

EDUCATION

Chalmers University of Technology, Göteborg, Sweden
Master's in Complex Adaptive Systems

2022 - 2024

Relevant Coursework: Artificial Neural Networks, Stochastic Optimization Algorithms, Simulation of Complex Systems, Algorithms for Machine Learning and Inference, Design of AI Systems, Advanced Machine Learning with Neural Networks, Autonomous Robots, Constraint Programming and Applied Optimization, Distributed Systems

RV College of Engineering, Bangalore, India
Bachelor of Engineering in Mechanical Engineering

2016 - 2020

SKILLS AND CERTIFICATIONS

- **Languages:** Python, MATLAB, C++, GO, SQL, Linux scripting, Latex
- **Tools/Frameworks:** ROS, ROS2, Gazebo, GIT, Docker, Tensorflow, Keras, Pytorch, Scikit-Learn, AWS, Kubernetes, JIRA, PowerBI
- **Certifications:** Generative Adversarial Networks (GANs) ([Coursera](#)), DeepLearning.AI TensorFlow Developer ([Coursera](#)), Deep Learning Specialization ([Coursera](#)), Machine Learning ([Coursera](#))

EXPERIENCE

Master Thesis Worker, VOLVO Group

Jan, 2024 - Present

- Developed and implemented **agent-based architectures** using open-source Large Language Models (LLMs) for analyzing industrial logged data at Volvo Group, focusing on automating data analysis and enabling natural language interactions.
- Crafted and implemented **advanced prompt engineering methodologies** for complex data interpretation, reasoning, code synthesis, and visualization tasks.
- Collaborated with the team on the development and evaluation of the tool, using standardized and **custom metrics** to ensure accuracy, reliability, and effectiveness.

Teaching Assistant, Chalmers University of Technology

Oct, 2023 - Jan, 2023

- Served as a Teaching Assistant for Autonomous Cooperative Vehicular Systems (DAT295), instructing students on ROS and developing a **teach-and-repeat algorithm** for the wifibot to enable autonomous trajectory following.

Project Intern - AI/Robotics Lab, Chalmers University of Technology

Jun 2023 - Aug, 2023

- Assisted Dr. Karinne Ramirez in developing a **localization and mapping system** for the TIAGO robot to autonomously identify its location within office environments.
- Managed lab resources and led comprehensive testing of TIAGO robot functionalities in both **simulation and real-world scenarios**; documented and resolved bugs to ensure optimal performance.

Teaching Assistant - Robotics Lab, Chalmers University of Technology

Feb, 2023 - Jul, 2023

- Served as a Teaching Assistant under Dr. Elad Schillar, guiding 6 bachelor students in using ROS to design indoor autonomous robot architectures and motion planning algorithms.
- Implemented advanced SLAM algorithms, including **TAG Slam, Orb Slam3, and Gmapping**, on Wifibot with an RGB camera and a Lidar for trajectory and map generation.
- Integrated the developed autonomous system with the in-house local positioning system, **Gulliview**, conducting a comparative analysis of trajectories from both sources.

Robotics Software Engineer, JETBRAIN ROBOTICS

Sep, 2020 - Jun, 2022

- Implemented **SLAM and online motion planning algorithms** for mobile robots, interfacing with sensors like sonars, LIDAR, IMU, and wheel encoders to enable autonomous navigation tasks.
- Developed a **tricycle controller and teach-and-repeat algorithm** for an autonomous floor scrubber, integrating the [Alphasense](#) position module for enhanced positional accuracy.
- Upgraded robot systems by porting the navigation stack to **ROS2**, integrating **Slam toolbox** and **NAV2**, and leveraging Docker and shell scripts to develop automation solutions that enhance operational efficiency.

- Constructed **URDF packages** for robot simulations in Gazebo, incorporating camera, lidar, and IMU plugins to model real-world dynamics accurately.

Data Scientist Freelancer, GreyNodes

Nov, 2020 - Mar, 2022

- Conducted **A/B testing** to optimize digital advertising strategies, analyzing user engagement metrics. Implemented data-driven improvements that significantly enhanced **user engagement** and **campaign performance**.
- Utilized **ARIMA models** to accurately forecast demand spikes, optimizing inventory for peak periods like back-to-school and holidays, effectively **minimizing overstock and stockouts**.

PROJECTS

Time-Constrained Scheduling and Collision-Free Control for A Fleet of Mobile Robots

Oct, 2023 - Jan, 2024

- Developed an **automated pipeline** linking scheduler outputs with MPC for seamless **task scheduling** and **trajectory planning**.
- Employed **MILP optimization solvers** (Gurobi, Z3) and CasADi for precise trajectory control and efficient task allocation, enhancing system coordination.
- Created a prototype for a **dynamic online scheduler**, enabling real-time task adjustments and trajectory translations in the MPC system for improved resource management.

Image-to-Image Translations Using GANs

Mar, 2023 - May, 2023

- Developed and implemented **Generative Adversarial Networks** (GANs), including **Conditional GANs** (Pix2Pix) and **Cycle GANs**, for accurate image translation across domains such as **facades to semantic representations** and **maps to satellite imagery**.
- Analyzed network outputs, identified improvement areas, and fine-tuned models to ensure high-quality image translations and enhanced performance.

Intelligent Navigation for Kiwi Cars

Mar, 2023 - May, 2023

- Developed **YOLOv5 Nano model** for rapid cone detection on Kiwi car, and integrating an **adaptive steering algorithm** to enhance autonomous vehicle control.
- Implemented **color-based object detection** for blue paper and green Post-it notes using OpenCV, employing advanced image processing techniques for precise identification.
- Engineered a **dynamic wandering system** for Kiwi car, prioritizing object detection based on battery status and developing a comprehensive **navigation plan** for robust autonomous functionality. Trained **YOLOv5 model** for enhanced car detection, applying advanced steering methods in varied environments.

Cooperative Path Finding with Time-Delay Communication

Nov, 2022 - Dec, 2022

- Developed an **agent-based model with bacteria** to demonstrate communication and cooperation among autonomous agents via environmental signals.
- Aimed to create a foundational algorithm for **cooperative path-finding** in robotic swarms, addressing time-delayed communication complexities.
- Applied model insights to **drone-based search-and-rescue missions**, enhancing communication and cooperation for locating trapped victims during emergencies.

VOLUNTARY WORK

Läxhjalper - Chalmers Pluggstöd, Chalmers University of Technology

Oct, 2022 - Present

- Tutoring and guiding high school students with their homework and assignments in Mathematics and Science in schools across Gothenburg.

Chalmers Digital Student Ambassador, Chalmers University of Technology

Oct, 2022 - Dec, 2023

- Served as a **Program Ambassador** for Complex Adaptive Systems at Chalmers University of Technology, guiding prospective students worldwide, addressing program inquiries, and sharing insights into university life based on personal experiences.