

Journal 0

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1 Introduction

Many current mapping services such as Google Maps offer real-time traffic detection, but they require the use of a centralized system which makes it vulnerable to events such as power outages and denial of service attacks. Using local car-to-car communication could create a decentralized system for traffic detection. My project would address the vulnerabilities and privacy concerns associated with centralized systems while still providing effective traffic detection.

2 Summer Work

This summer I looked into the use of the SUMO software to simulate traffic, but I determined that it would not be suitable for my project.

3 Obstacles

Traffic simulation will be very computationally demanding, so I will have to address this issue through either using the cluster or limiting the number of simulated cars. I will need to learn how to download a real road system, likely through the OpenStreetMap API.

4 First Marker of Success

My first step would be to simulate my proof-of-concept model, which consists of two roads running parallel to each other with the third road running antiparallel to them. If the average times of the cars are reduced when using my decentralized traffic detection navigation system compared to a no traffic detection navigation system, then my proof-of-concept model would have succeeded.