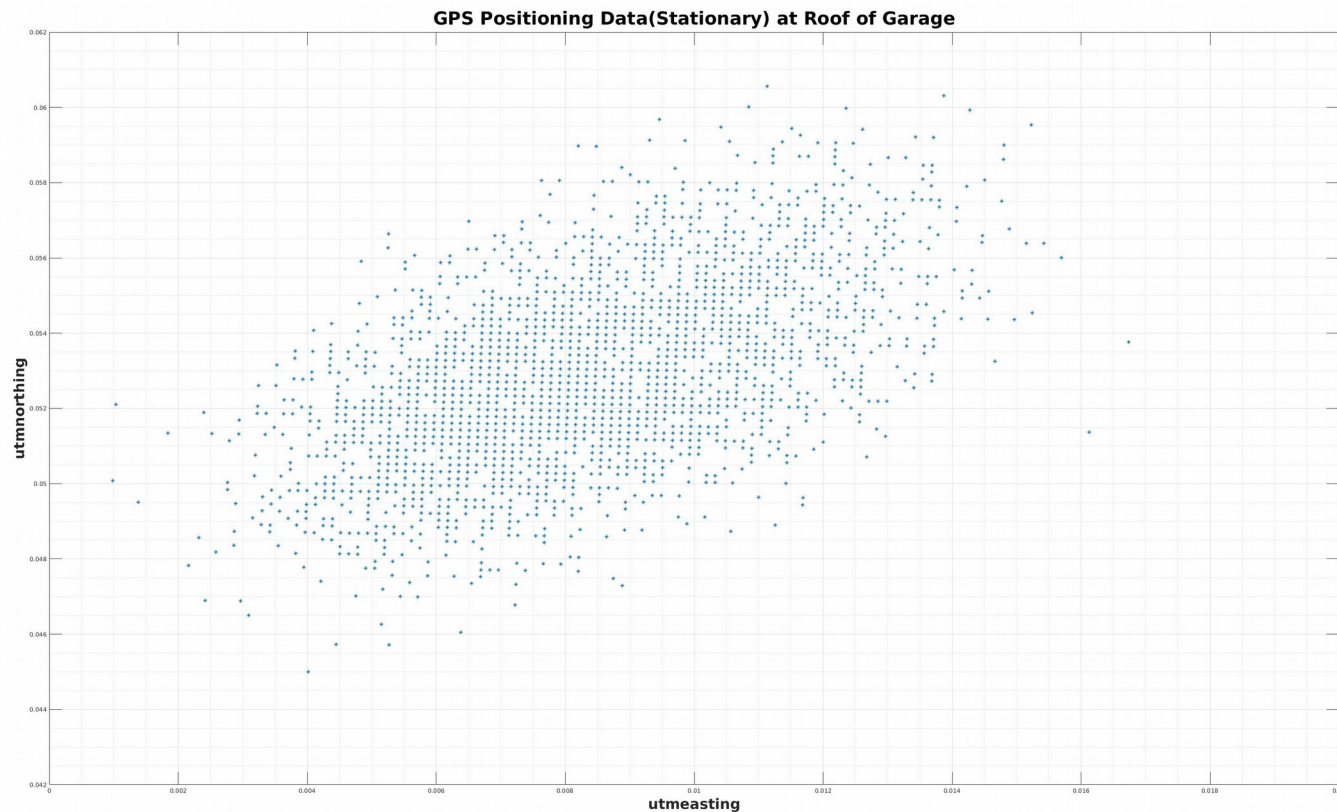


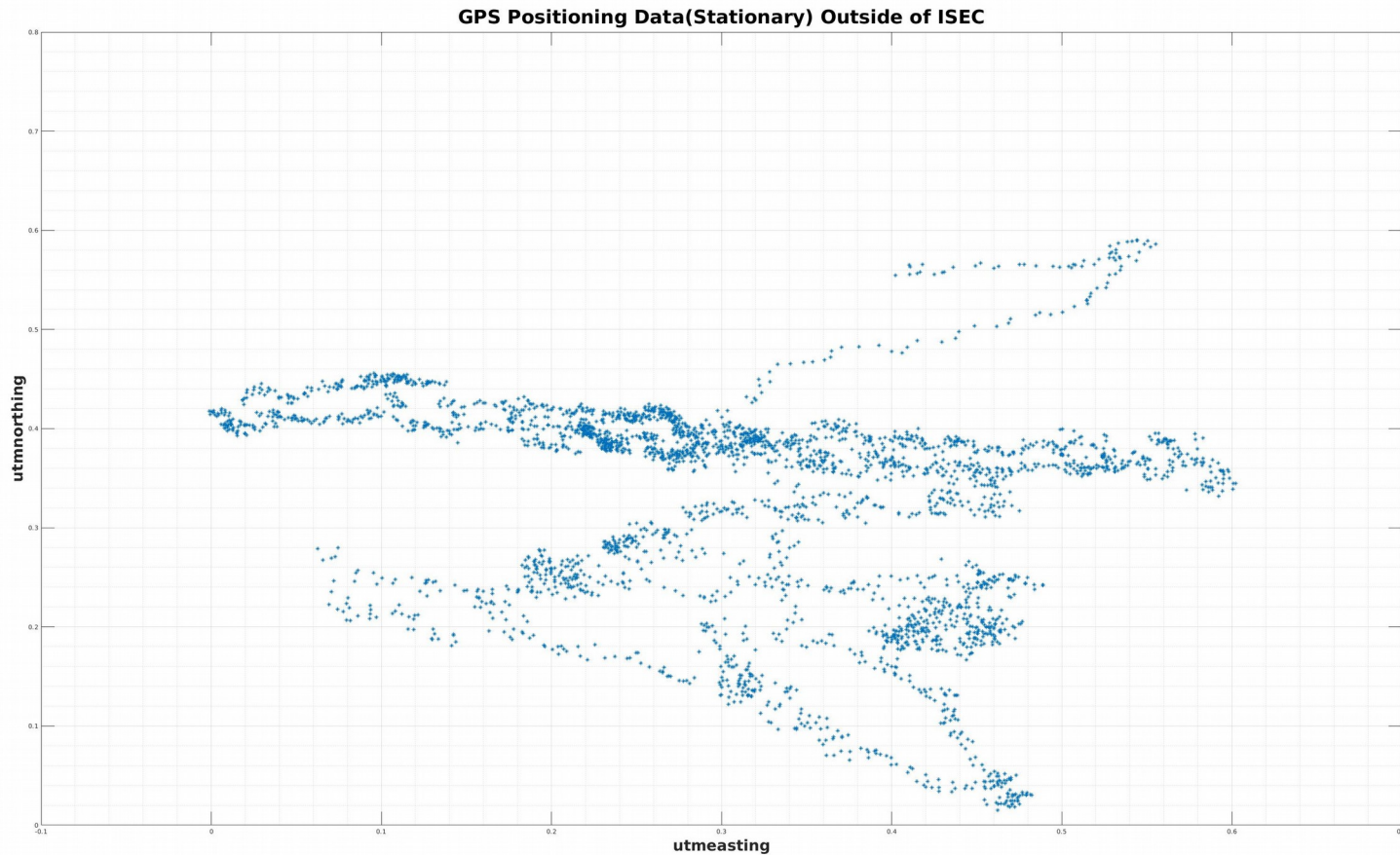
We collected data at two spot: the rooftop of parking garage, beside the playground(outside ISEC).



Location: The rooftop of parking garage

