



A Smart Central Traffic Management System

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Introduction

- This project, in which we operate our Arduino vehicle as a hybrid with traffic simulation, aims to provide time and fuel efficiency in traffic. The project consists of 3 parts, these are simulation, Arduino line tracking car and image processing parts.

MOBATSIM

- We use MOBATSIM, which is a MATLAB based traffic control system, and we changed it according to our own needs. Some of these are:

- We fixed the errors in the codes and stabilized the overtaking
- We replaced the single roadway with a double roadway.
- We wrote code that detects the vehicle coming from the other roadway

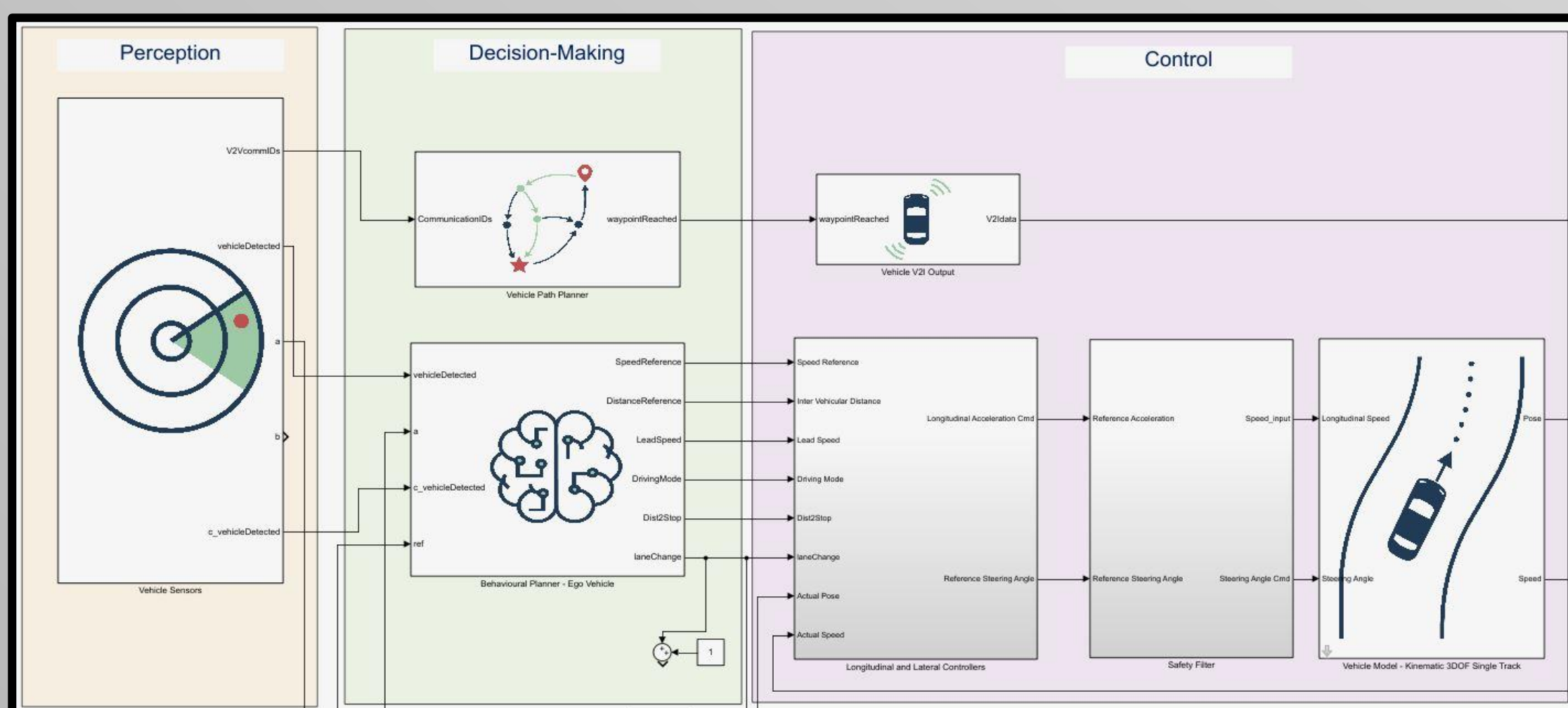
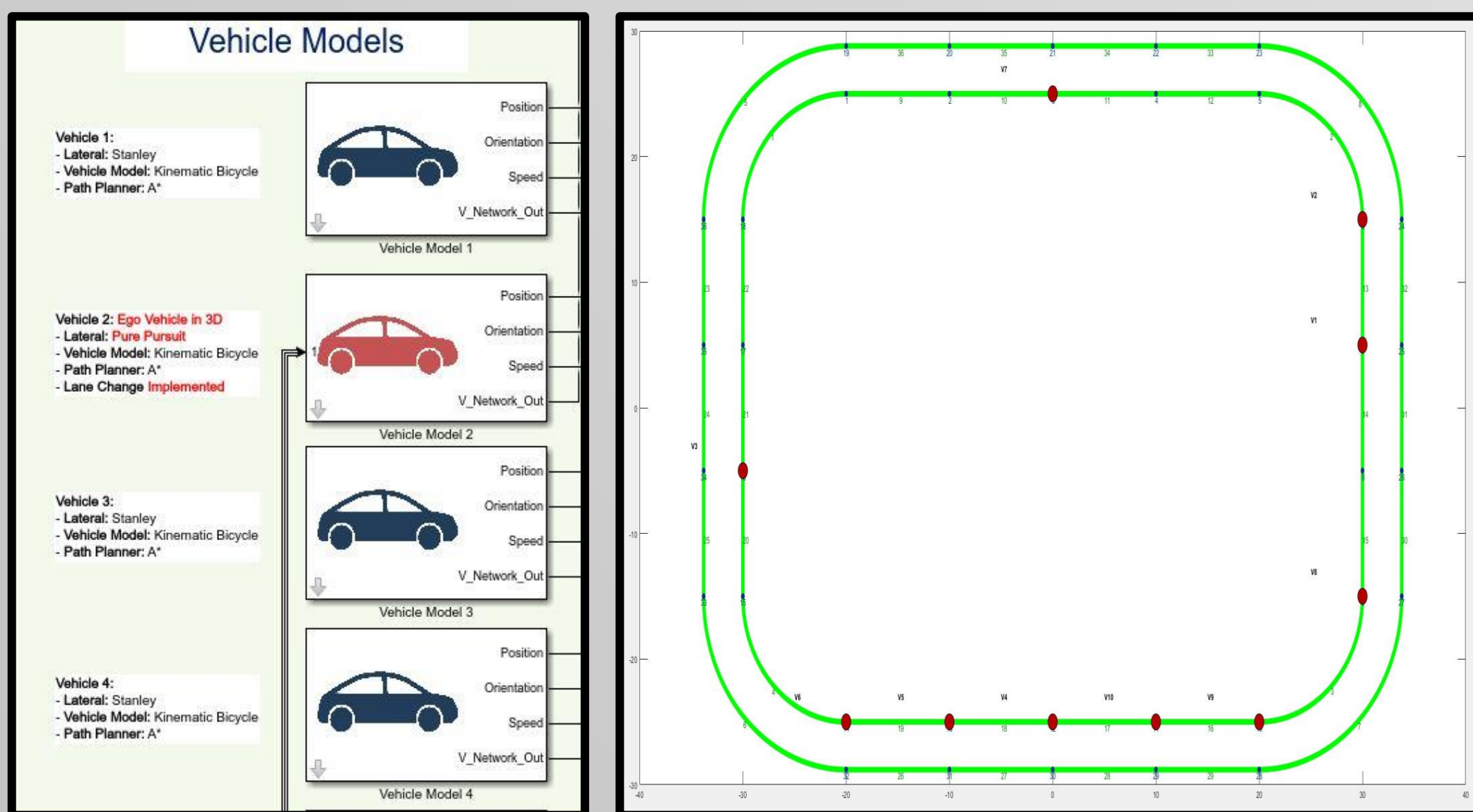
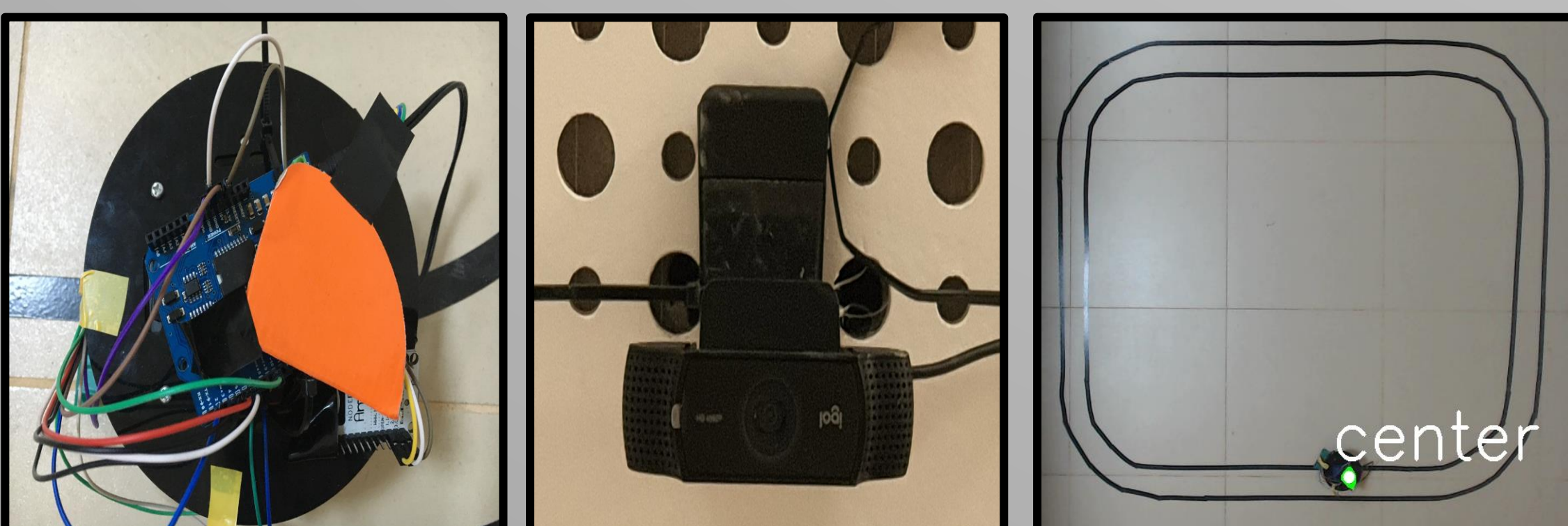


