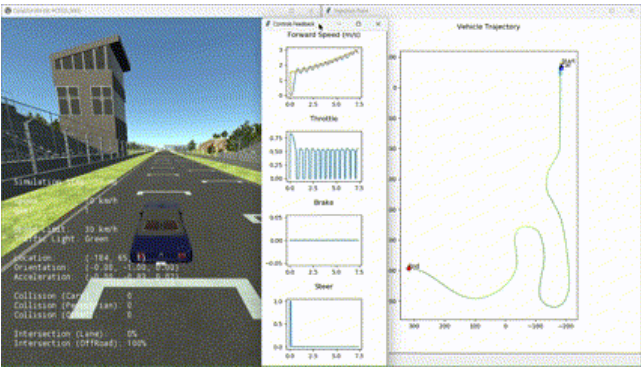


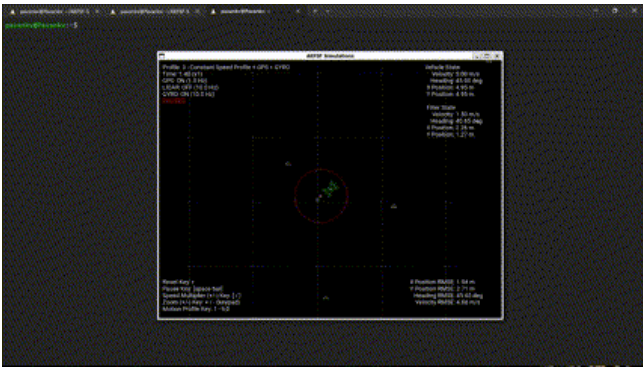
# My Portfolio of projects

## 7. Autonomous Cars

- **Summary:** End to end autonomous car
- **Key steps:** Kinetic/Dynamic car model, fusing incoming sensor data for localization, percieving world around using camera, Lidar, Radar etc and mission and path planning
- **Keywords:** OpenCV, Stanley controller, LKF/EKF/UKF, C++, SLAM, PointCloud, Python, C++



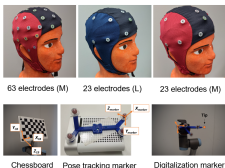
Stanly Controller



Linear Kalman Filter

## 6. SLAM - Electroencephalography (EEG)

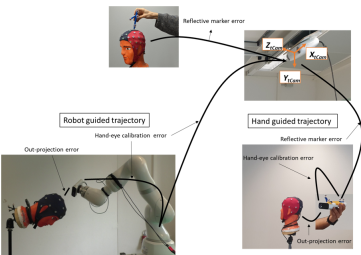
- **Summary:** SLAM using a handheld RGB-D camera
- **Key steps:** Camera calibration, hand-eye calibration, electrode detection, SLAM and evaluation
- **Keywords:** OpenCV, ROS, YOLO V3, Pose-Graph SLAM, PointCloud, Python



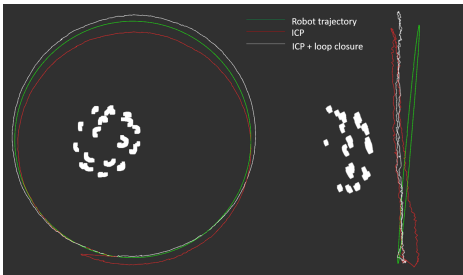
Experiment setup

Data acquisition

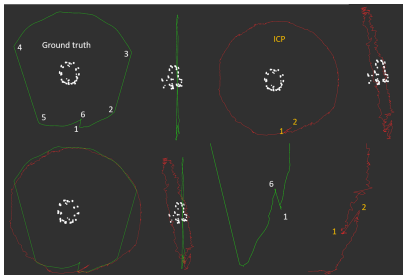
Electrode detection (YOLO V3)



System transformations



SLAM Robot



SLAM hand held

<https://user-images.githubusercontent.com/50611671/133922767-bb743d54-fc99-4aef-9ce9-f8426658f57b.mp4>

