

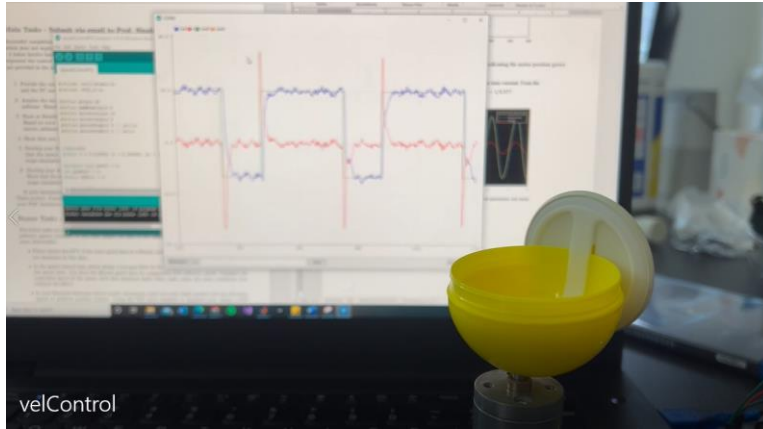


Hi! This Jing in 2022.

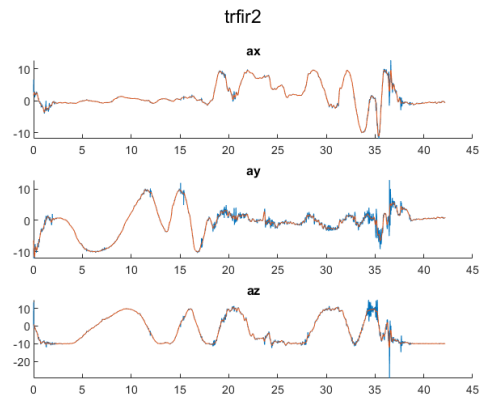
I put down some of my past projects and course works here, involving control, planning, perception and mechanics.

My portfolio GitHub Repo: <https://github.com/wwtse/folioS>

Projects



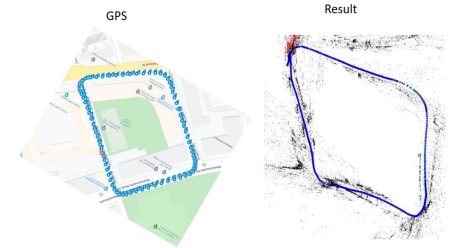
DCmotor control



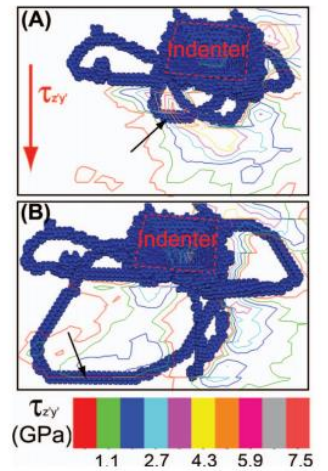
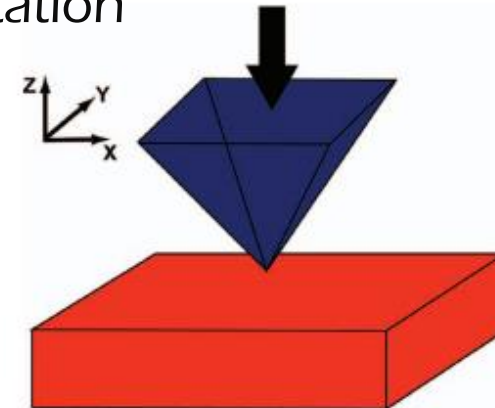
IMU filters



