

Team No. 2

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## Initial Project Description

**Project Name:** *CarFlo*

**Project Synopsis:** Dynamic traffic management for cities

**Project Description:**

Sitting in traffic is frustrating. The goal of *CarFlo* is to minimize the time spent in traffic by creating a dynamic traffic management system. Traffic is a consequence of the increased density of cars on a road. Intuitively, the faster vehicles move, the longer the distance required between each car. Thus, as density increases, vehicles naturally start to slow down to maintain a safe distance. This process occurs naturally in a choppy manner, with inconsistent acceleration and deceleration, leading to congestion. If speed limits could change dynamically to reflect the quantity of vehicles on a given section of highway, hypothetically some of this congestion could be alleviated. As autonomous vehicles take the roads and have their own lanes, they could handle dynamic speed limits with ease. This presents an opportunity to build for this problem.

*CarFlo* is a traffic management solution which suggests dynamic speed limit modifications as a consequence of vehicle density on a given roadway. Using computer vision, *CarFlo* interprets roadway capacity levels and uses a model to predict the optimal speed limit required to reduce congestion while maintaining traffic flow. The predictions are sent from the service to electronic speed limit signs. Additionally, there is a user-interface for managing associated settings. This project will serve as a proof of concept of the CarFlo hypothesis.

**Project Milestones:**

*First Semester:*

- Design mockups and user workflows (October 12)
- Proposal Video (October 26)
- Produce document detailing standard traffic flow modeling (Partial October 26, Full November 3)
- Generate software implementation plan document (November 24)

*Second Semester:*

- Generate simulated input (February 19)
- Back-end implementation (March 12)
- Implement user interface (March 26)
- Traffic flow visual simulation - Stretch goal (April 23)
- Project Poster - (May 1)

**Project Budget:**

Sensors	\$200
AWS Credits	\$250 (variable)

**Work Plan:****Grant:**

- Backend implementation and design
- Traffic flow visualization

**Tiernon:**

- Machine Learning Implementation
- Design Mock-ups and UI

**Antonette:**

- Proposal video
- User Interface

**John:**

- Simulate traffic flow input
- Design Mock-ups

**Michael:**

- Backend implementation and design
- Modeling traffic flow

