Issues to consider with driving:

Compiled by Garrett Barton for ENGR 4200

# Locomotion/Automation

* + Lane detection
    - **Goal**: To stay within the lanes and determine lane path
    - Cross walk detection/ Miscellaneous stop detection
  + Pedestrian detection
    - **Goal**: To avoid collisions with pedestrians (see-stop method)
    - Determine safety zones
      * Variable with vehicle speed
  + Turns (only rights like UPS?)
    - **Goal**: To determine the safest and easiest method for making turns and when to make them
    - More perception/computation to make turns across lanes

# Navigation

* + Current Street Identification
    - **Goal**: To determine the street the vehicle is currently traveling on for route tracking
  + Current location
    - **Goal**: To determine the position so as to be able to determine position in route
  + Path planning (Algorithm)
    - **Goal**: Choose algorithm that suits this projects needs and safety and ability parameters
    - How to get map of campus/area of operations?
    - Use Google Maps?
    - Research using MIT 6.034 AI Course (<https://www.youtube.com/playlist?list=PLUl4u3cNGP63gFHB6xb-kVBiQHYe_4hSi>)

# Hardware

* + Mounting/Protection of
    - **Goal**: Mount all devices securely, safely, and with protection from weather
    - Camera:
    - GPS chip (Directioning?):
    - Core devices:
    - Power supply:
  + Drive control
    - **Goal**: Use actuators to control vehicle’s speed and direction
    - Where to control the steering wheel from?
    - Algorithm to control speed and turning?

# Processing Capabilities

* + Processing
    - **Goal**: To be able to process imaging, routing, and actuator control.
    - The Raspberry Pi3 has 4 cores
    - There are several processes that need to be run
      * Image Capture
      * Image processing
      * Route planning/following
      * Actuator control/communication
    - Not all of them need to be parallel