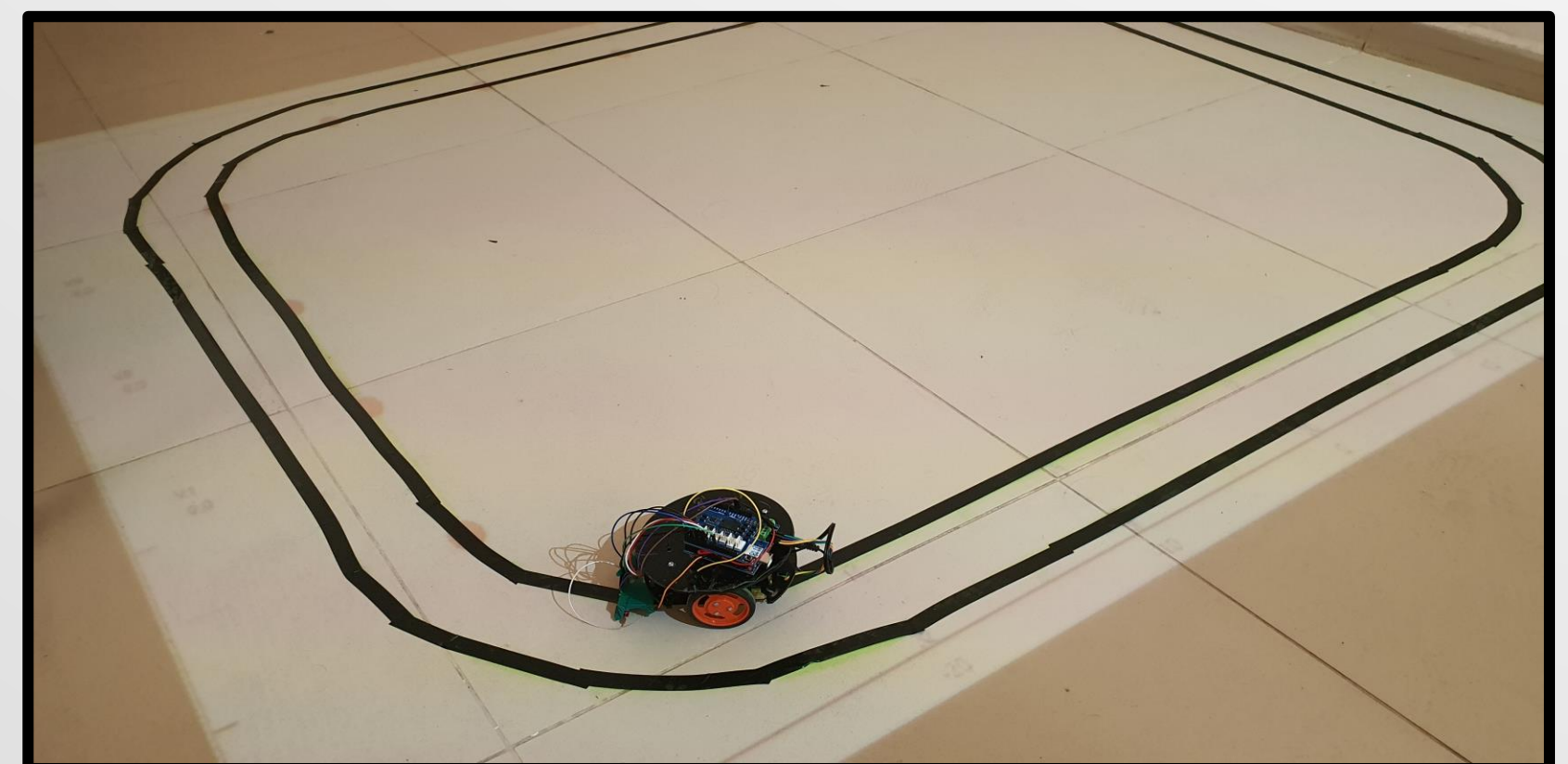
Image Processing

- We are using python code in image processing. The camera we put on the ceiling detects our vehicle and transmits its location to MOBATSIM. We wrote algorithm which filters orange color pixels and take the moment of it which gives center of the orange area .



