

# **Current Plan for Controls of Senior Design Autonomous Vehicle Simulation**

## **Sprint 6**

**McKenzie King**

### **Target vehicle**

This description links to the “Target Vehicle” block of the General Program Flow diagram on the next page.

Target vehicle will drive using ros keyboard input premade node

- ros\_teleop\_twist node

Target vehicle will have predefined image on the back

- The current plan for this image is a license plate

### **Ego Vehicle**

This description links to the “Ego Vehicle Control Plugin” block of the General Program flow diagram on the next page.

The Ego vehicle will detect the target car, follow the image on the rear of the car and gain position using a depth camera.

The current follower approach will do the following

- Gain position of target relative to ego
  - The sensor/Haar cascade will return a 3d point relative to the ego vehicle
  - This position is able to translate to a set of angular and linear velocity commands if properly mapped to a function
- If target is left or right of center
  - Send an angular velocity command relative to the yaw of the target
- If target is farther than appropriate follow distance from target
  - Increase forward velocity relative to this distance
- If target is closer than appropriate follow distance from target
  - Decrease forward velocity relative to this distance
  - Stop if necessary
- If target is lost (fail state)
  - Slow to a stop, turn in a circle slowly until target is found again
    - Follow as normal

# Current Plan for General Program Flow of Senior Design Autonomous Vehicle Simulation

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