Bosch R&D Center

Lund

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Bosch R&D Center Lund
We are Lund

R&D Center Lund stands for modern development in cutting edge technology in the areas of connectivity, security, mobility solutions and AI.

With our specialized competencies we are contributing to the success of our partners in the automotive industry as well as consumer products and partners in the Internet of Things.
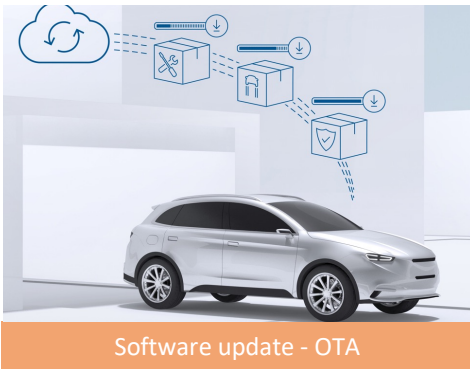
Bosch R&D Center Lund
Our core areas of focus

Security

Cyber security for automotive

ESCRYPT IDS Security

Connectivity

Connectivity solutions for vehicles

and eBikes

Premium eBike Display

Software update - OTA

Enablers

Agile methods
Architecture
Dev Ops

BST algorithm development

iOS, Android and Linux development

Software updates over the air

Mobility solutions

Android Automotive OS

Embedded AI

Algorithm development

Embedded AI

Artificial Intelligence

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Master Thesis:
Position Tracking of a Small Vehicle Using Sensor Fusion

Goal: Get the best possible position accuracy by combining two sensors:

- IMU: High frequency measurements, accurate on short timescales, relative position
- GNSS: Global Position, Low Frequency
- Possible to add more Datapoints from other components in the system

Benefit: Improved navigation and tracking

- Literature study, experiment design & data collection
- Algorithm Development and Evaluation
- Stretch Goal: Implement on embedded target
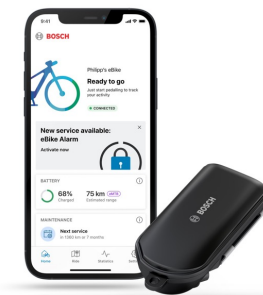
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Master Thesis:

Master Thesis Project at Bosch Lund
Position tracking of small vehicles using sensor fusion

Welcome to a world, where your ideas lead to something big. Welcome to Bosch.
At Bosch, we shape the future by inventing high-quality technologies and services that spark enthusiasm and enrich people's lives. Our promise to our associates is rock-solid: we grow together, we enjoy our work, and we inspire each other. Join in and feel the difference.

Bosch R&D Center Lund stands for modern development in cutting edge technology in the areas of connectivity, security, mobility solutions and AI. We are growing rapidly and looking for people to join us on our mission to become the Bosch Group's 1st address for secure connected mobility solutions. We are working on a range of interesting projects, with a particular focus on software development for the automotive industry, electrical bicycles and Internet of Things.

Problem statement
At Bosch in Lund, we develop software and hardware that evolves transportation of people and goods into computerized, safe, agile and environmentally friendly mobility. One very important part of this future is to continuously and in real-time know the vehicles position information. Using a tiny and power-efficient inertial measuring unit (IMU) combined with a GNSS modem, the assignment in this project is to fuse the information into an accurate position that is robust against dropouts in the GNSS domain.

Proposed solution
The focus in this thesis project shall be on developing algorithms where IMU and GNSS data are combined in a sensor fusion framework, with the goal of achieving high quality position tracking.

We propose the following topics to be covered in the thesis:
- Identify and calculate momentaneous directional information from the IMU measurements.
- Research and find suitable algorithms to be used for sensor fusion between IMU and GNSS data.
- Conduct field testing to evaluate, verify and validate the algorithms in different real-world scenarios.

You will of course have the opportunity to shape the thesis based on your knowledge, skills and discoveries during the project.

Scope of master thesis project
Two students completing 30 credits each (20 weeks) onsite at the Lund office

Your profile
In order to be successful in the project with think you are:
- A student in Information Technology, Computer Science, Electronics, Math or Physics.
- Interested in algorithm development and have some signal processing experience with machine learning knowledge.
- Experienced with or have at least some knowledge of programming in Matlab, Python, C++ or similar.
- Self-driven, able to challenge yourself, and gain the experience needed to move the project forward.
- A person with team spirit, social skills and a curiosity for exploring new technology areas.

Supervisor: Martin Heyden, Bosch RBSN/ESW13

How to apply
Please submit your application at https://www.bosch.se/jobba-hos-oss/lediga-tjaenster/ and specify which project you are interested in. **Please note:** Only applications from students at a Swedish University are accepted.

- Other open positions and Master Thesis proposals:
  https://careers.smartrecruiters.com/BoschGroup/sweden