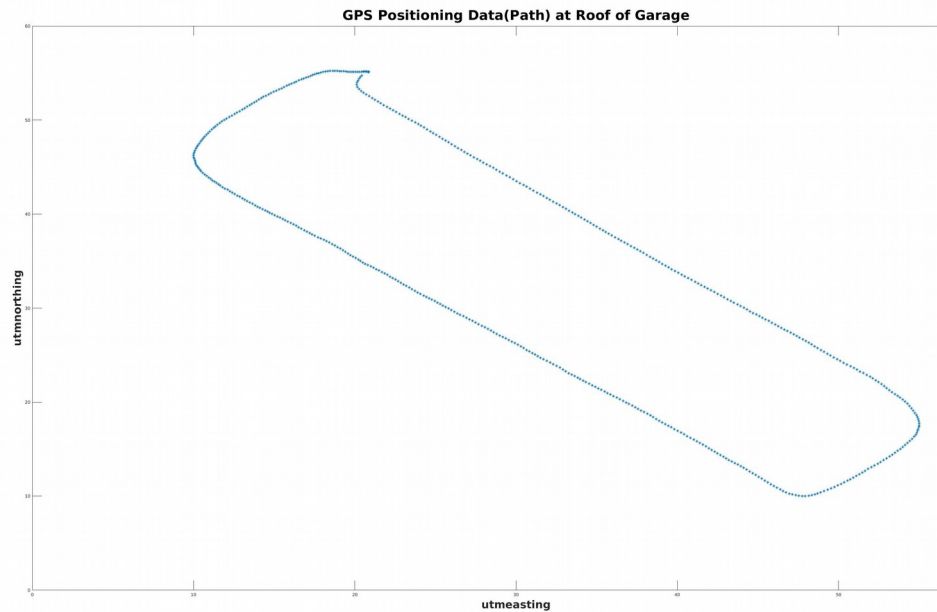
1 The distribution of y is 0.046m – 0.062m and the distribution of x is 0 – 0.016. So we can say the data brings the position under 2.5cm with tight groupings under 1cm. It is a perfect data for rtk-gps.