SLAM



Nanoindentation Simulation



Course work

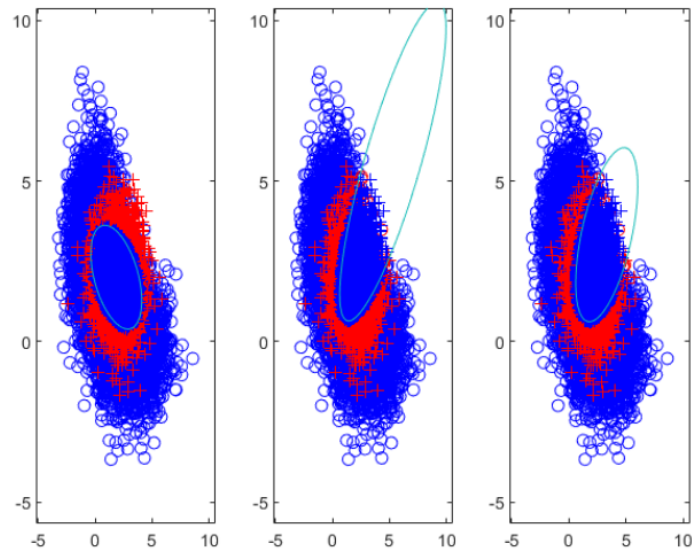
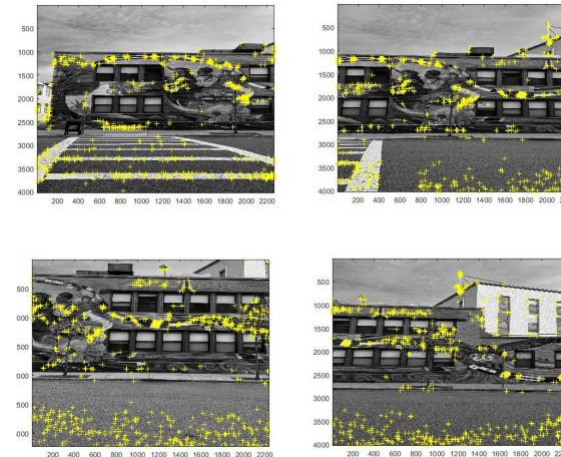


Figure 8: Validation Datasets with Decision Boundary by logistic-quadratic-function

Machine Learning



Sensor and Navigation

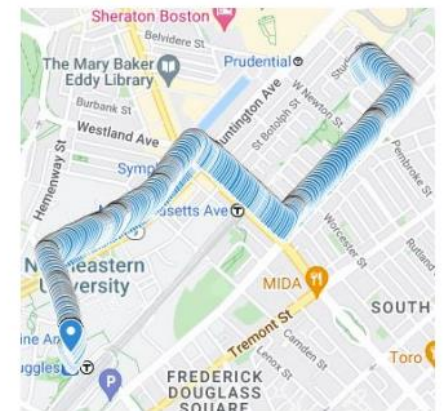
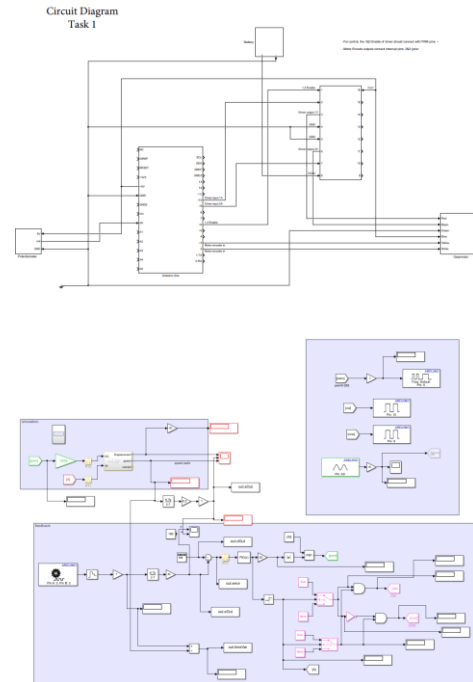