<https://user-images.githubusercontent.com/50611671/123485537-98698000-d60a-11eb-85e6-db8b97f7c020.mp4>

## 5. Image guided robotic TMS

- **Summary:** Head motion detection and robot end-effector motion in tandem simulating TMS medical procedure
- **Key steps:** Camera calibration, hand-eye calibration, head motion estimation and robot motion planning
- **Keywords:** OpenCV, ROS, Python

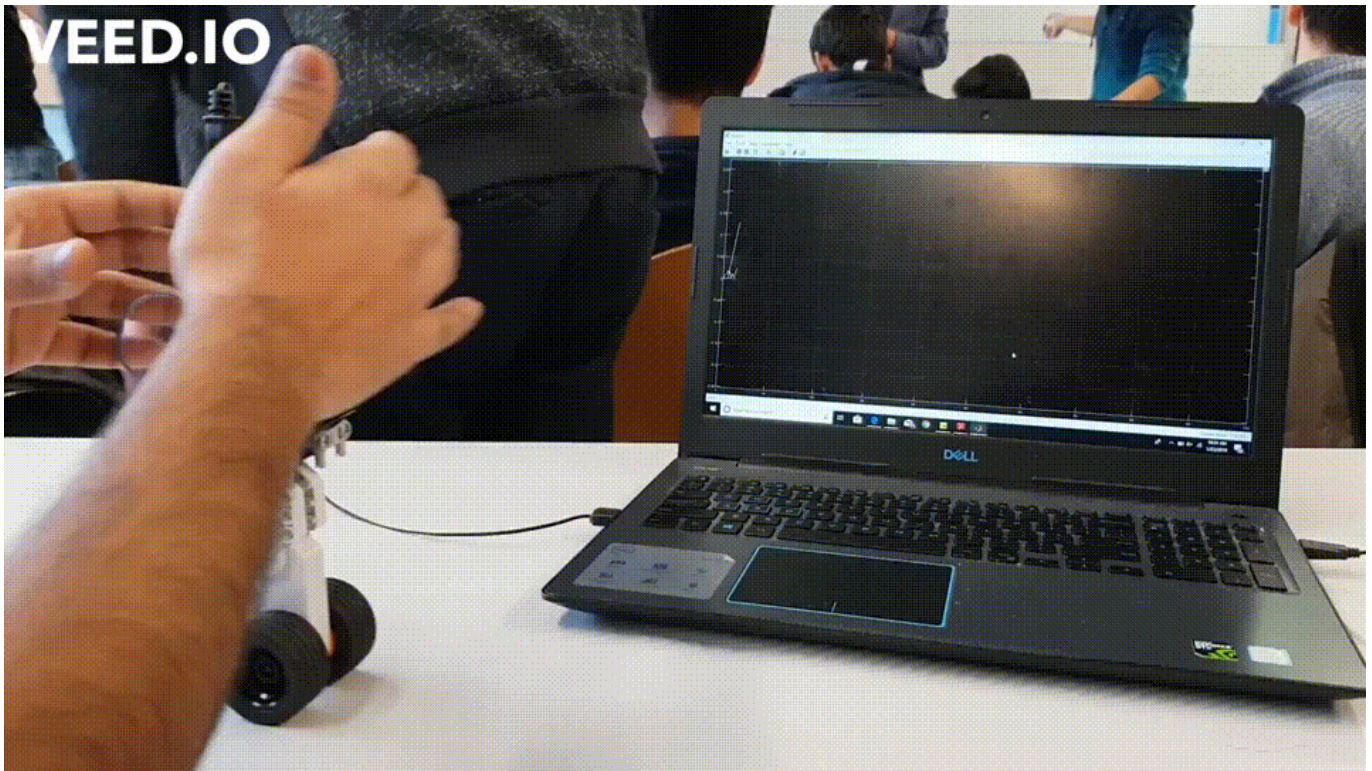


VEED.IO

