

## Master Thesis/Bachelor Thesis/Guided Research

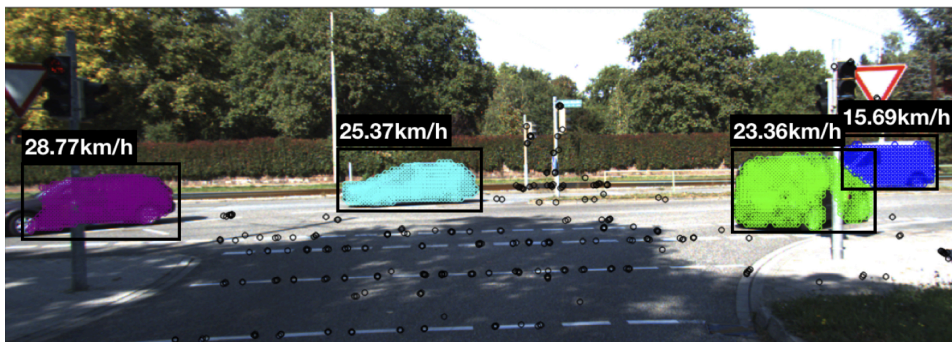
# Simultaneous Localization and Mapping in Dynamic Environments

## Introduction

When a robot carrying a camera is placed in an unknown location in a new environment, simultaneous localization and mapping (SLAM) aims to construct a map of the unknown environment while simultaneously keeping track of the robot's location within it. SLAM is considered to be the key to enabling autonomous navigation for mobile robots and self-driving vehicles among the robotics community. In recent years, SLAM has also played an important role in virtual reality (VR), augmented reality (AR) and metaverse as a tool to connect the real world with the virtual world.

## Motivation and Goals

Traditional SLAM solutions are based on static environment assumptions, but most real-world scenarios are highly dynamic and can cause those SLAM algorithms to fail. Based on several recent research advances, this study proposes a new deep learning-based framework that tries to solve the SLAM problem in dynamic scenes.



## Tasks

In this study we will combine the state-of-the-art deep learning methods and traditional geometric methods to solve important problems (tracking, segmentation, etc.) dealing with dynamic scenes. Specific tasks will be determined based on your background, interests and total working hours. It would be helpful if you send me your CV including your related background knowledge introduction.

## Requirements

- Good knowledge on deep learning
- Proficient in python and pytorch programming
- Basic knowledge on computer vision and SLAM

## Contact

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