Figure 1: data present in Google Map

DCmotor control

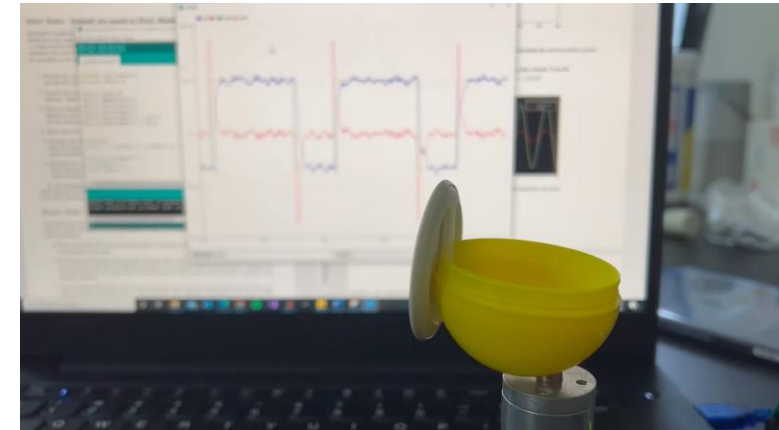


```
speedControlPID
double w = 0;
double e = 0;

//PID parameter
double rpmD = 10;
double kp = -3, ki = 3, kd = 0;
long eIntegral = 0;

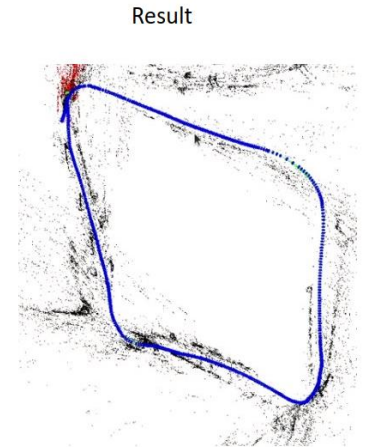
PID myPID(rpm, w, rpmD, kp, ki, kd, DIRECT);

void setup() {
  Serial.begin(9600);
  pinMode(potpin, INPUT); // Potentiometer
  pinMode(motorOutpin, INPUT); // yellow
  pinMode(motorOutpin, INPUT); // white
  pinMode(driverInpin, OUTPUT); //2V
  pinMode(driverInpin, OUTPUT); //2V
  pinMode(pwmEnablepin, OUTPUT); // pwmEnable
```

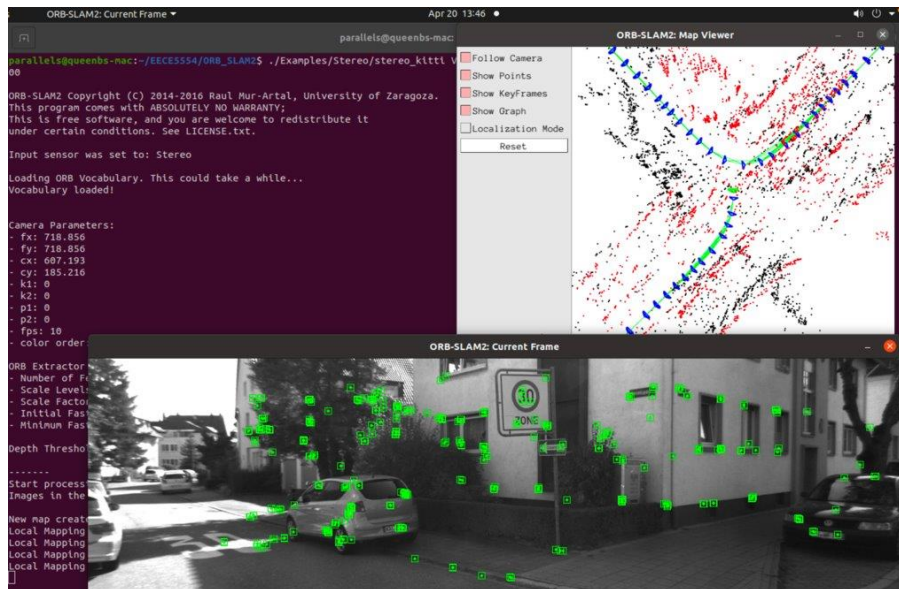


Demonstrate motor speed and position with Arduino coding and Simulink Real Time Target.

