall lifespan.
- Propose a methode to monitor changes in battery capacity and predict its remaining lifespan.
- Investigate additional factors currently influencing battery lifespan that should be taken into account.



Supervisor; **Anders Löfgren**

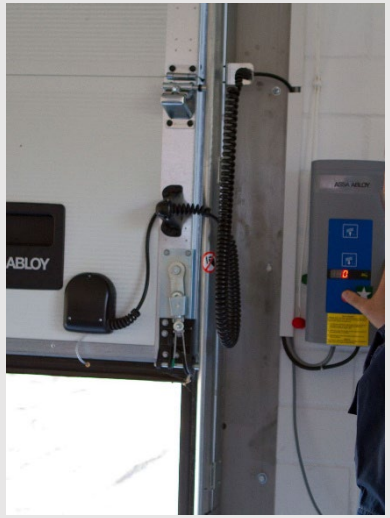
Master Thesis.

15

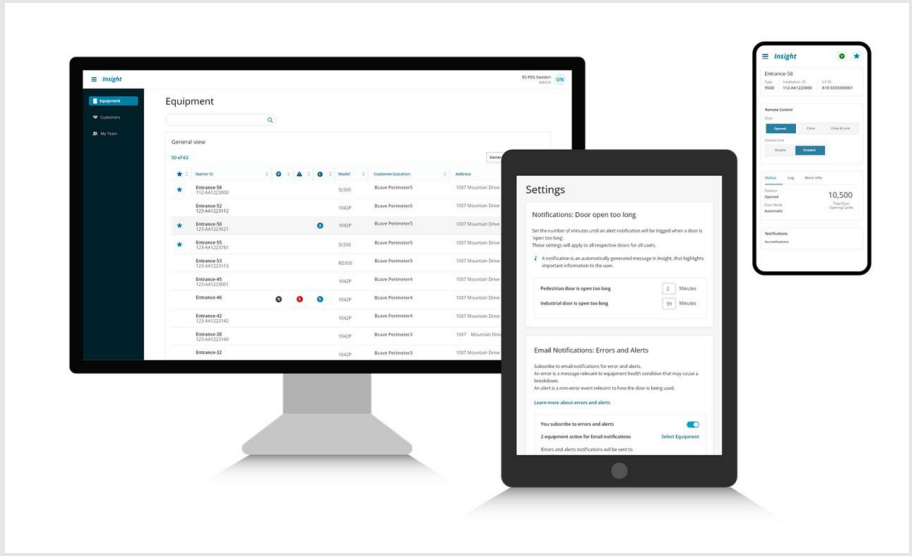
Strategic Data Streaming from IoT Connected Doors To Cloud

At ASSA ABLOY, we are connecting more doors and accessing a vast reservoir of operational data within their control units. Our vision is to leverage this connectivity for advanced remote monitoring, driving proactive maintenance and supporting the smart factory of the future. We are seeking 1–2 students for a Master Thesis focused on pioneering our data value chain—from the edge device to the cloud. This project offers hands-on experience in IoT architecture, data strategy, and optimization.

- What existing **data parameters** are optimal for edge-to-cloud transmission from the door control unit (for different equipment types)? Conversely, what **ideal data parameters** should we prioritize for future collection, solely considering their potential for value generation for customers or our service teams?
- How do we **measure and ensure the quality and integrity** of this streaming data for reliable applications?
- What is the **real effort and cost** required to move different data types from the door to an actionable insight in the cloud?
- How can we achieve an optimal trade-off between **data volume, network traffic** and the business value generated, specifically contrasting edge computing against direct cloud transmission?
- What is the most suitable architecture for our chosen data streaming strategy, and what are its operational **deployment prerequisites**?



Monitor and Fix Online



Supervisor; **Linda Vallenhag/Nils Maltesson**

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16 Industrial Door Dual Drive motor torque investigation

Our latest industrial door innovation uses two BLDC motors mounted at the bottom panel, climbing chains. We need assistance in investigating where in the motor-gearbox-sprocket we loose efficiency. And proposals on how to fix it, preferably backed up by tests.