2 The distribution of noise in the signal is gaussian distribution.

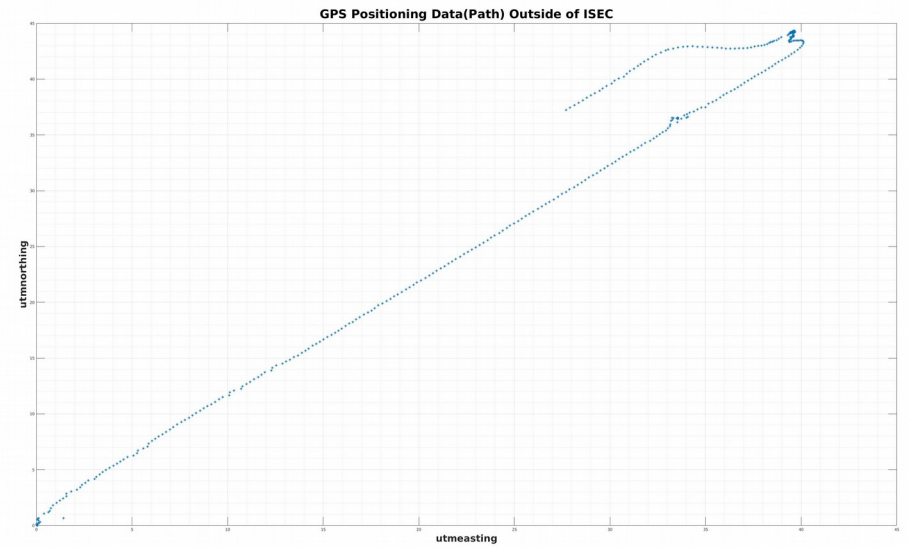


Location:  
Outside ISEC

- 1 The distribution of x,y is 0 – 0.6. So we can say the data brings the position under 60cm. And also the data status of rover is not fix but float, which means it is not rtk-gps mode, but in single-gps mode we did in lab1.
- 2 The distribution of noise in the signal isn't gaussian distribution.
- 3 Compared with first spot, there are too many interferences such as tall buildings, trans, lot of antennas, etc.