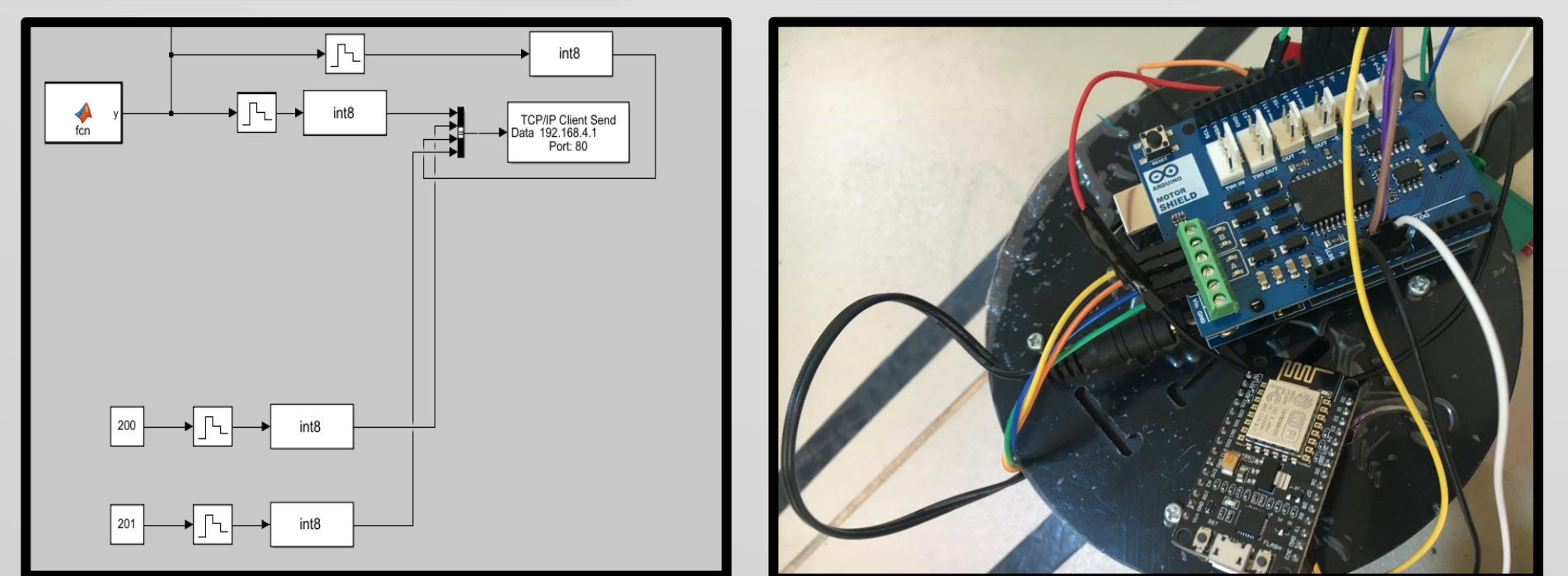
Why Hybrid?

- By using a hybrid system, instead of using 10 physical vehicles, we used 1 vehicle, so we gained both economic and workload.



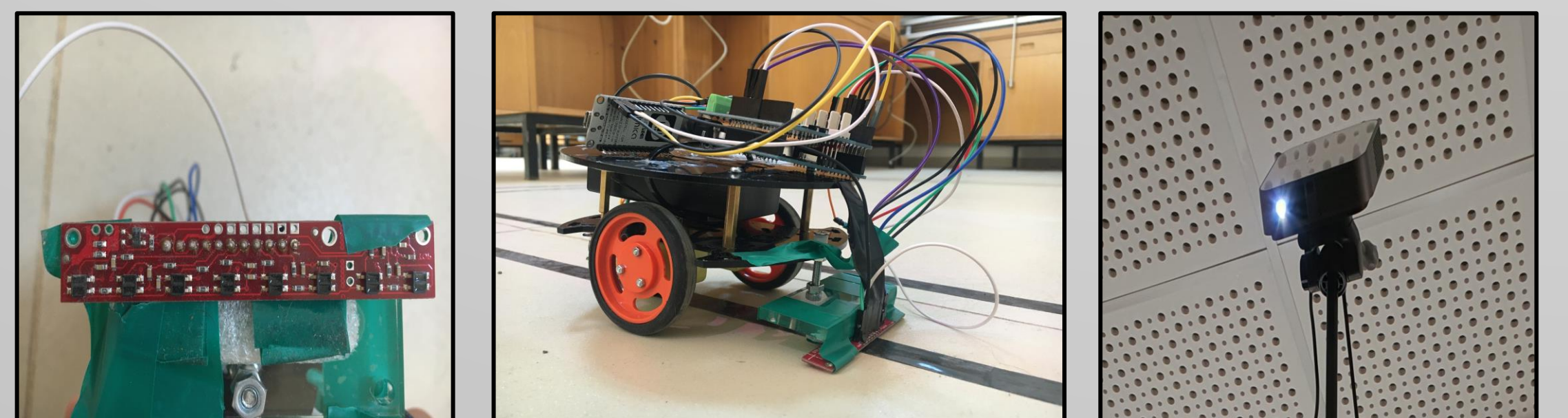
Communication

- We used Wi-Fi to communicate between the car and MATLAB. We are sending data which is our car's speed, with using TCP/IP Client Send block.



Our Sensor

- We used QTR-8RC Reflectance Sensor for line-follower car.



- We project our map in the simulation on our own path using projection so we can see the simulation cars

Acknowledgement

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