Empowering Better Infrastructure Design

Olin College of Engineering SCOPE

Project Goals

- Determine the best way to improve automotive safety by carrying out user-oriented design practices and interviewing various experts and stakeholders in the field.
- Implement an idea. Build a modular platform that collects, stores and processes traffic data; providing town engineers with critical information about the safety of their roadways. The platform allows them to make informed, preventative design decisions, as well as confirm that these decisions have been effective

Exploration Phase

- Interviewed experts in the field and explored vulnerable road users; cyclists, pedestrians, and motorcycle riders.
- Safety is not cool!
- Settled on affecting better infrastructure design because infrastructure directly dictates the safety of roadusers
- Chose to focus on aiding town engineers in small towns

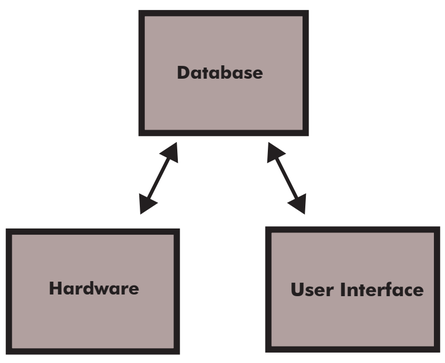
The Problem

- Engineers decisions are highly reactionary
- Changes are slow to happen
- Design decisions are driven by a small amount of data with high latency
- Current data acquisition techniques take a lot of labor time and can be antiquated
- Data that validates decisions is non-existent

Common traffic study done by human counters

The Product

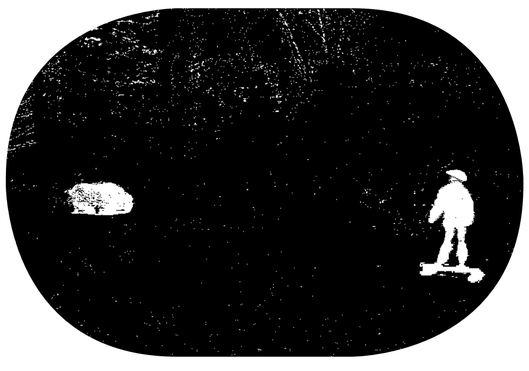
- A low cost sensor package that collects and compiles detailed traffic data in real time (ex. car count, speed & directions)
- Town engineers can connect multiple sensors at different locations and view processed data via a website
- The data allows for town engineers to make informed decsions about how to design and change infratructure



The Protoype

Hardware

- Stand alone computer (Raspberry Pi) with camera module
- Tracks cars, pedestrians and cyclists movement through roadways, acquiring vehicle type and count
- Data is wirelessly transferred to laptop where its processed and then uploaded to the database



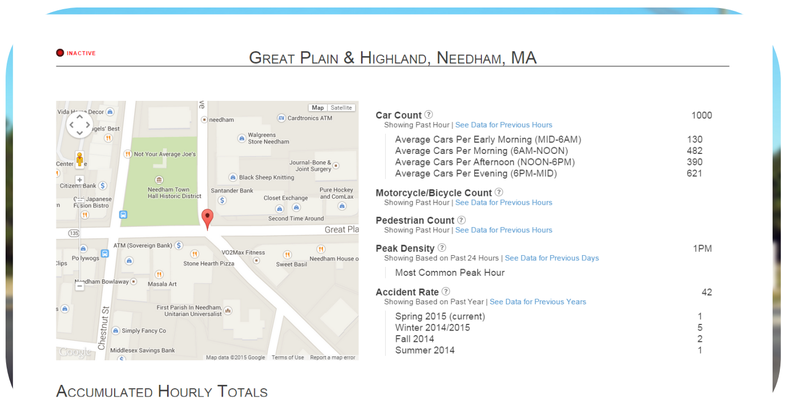
Tracking on the road using backgroud subtraction & blob detection

Database

- Stores data from multiple sensors and processes data into meaningful output for end user

User-Interface

- Webapp that displays data from multiple traffic sensors and generates traffic studies
- Quickly shows problem areas and allows engineers to identify design changes that need to be made



Current UI