EECE5554 – ROBOTIC SENSING AND NAVIGATION

LAB -1 REPORT

BASIL REJI

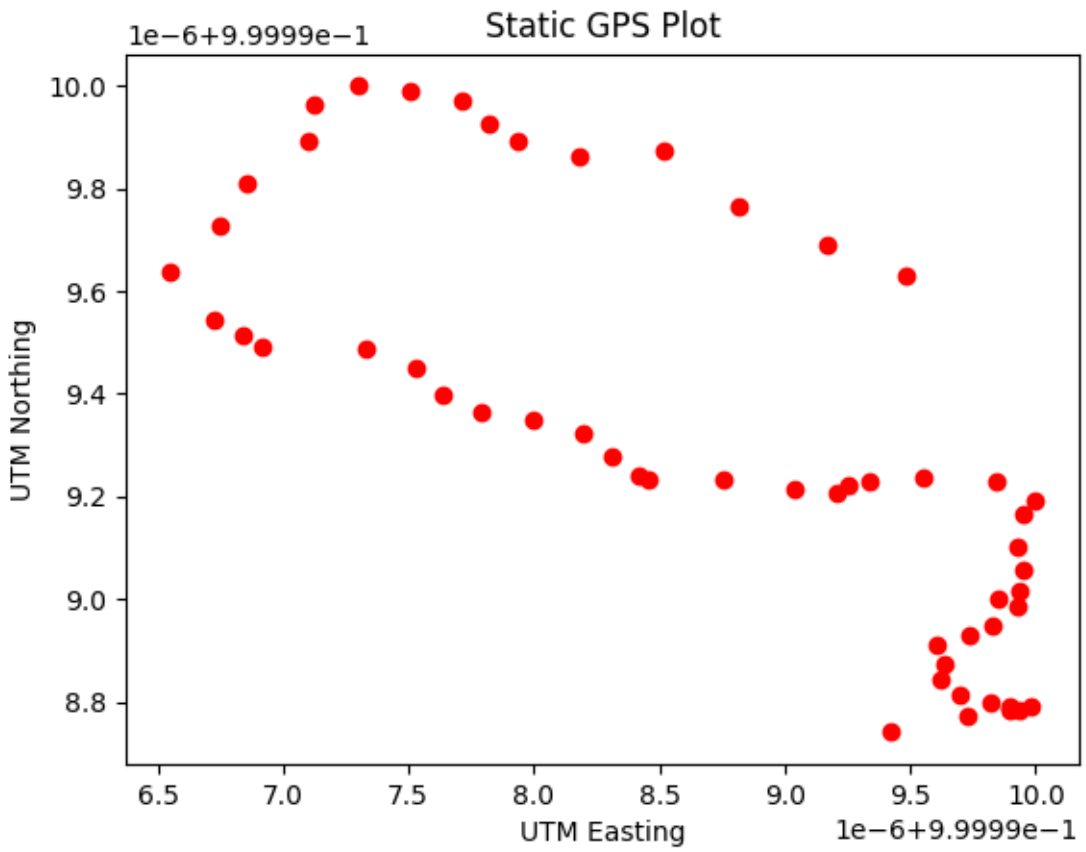
Data Collection Environment:

The static data was collected inside the Northeastern University campus near to the Snell Library. The moving data was collected by walking towards various buildings in the university.

The area is surrounded by buildings, the day was very windy, and the temperature was 14 degree Celsius.

Static and moving GPS coordinates were collected from the university campus using a BU353S4 GPS module.

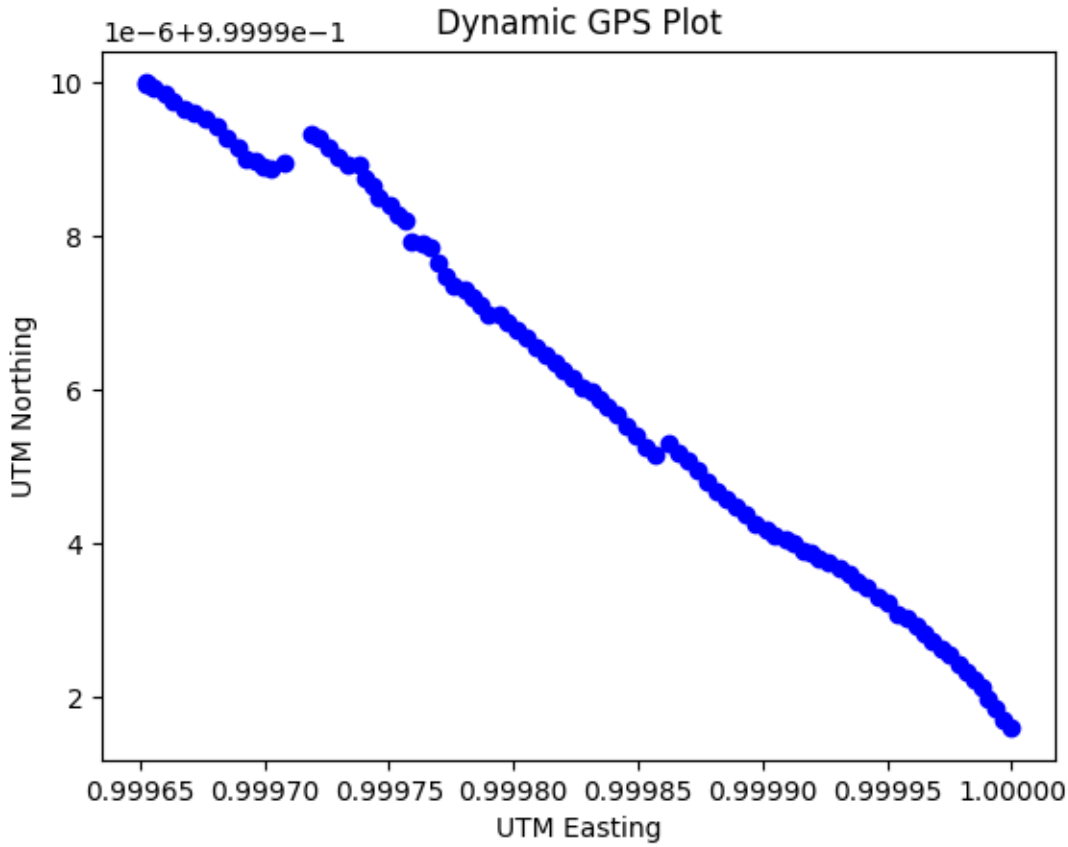
Static Data



The GPS coordinates of the places were taken without moving. The UTM Northing vs UTM Easting data was plotted. The inference from the plot was that the readings were much more spreadout and non linear.

This can happen due to various reasons. Firstly, while static, the data is being received only through one GPS, which can reduce the accuracy of the values. Secondly, the Kaalman filter in the GPS BU353S4 module gives more accurate values while in motion. The orientation and altitude of the GPS while in operation also could results in errors while receiving the data. Another possible reason for the error could be the change in satellite configurations which may be read by the GPS as a separate reading.

Moving Data



The GPS coordinate data was taking by moving around and the UTM Northing vs UTM Easting data was plotted. The plot was found to be more linear and straight compared to the static data. This is because, while movement, the GPS module passes through various satellite configurations which will help in getting more accurate readings of coordinates. Additionally, the Kaalman filter works better while in motion which adds more precision and accuracy to the data.