We would like you to:

- Investigate where we are loosing efficiency
- Propose design changes to increase the efficiency
- Test your proposals and evaluate the best way forward
- Design and prototype a test rig to evaluate the motors before they hit the field

Supervisor; **Anders Löfgren**

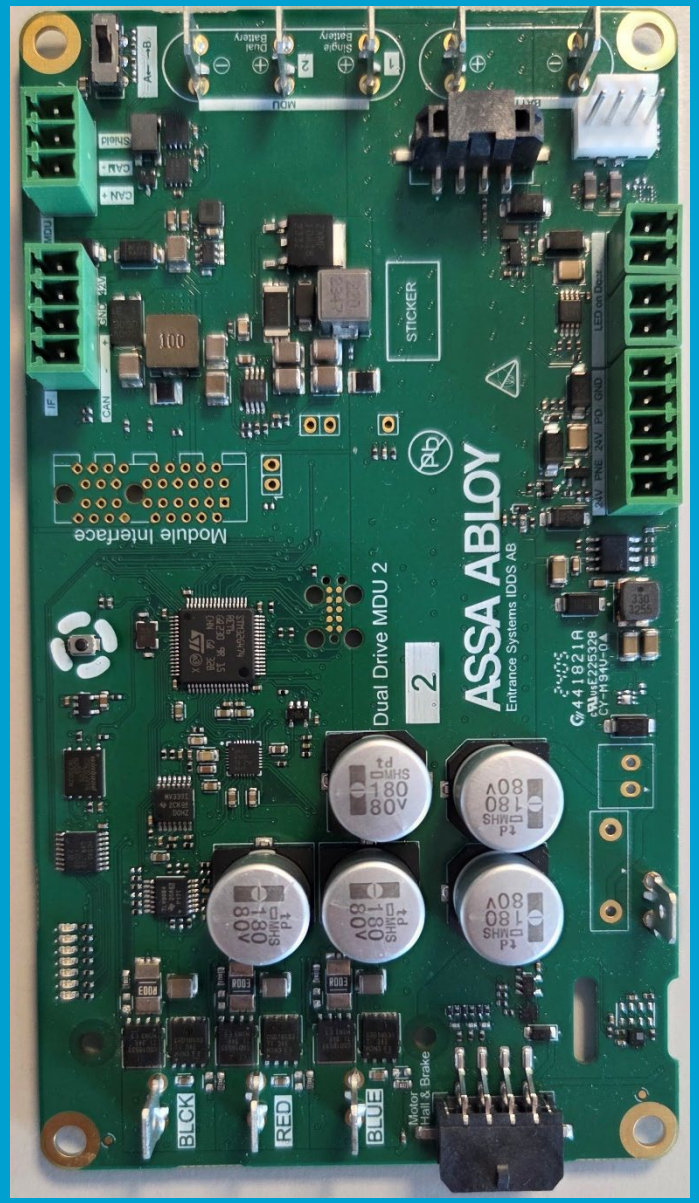
Master Thesis.

17 Industrial Door Dual Drive motor drive

Our innovative industrial door, powered by BLDC motors and battery-boosted, is today utilizing a bought motor drive module. This limits our capability to control the door movement as we would like and to optimize the moment to our customers needs. We need your help with designing and programming the replacement of that circuitry to put the ownership of the door movement back into our own hands.

