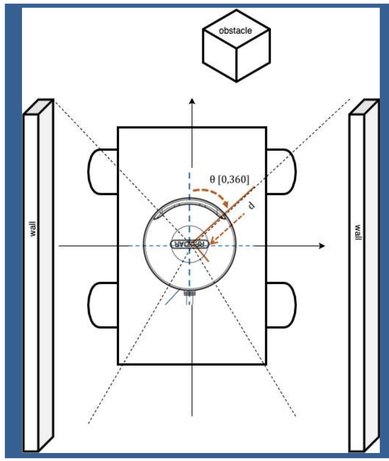
Autonomous Vehicle

Zhijun Chen, Yihua Zhou, Fengbo Yang, Christian Rodriguez
Professor Swindlehurst
Department of Electrical Engineering and Computer Science

Goal

We want to make the car autonomous. The car must be able to avoid obstacles that are in its way. It must also follow a path, that is a road or a simple path, from its starting position to its goal. The car must also be very responsive for the speed that its going and must ensure that the passengers or cargo are safe. It should also recognize and respond to any road signs that come its way.

EYE OF AUTONOMOUS VEHICLE



We divide Lidar scanning enviroment into four regions: front view, back view, and both side views.

- Front View: [315, 0) U [0, 45),
- Side Views:
  - Right: [45,135),
  - Left: [225,315)
- Back Views: [135, 225).

Progress/Challenge

Assembled the car in a custom design to ensure the LIDAR is able to detect shorter objects.

Programmed the raspberry pi to use the LIDAR to scan for walls and obstacles.

Programmed the raspberry pi to be able to control the car to move forward and turn left and right and stop.

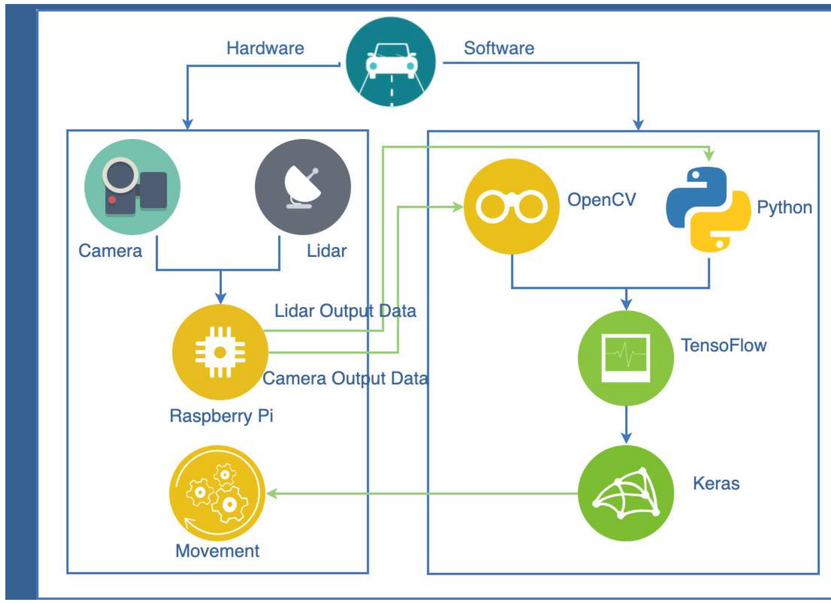
Challenges: make the car cooperate with LIDAR.

Hardware

All the materials we will be using include:

- An RC car that will be modified.
- A camera for detecting obstacles and road signs.
- LIDAR for quick recognition of the environment.
- Raspberry pi for processing.

Software



Future Work

Install the camera on top of the car.

Change the raspberry pi to an NVIDIA Jetson Nano Developer Kit (GPU)

Program the GPU to use the camera to scan the environment.

Reference

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- Xiaorgeek.com. (2019). *XiaoR GEEK Classroom-Donkey Car XR-F1*. [online] Available at: http://www.xiaorgeek.com/Study/Study/catalog/cid/29 [Accessed 4 Nov. 2019].
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