SLAM

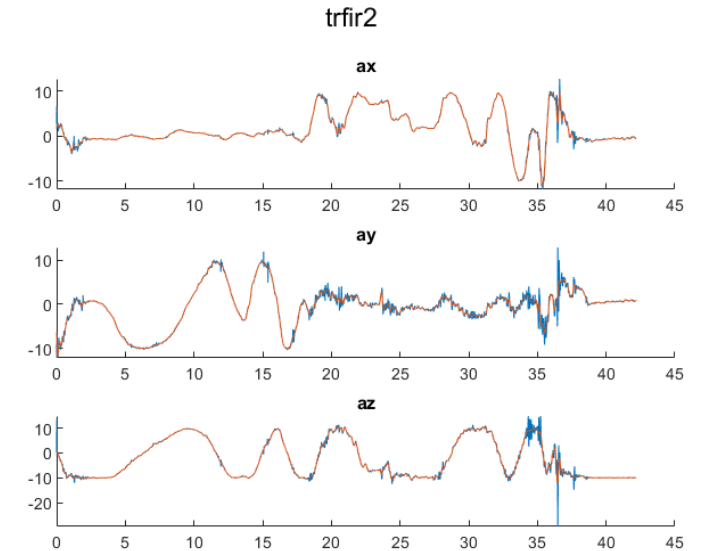
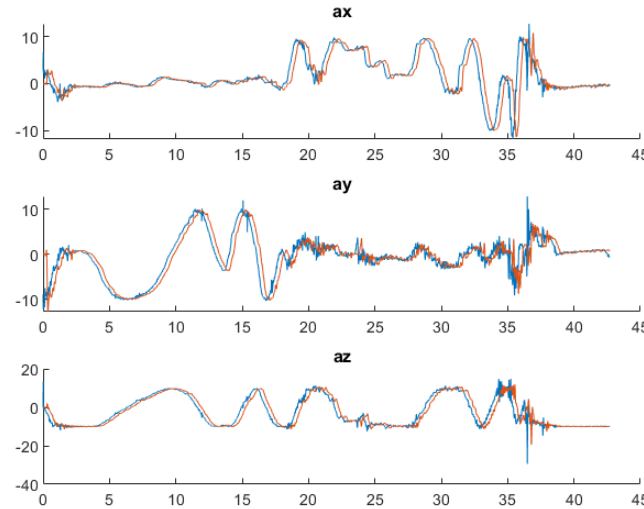
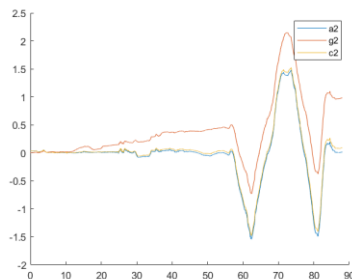
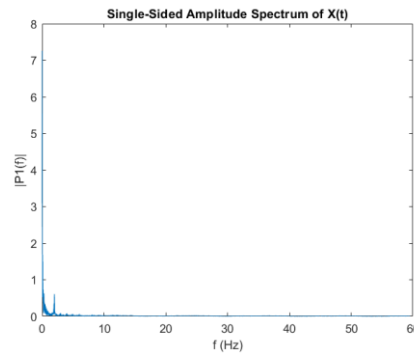
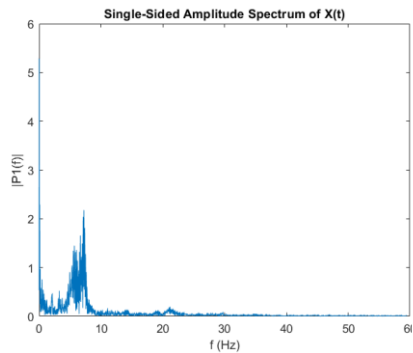
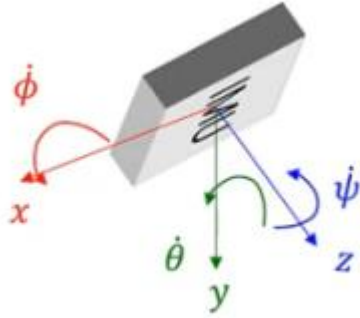