We would like you to:

- Evaluate the already made electric circuitry
- Program the motor drive



Supervisor; **Anders Löfgren**

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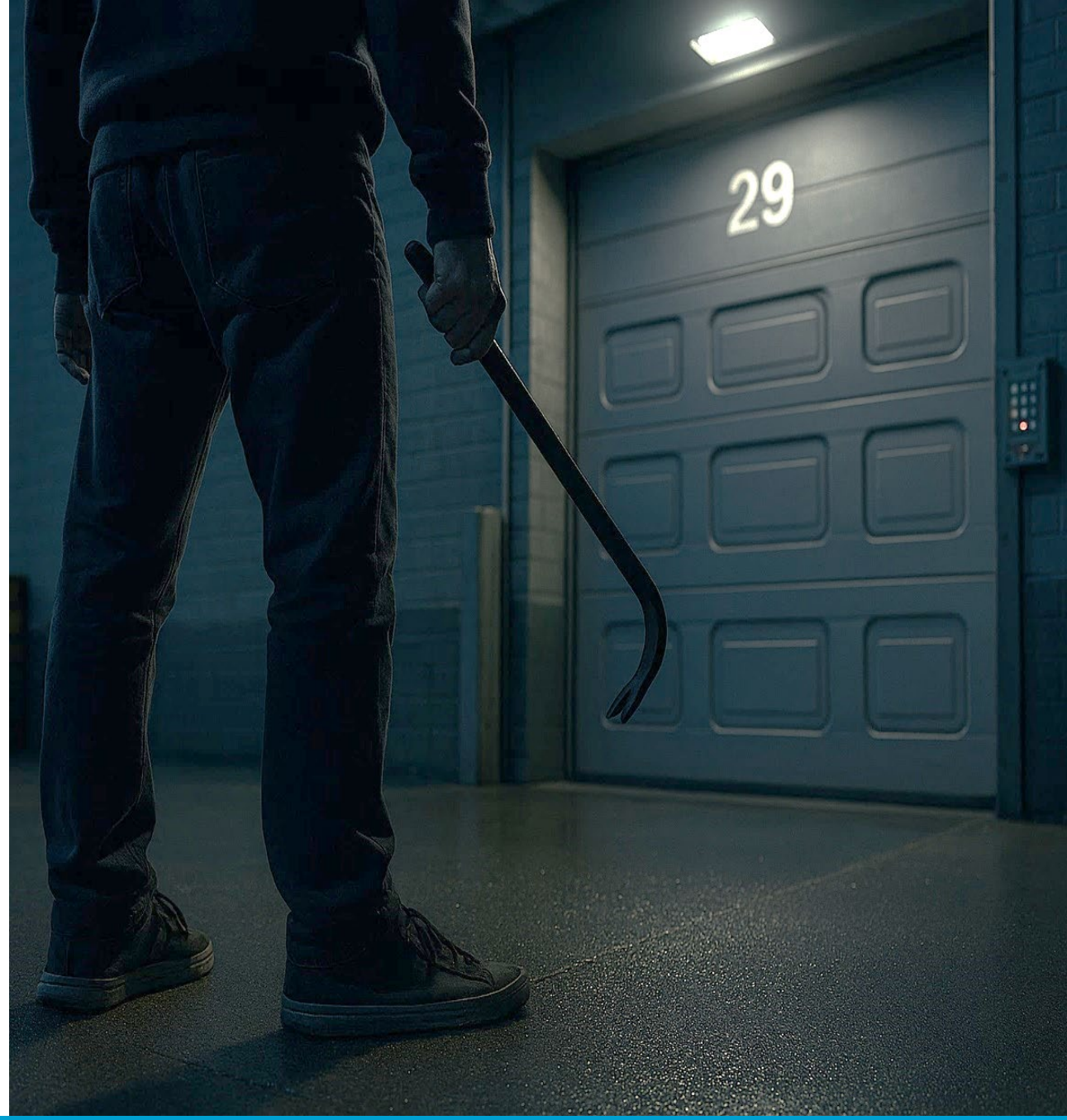
18

Industrial Door light weight burglary protection

Now when the world has entered an uneasy time we see an increase in demands for burglary resistant doors. Today that is solved by adding 1mm steel sheets to the door panels. This is both expensive and increased the weight of the door dramatically. We would like your help in exploring new ways to meet the demands but with less consequences.

