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Personal Statement

I studied Autonomous Systems at DTU and Chalmers, specializing in software development for race car dynamics and robot control. I possess strong analytical, practical, teamwork, and communication skills.

Education

Technical University of Denmark(DTU) — **Copenhagen, Denmark**
Master of Science in Engineering (MScEng), ***Autonomous Systems*** — *01.2021 – 12.2023*
GPA: 8.86/12; Core courses: Linear control design, Perception for AS

Chalmers University of Technology (exchange) — **Gothenburg, Sweden**
MSc in ***System, Control and Mechatronics*** — *09.2022 – 12.2023*
Core courses: Vehicle Motion Engineering, Decision-making for AS, Artifical Neural Networks

Nanjing Insitition of Technology — **Nanjing, Jiangsu**
BSc in ***Mechatronics*** — *09.2016 – 06.2020*
GPA: 3.47, Rank in major: **10**/162

Projects

Reinforcement learning for robust mobile robot navigation control — **DTU**
Independent Developer — *07.2023 – 12.2023*
- Developed a training environment with Laser-scanner-equipped, two-wheel drive robot in Gymnasium.
- Built the laser scanner module from scratch using Numba and vectorization for acceleration.
- Designed adjustable paths, movable obstacles, and corridor walls in the environment to prevent overfitting.
- Created a GUI tool for easy tweaking of training and environment parameters and for visualizing simulations.
- Trained the NN ccontroller with PPO, achieving a 60% success rate in unknown environments with obstacles.

Unmanned autonomous systems — **DTU**
Project Developer — *06.2022 – 06.2022*
- Developed a control system in Simulink enabling hovering, translation, and set-point flight for a quadcopter.
- Implemented path planning using A* in a 3D environment, successfully navigating a drone through a 3D maze.
- Utilized polynomial optimization for trajectory planning, making the quadcopter navigate through hoops

Internship & Work Experience

Chalmers Formula Student — **Chalmers**
Autonomous system software engineer — *09.2022 – 08.2023*
- Developed a method for converting GPS coordinates to map coordinates, used to verify SLAM map accuracy.
- Developed a Gazebo plugin for a four-wheel drive vehicle motion simulation to test SLAM and control algorithms.
- Contributed to developing a tool for launching autonomous systems with test options.
- Assisted the team be the **overall winner** at 2023 FSG Driverless Cup and securing 7th place at FS East.

Off-robot robot lab — **NJIT, Nanjing**
MCU developer & head of the lab — *07.2017 – 07.2018*
- Developed lane-following car on STM32, featuring camera/laser rangefinder tracking and robotic arm control.
- Led the team to consecutive wins at provincial & national level robot competitions
- Got two utility patents granted, and completed a Challenge Cup project in the topic of pipeline robots.

Awards

First Award in Intellect Vehicle Challenge — **06.2019**
Champion in 2018 China Engineering Robot Competition — **04.2018**
First Award in 2018 China Robot Competition — **08.2017**

Skills

Coding: Python, C/C++, Matlab/Simulink, Linux, ROS, Docker, git

Control Systems Expertise: Linear control systems, control methods including PID and MPC, Reinforcement learning and neural networks, dynamics and control of drones, vehicles, and ROV

Language: IELTS 6.5 (Oral 7.0). Worked in international engineering team, demonstrating strong communication skills