Map of sequence 00 of kitti



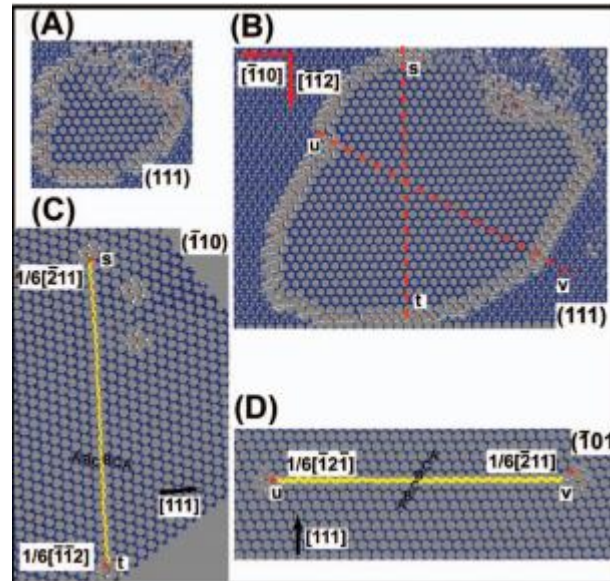
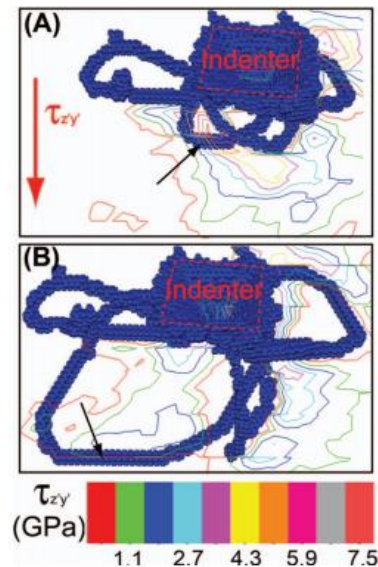
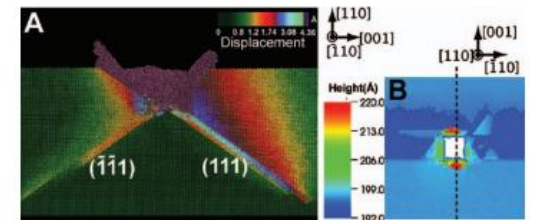
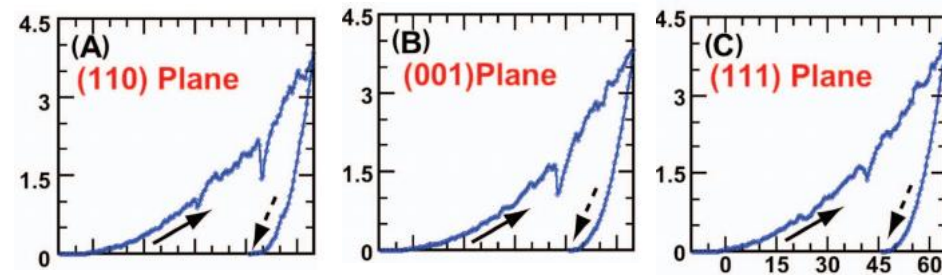
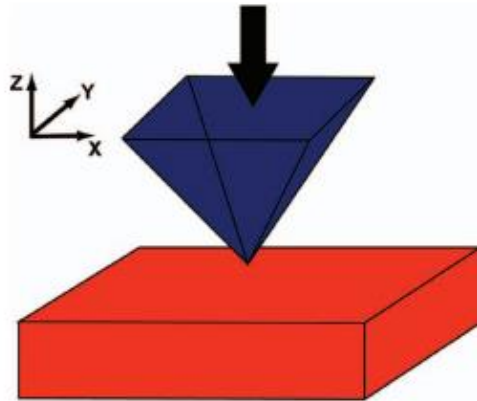
SLAM using stereo cameras dataset (kitti and NUance) with ORB-SLAM2 and ROS.