We would like you to:

- Evaluate how the burglary tests are performed
- Find the doors weak points and propose reinforcements
- Build up a door including all your proposed solutions
- Test the burglary resistance in accordance with the standard SSF1074 edition 1, class 2



Supervisor; **Anders Löfgren**

Master Thesis.

19

Industrial Door Wireless Dual Drive Door

Our innovative industrial door, powered by BLDC motors and battery-boosted, is today utilizing a spiral cable to continuously feed it with power. The battery can power the door for at least a few cycles without the need to charge. Help us utilize this by designing a solution where the door only charged while it is closed. Which most doors are most of the time.

We would like you to:

- Design and prototype a energy transmission system which is active while the door is closed
- Design and prototype a wireless communication system for the control unit to talk with the motors
- Investigate limits of power transmission
- Investigate limits in lifetime and wear and tear

Supervisor; **Anders Löfgren**

Master Thesis.

20 Industrial Door optimized roller bracket

In our journey for a more sustainable and cost effective door no part is too small for innovation. One part that is used in high volumes is the roller brackets. There are usually between 10-20 per door so even a smaller change will have a larger impact. We need your help investigating how our future roller bracket should look.

We would like you to:

- Conceptualize new roller bracket and roller designs, keeping in mind
  - Installation
  - Service
  - Production costs
  - Strength
  - Adjustability
- Prototype at least one solution and test on a real door

