30 hp – Master's Thesis: Dynamic Occupancy Grid with LiDAR

Are you passionate about the cutting-edge technology driving the future of automotive safety and autonomy? Do you have a keen interest in LiDAR sensors and their role in advancing vehicle perception systems? If so, we invite you to embark on an exciting research journey with us by pursuing your Master's thesis in the field of "Dynamic Occupancy Grid with LiDAR."

Background

As the automotive industry rapidly evolves towards autonomous driving, ensuring the safety of self-driving vehicles is paramount. LiDAR sensors have emerged as a critical component for enhancing the perception capabilities of these vehicles. The proposed Master's thesis project will focus on the development and optimization of a Dynamic Occupancy Grid system that leverages LiDAR data to provide real-time, high-resolution environmental perception for autonomous vehicles.

Target/scope

The primary target of this Master's thesis is to develop, optimize, and evaluate a Dynamic Occupancy Grid system utilizing LiDAR sensor data for automotive applications. The research aims to address critical challenges in the field of autonomous driving and contribute to the enhancement of vehicle perception and safety. Key objectives include:

- **Dynamic Occupancy Grid Mapping:** Develop unsupervised algorithms and methods for the generation of dynamic occupancy grids that accurately represent the vehicle's surrounding environment. The grid will represent, static obstacles, dynamic objects, occluded areas, and free space. Dynamic objects and static information will be placed on real-time updates and adaptability to changing conditions.

- **Performance Evaluation:** Conduct rigorous evaluations, both in simulated and real-world scenarios, to assess the effectiveness, accuracy, and robustness of the developed system.

Join us in pushing the boundaries of automotive technology, improving safety, and paving the way for the future of autonomous driving.

Applicant Requirements

- Enrollment in a Master's program in fields such as Robotics, Computer Science, Electrical Engineering, or Automotive Engineering.

- Strong programming skills (e.g., Python, C++) and a background in computer vision or robotics are advantageous.

- Enthusiasm for research and the drive to tackle complex challenges in autonomous vehicle technology.

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Education/line/direction

Number of students: 1

Start date for the Thesis project: winter 2024

Estimated timescale: 5 months

Contact person and Supervisors

Sina Sharif Mansouri, Perception Technical Leader at EEARP

Jonatan Siönäs, Perception Development Engineer at EEARP

Joakim Lilja, Perception Development Engineer at EEARP

Application

Your application should contain CV, motivation letter and copies of grades

A background check might be conducted for this position.