## 4. Segway Control

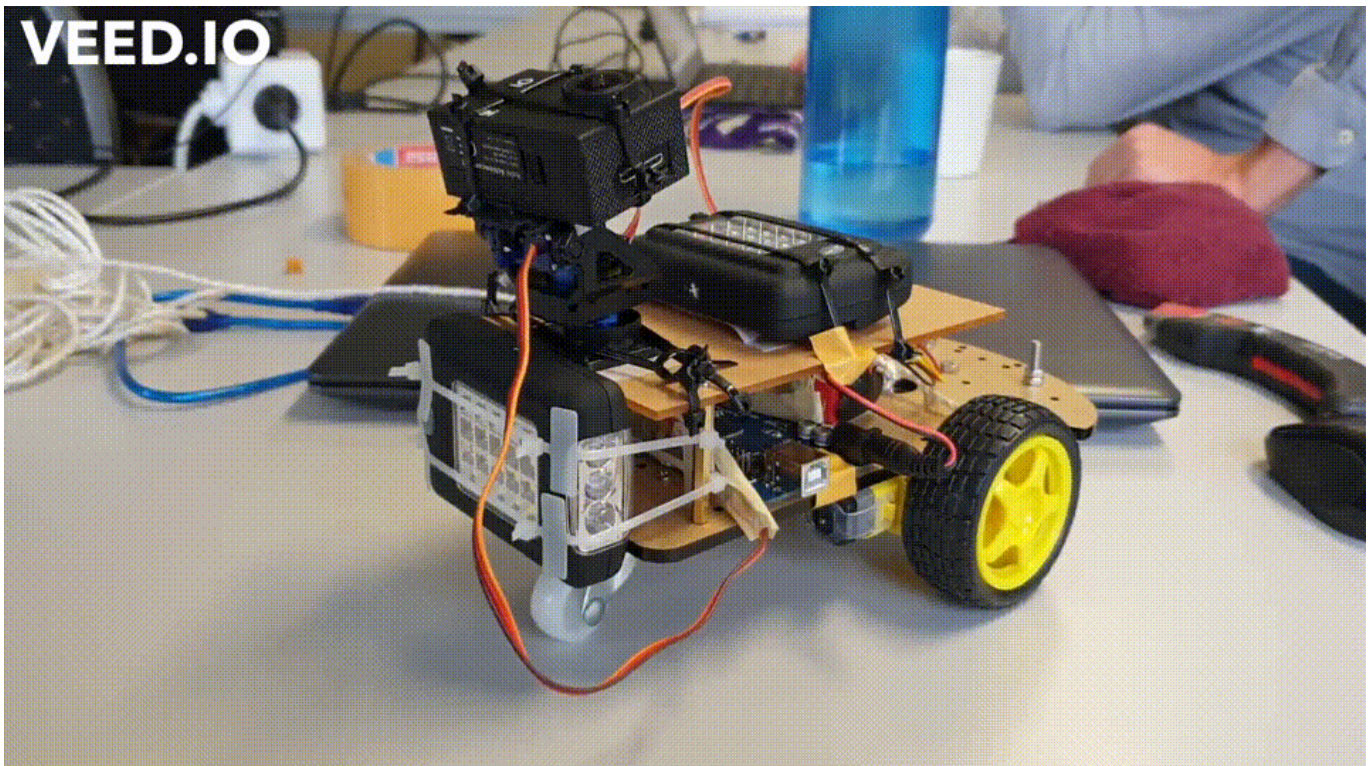
- **Summary:** Segway control using Optimal and Robust control strategies
- **Key steps:** Segway simulation mode development, ORC controller development
- **Keywords:** Matlab, Simulink, ORC controller





### 3. Remote Pipe Inspection Camera Robot

- **Summary:** Arduino based, WiFi controlled, remote pipe inspection
- **Key steps:** Camera movement control, WiFi control
- **Keywords:** Arduino, WiFi, Servo Motor