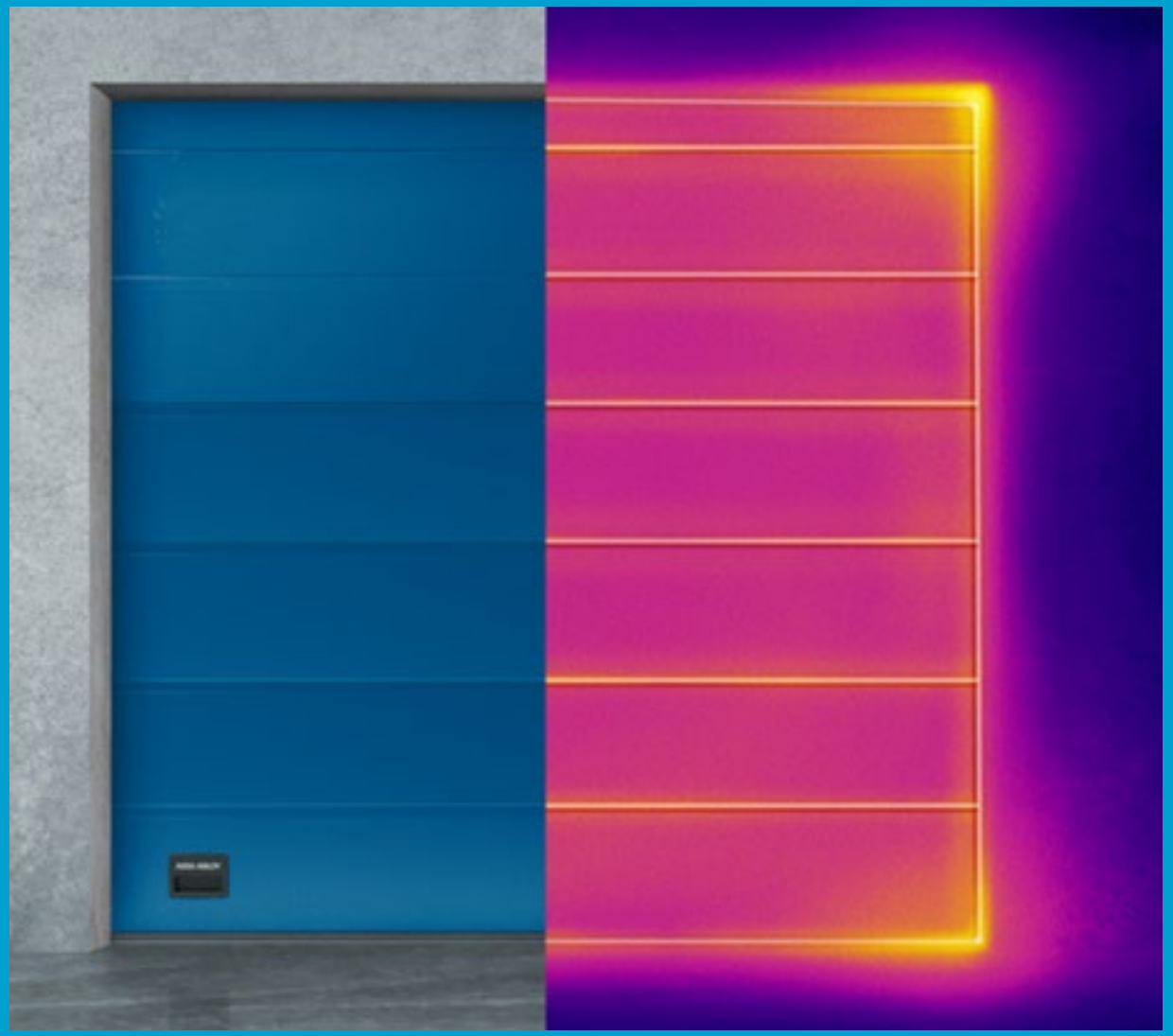
Supervisor; **Anders Löfgren**

21 Industrial Door Improved U-value of our 42mm panel

Last year some students helped us investigate different ideas on how to improve the U-value (energy transmission) of our most used panel. We would now like your help with designing concepts and industrialization methods to bring these ideas to life for our customers.

We would like you to:

- Design an “end-cap” with a broken cold bridge.
- Order prototypes and test them on doors in our facility in Landskrona.
- Visit our production site in the Netherlands to see how an enlarged broken cold bridge in the panel could be realized.



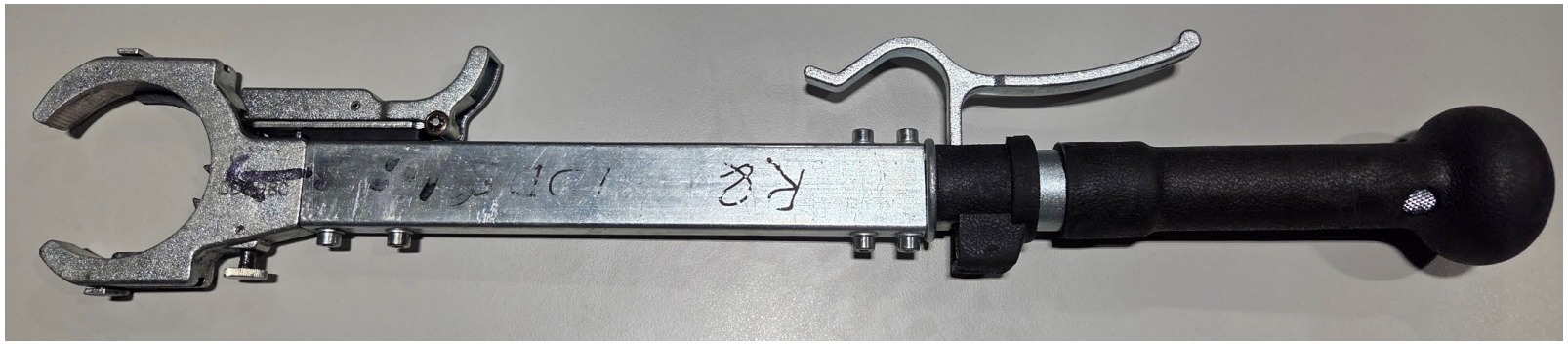
Supervisor; **Anders Löfgren**

22 Industrial Door optimized ratch tool

Our installers are sometimes using the tool you see to the right to tension the springs balancing our doors. Unfortunately the supplier used for the tool have gone bankrupt and due to the tools complexity it has been very difficult finding a new one. We need your help in optimizing the design while keeping all of the safety functions and robustness.

