Computer Systems Design Laboratory

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# RC Car Computer Vision System

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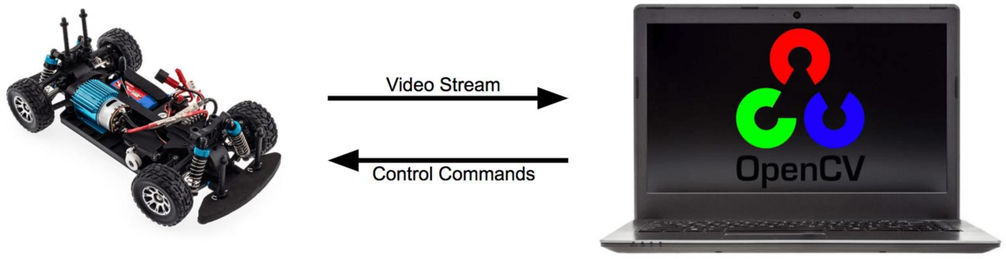
## Project Overview

Goals:

- ➢Control an RC car over a wireless network
- ➢Stream video from the car to a control computer
- ➢Create computer vision algorithms to drive the car around a track marked in tape




## Electromechanical Systems

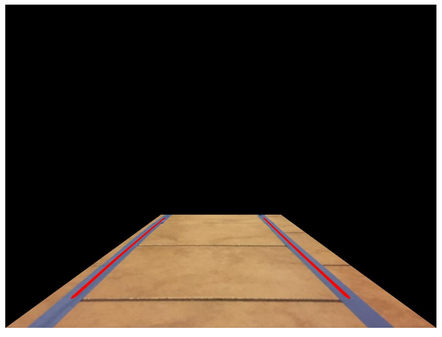
- Raspberry Pi: streams video, communicates with the control computer, and drives the car

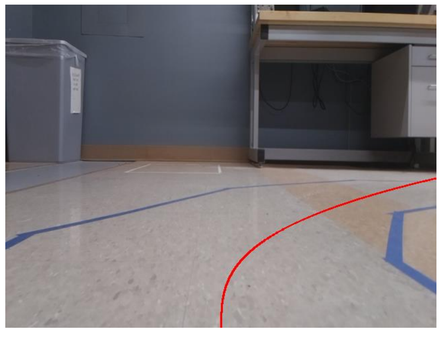
- Polulu Motor Driver: allows the Pi to control power sent from the battery to the motor

- Dynam Tomcat Servo: steers the car using a PWM signal from the Pi

## Control Software

- Python program uses sockets over an Ad-Hoc network to stream video and send controls
- OpenCV and TensorFlow used to find lane lines and decide the proper velocity and steering angle





## Improvements

- Small delay in wireless communication can sometimes cause issues
- Computer vision needs improvement to consistently detect the driving lane

- Improving the lane detection algorithms increases processing time per frame, making it more difficult to send control commands in time