IMU filters



Filter IMU raw data with the combination of FIR, IIR and complementary filters.
PuTTY is used to log the signal.

Nanoindentation Simulation



Bachelor Thesis

Demonstrate motor speed and position with Arduino coding and Simulink Real Time Target.

Machine Learning

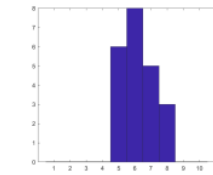
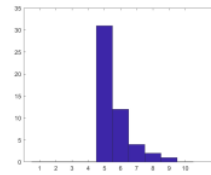
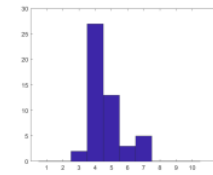
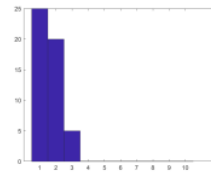
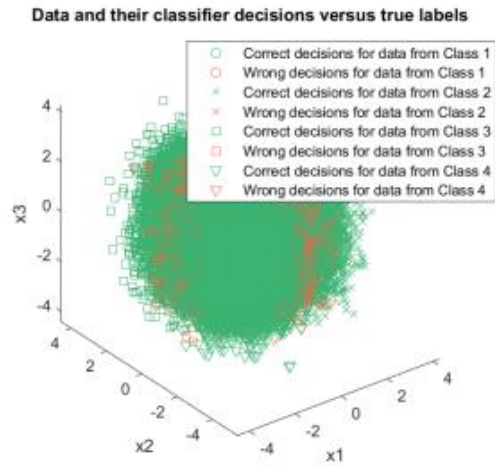


Figure 8: kFold histogram

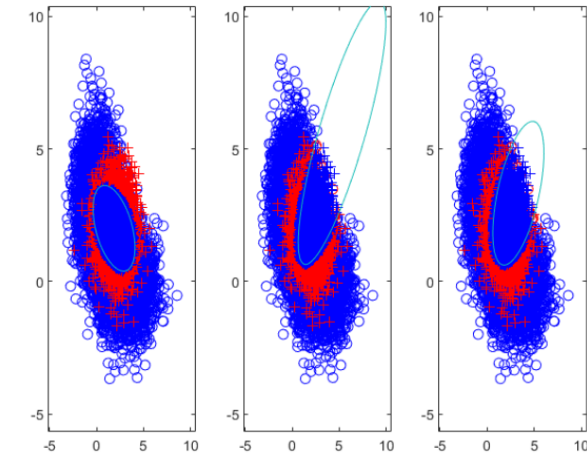


Figure 8: Validation Datasets with Decision Boundary by logistic-quadratic-function

