

RasPiCar - Executive Summary

Summary:

The objective of this project is to create a self-driving autonomous car using a Raspberry Pi 4B and a Google (Coral Edge TPU Unit).

Layers:

These layers are organized in order of closeness to the physical hardware.

1. Program the *RPi GPIO Pins* in order to use two DC motors as back wheels and a servo motor as a front wheel. We will be using the RPi.GPIO library.
2. Use *computer vision* through OpenCV to get the RasPiCar to navigate lanes on its own, using digital image processing techniques.
3. Use *deep Learning* with the following APIs in Python (interacting with the Edge TPU): Keras, Tensorflow. The goal will be to train the car to drive on its own, as opposed to using computer vision.

Deliverables:

1. Project Paper
2. Appropriate Schematics
3. GitHub CodeBase
4. A Desktop Application to interact with the two modes (CV or DL)

Potential Extensions:

1. Use light-following to have the car follow a laser path
2. Use an Ultrasonic Sensor to interact with the car