Lab 1: GPS Report

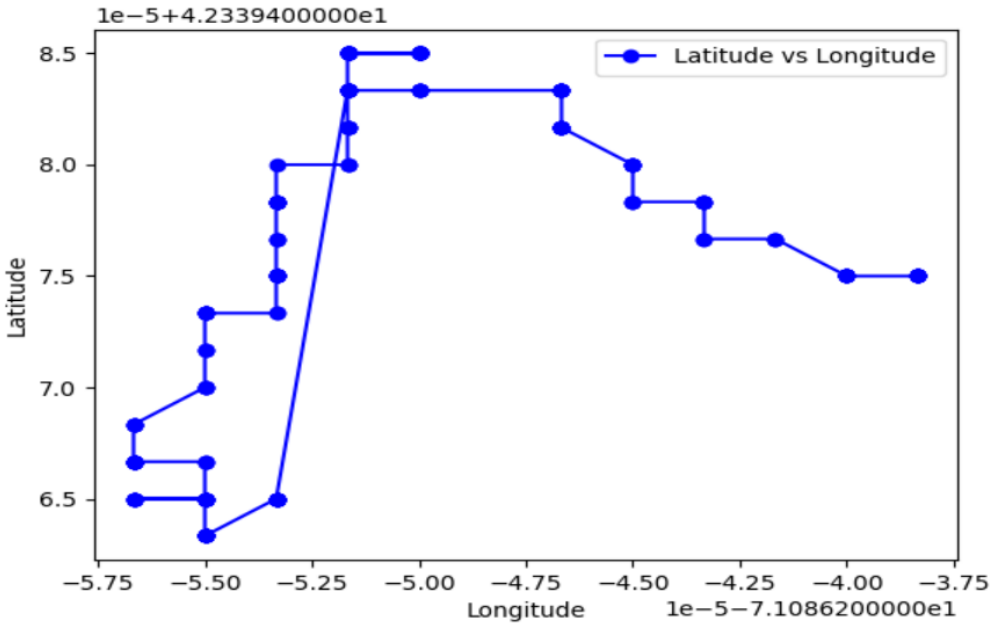

Figure 1: Stationary Data Mapping (Latitude vs Longitude)

The GPS coordinates are changing unpredictably even though the device is stationary. This happens due to the presence of buildings and trees in the surroundings which causes the GPS signals to bounce off before reaching the GPS module resulting in inaccurate readings. It can also happen due to the satellite-based correction systems like Wide Area Augmentation System (WAAS) which is used to improve the accuracy. Delayed signals or inappropriate satellite positions can cause errors.

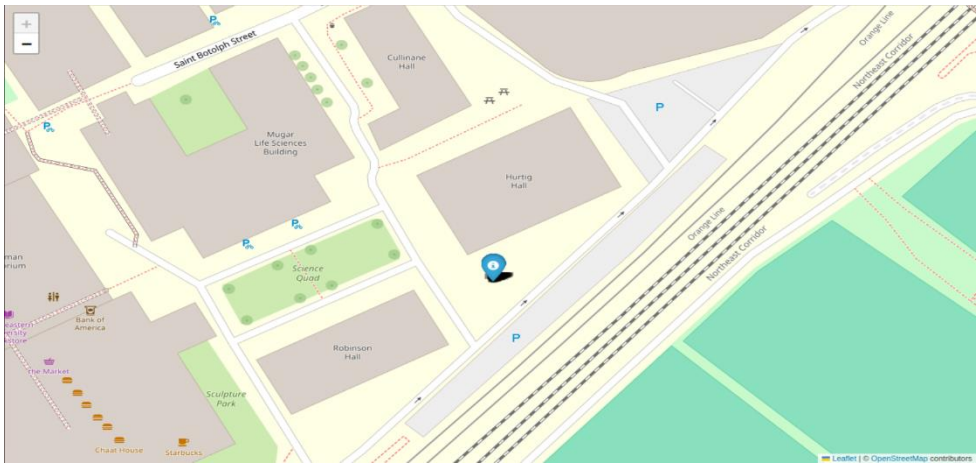

Figure 2: Stationary Location on Map

The above image pins the location of the coordinates received by the GPS module. The drift is not visible here on the map due to the map's scale. According to this image, it can be assumed that there is no major deviation from the true position.

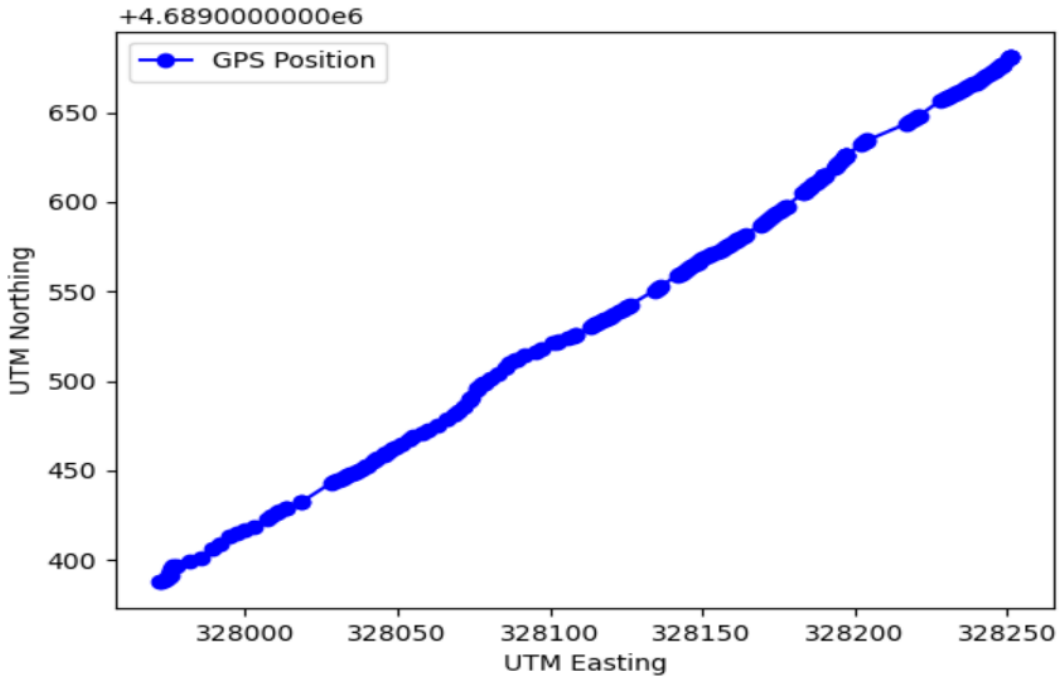

Figure 3: Walking Data Mapping (Northing vs Easting)

The above-plotted data is collected while walking in a straight line for several meters. It is observed that the data points don't deviate much from their true path while in motion. While moving multiple satellites transmit signals to the module causing it to have a very less error.

Figure 4: Walking Data on Map

To conclude it can be observed that when the position is stationary there is more probability to get false values than that of when in motion.