We would like you to:

- Analyse the tool and its components
- Design and prototype alternatives
  - Try to reduce the amount of different production methods and tooling bound parts
  - The more standard off the shelf parts the better
- Test and validate proposed design



Supervisor; **Anders Löfgren**

Master Thesis.

23 Advanced mmWave Radar Sensing for Safety in Automated Revolving Doors

- The core objective is to design, implement, and evaluate a mmWave radar-based system capable of **accurately detecting human speed and potential falls** within a revolving door environment.
- The central research questions are:
  - How can signal processing and algorithmic techniques be used to effectively identify and mitigate strong multipath reflections originating from the glass structure of a revolving door?
  - What are the most effective strategies for coordinating a multi-sensor radar setup to eliminate or minimize mutual interference while maintaining complete spatial and temporal coverage?
  - Can a real-time algorithm be developed that reliably distinguishes between normal pedestrian traffic, dangerously high speeds, and fall events using the processed data from the multi-sensor radar system?

Supervisor; **Oscar Fogelberg**

24 Injecting Vingcard credential data blob into locks for test automation.

Summary

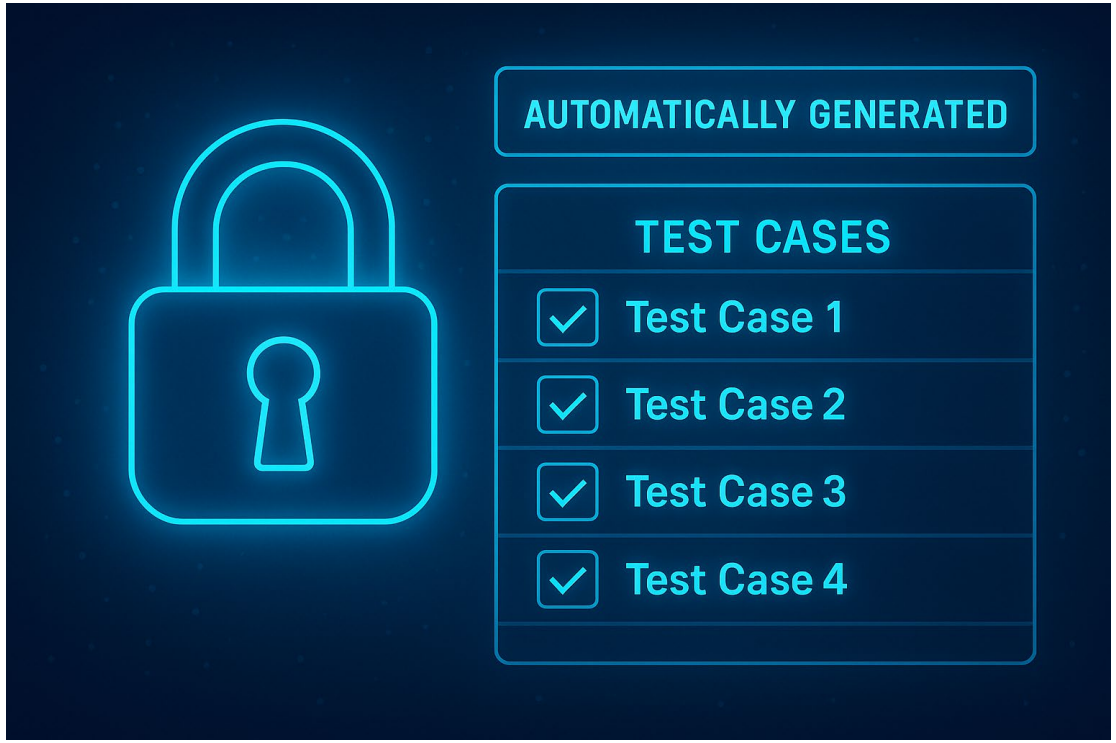
Can we simulate card interactions without any physical card at all — directly injecting credential data blob into the lock's processing chain?