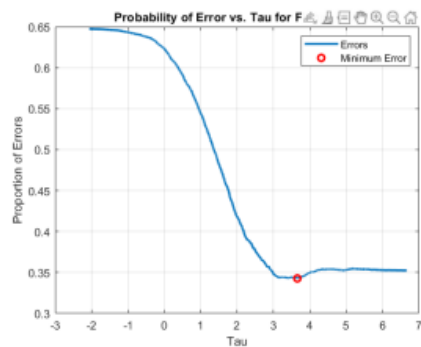


Figure 6: Fisher LDA Probability of Error vs. Tau

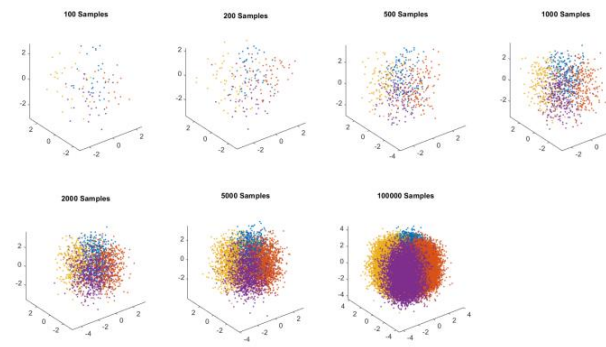


Figure 1: Data Distribution

Used Fisher LDA, ERM, MLE, MAP, Bayesian estimation, BIC and K-fold cross-validation to approximate model parameters. Trained 2-layer MLP.

Sensor and Navigation



Figure 5: 5 images using for mosaic



Figure 7: the panoramic mosaic of entire building

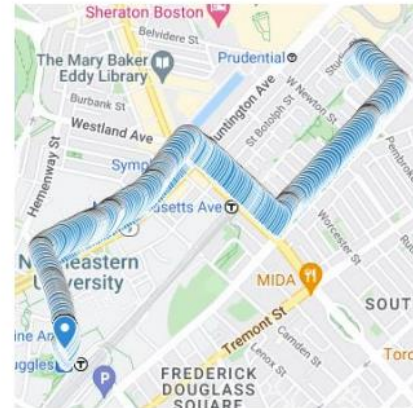


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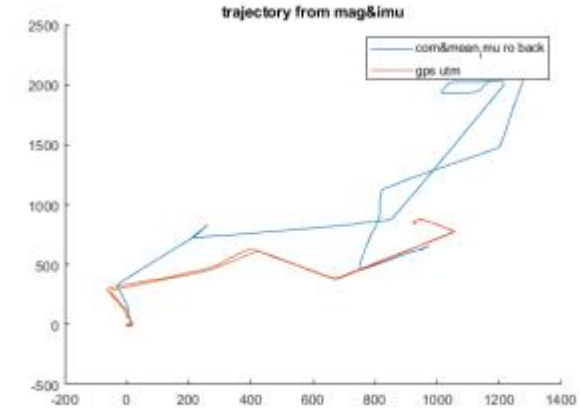


Figure 10: trajectory from calculation and gps

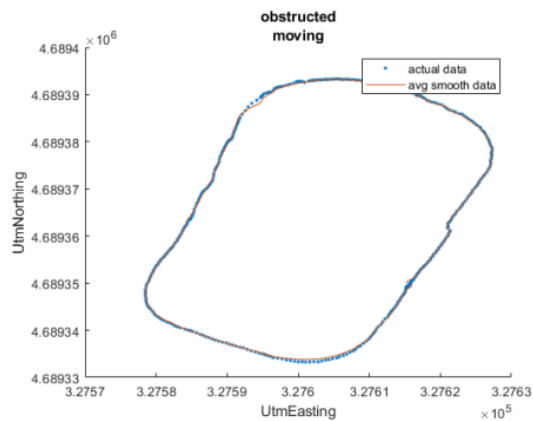


Figure 9: Obstructed moving data

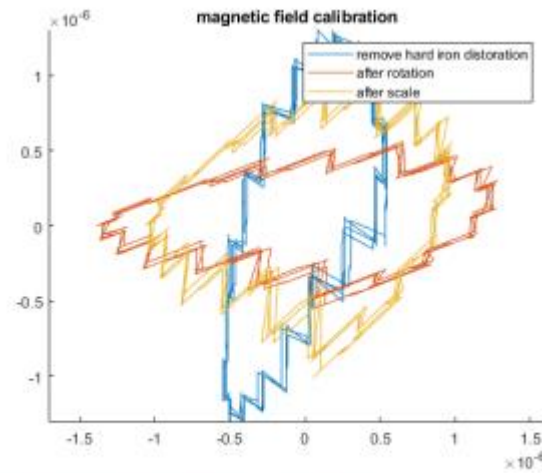


Figure 4: magnetometer calibration result

IMU, GNSS, camera, Lidar... All the sensors with ROS.