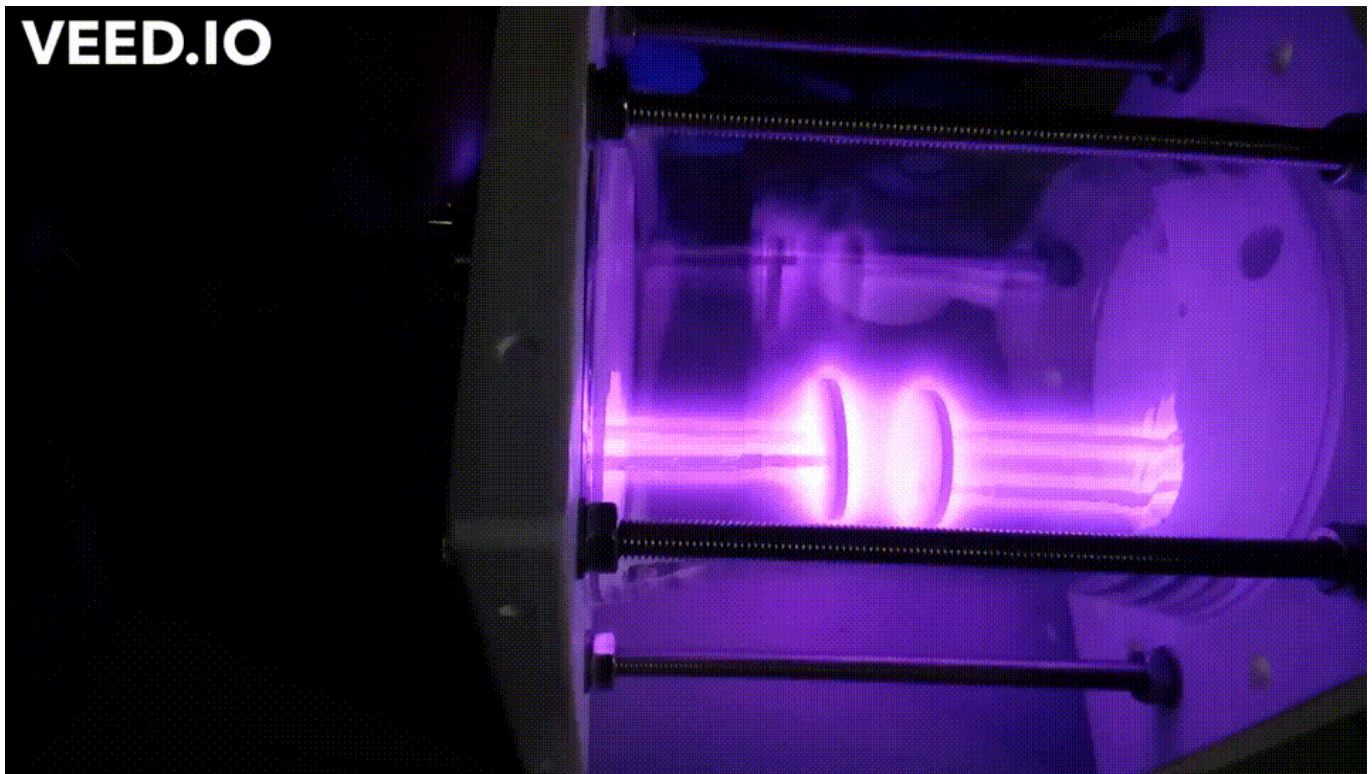


### 2. DC Plasma

- **Summary:** Room temperature DC plasma generation and control



- **Key steps:** Chamber pressure reduction (low vacuum), 220-230V AC - 1000 V DC conversion and plasma
- **Keywords:** Vacuum, AC - DC, Plasma



## 1. Augmented Reality App

- **Summary:** Basic AR App implementation
- **Key steps:** Cube creation, animation, Andoird App implemention
- **Keywords:** Unity, Andoird