Description

Today's testing setup for hotel locks involves end-to-end testing with physical hotel key cards. These tests often face long waiting times and unstable results, mainly because each card must be manually presented to the lock using robotic systems — a slow and error-prone process. Injecting credential data could drastically speed up firmware testing, improve consistency, and unlock new automation possibilities.

Supervisor; **Joakim Månsson / Hassan Shirazi**

25 Auto-generate test cases for different lock states.



Summary

Build a state-machine model of hotel lock and automatically generate executable test suites.

Description

Today's testing suites involves manually creating testcases which can be a long and tedious process. The use of a system which automatically generates testcases could drastically increase the number of tests but also improve test coverage. The thesis would preferably create some state-machine which maps the logic in the firmware code of the lock. This logic should be able to be used in order to create test cases.

Supervisor; **Joakim Månsson**

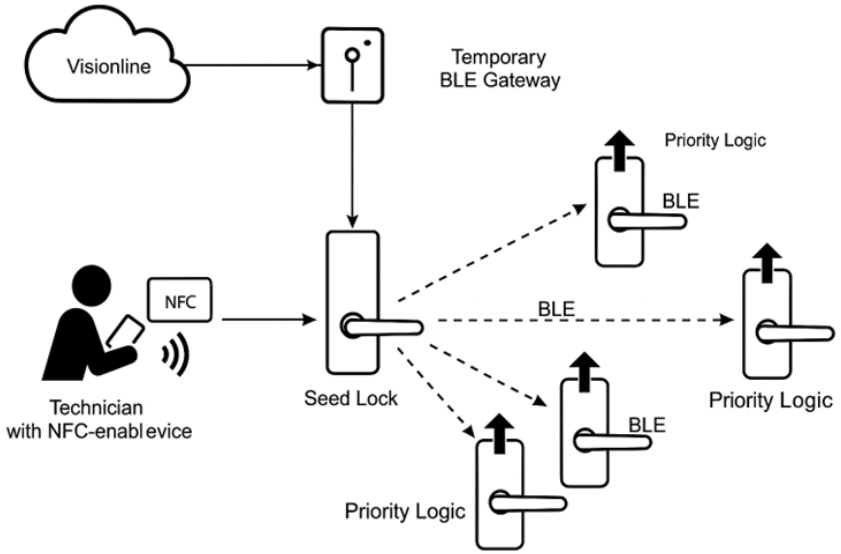
26 NFC + BLE Hybrid Firmware Update System for Visionline PMT VC Signature (6450/70)

Summary

Can we design and implement a secure, fast, and scalable NFC+BLE based firmware update mechanism for hotel locks, replacing the current slow service-tool-based DFU process.

Description

Today's firmware update on the hotel locks involves manual updates at each lock with the service tools. These updates are often cumbersome and usually take long times depending on the number of doors on premise. This hybrid semi-OTA upgrade mechanism helps to drastically speed up firmware updates, while being secure and battery efficient. Please refer to the *NFC_BLE_Hybrid_DFU_system_design* document for more details.



Supervisor; **Aditya Palanki**

Master Thesis.

27

Remote-XR support: A Real-Time Digital Twin Service for 3D-Visualized service of Revolving Door Systems

- This master thesis project proposes the design and prototype development of a **remote real-time service for debugging complex revolving door systems**. The system will leverage a **Digital Twin** (a real-time 3D replica) of the door, streamed to a service technician using a **Virtual Reality (VR) or Mixed Reality (XR) headset**.
- A remote expert, wearing a headset, can "see" the live operational data of a faulty door thousands of miles away. They can visualize all sensor states, motor commands, and error logs overlaid directly onto a 3D model of the door. This allows them to diagnose intermittent and complex faults (e.t., "why does the door stop every morning at 9 AM?") that are difficult to debug with a standard error code or a phone call.

Supervisor; **Oscar Fogelberg**

We look forward to receiving your application!

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