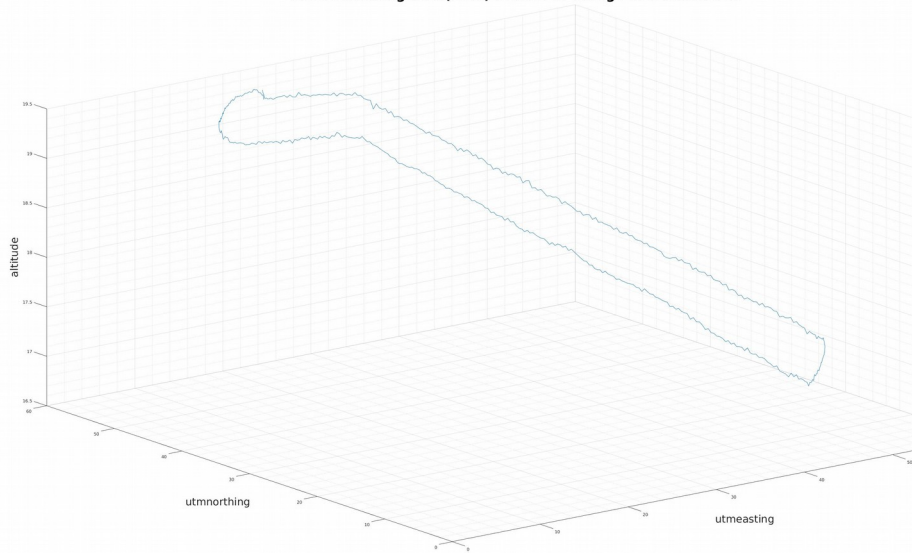
The rooftop of  
garage



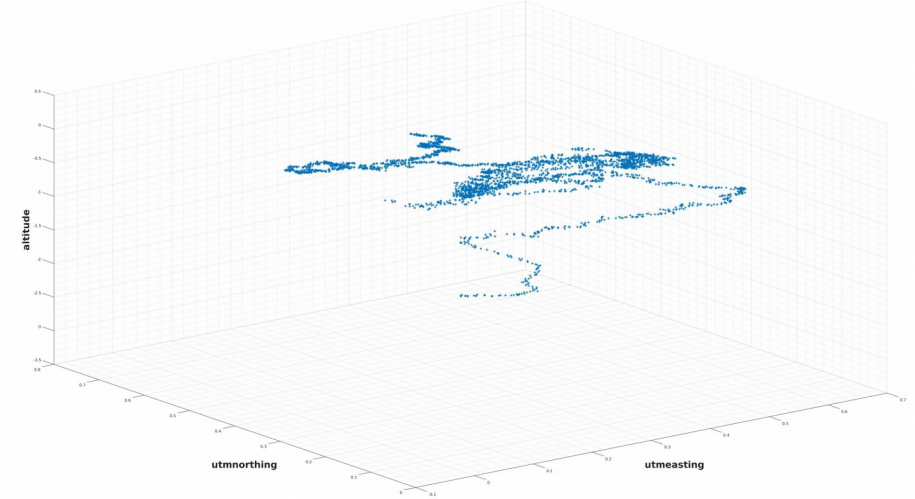
Outside ISEC

Compared with stationary, we got same beautiful data in two spots. Due to an accident, we stopped in a point for a while when we walk outside ISEC. Though we came back to the start point, we find that the data displays a different thing, it looks like it doesn't work after that. It happened while a train is passing. So I think the moving train must be a big problem.

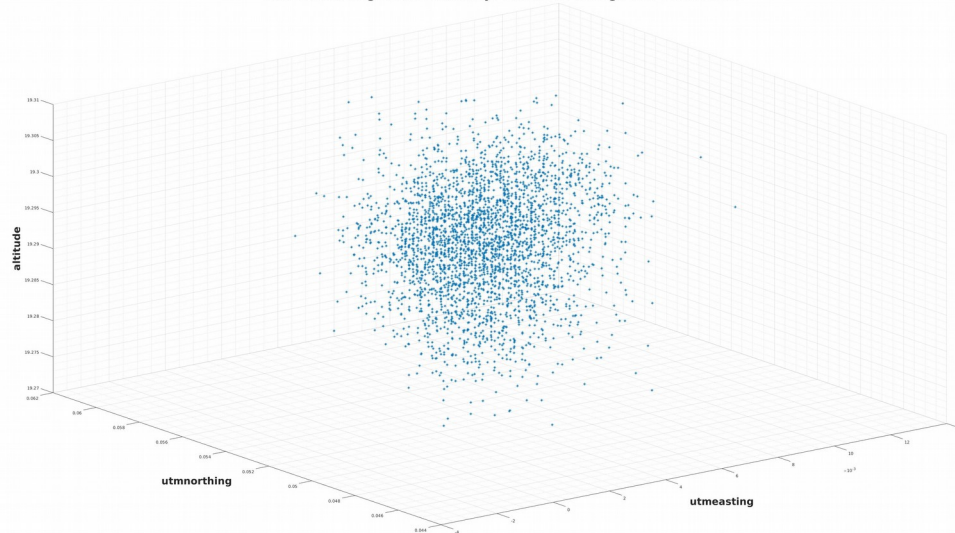
GPS Positioning Data(Path) at Roof of Garage in 3-Dimension



GPS Positioning Data(Stationary) Outside of ISEC in 3-Dimension



GPS Positioning Data(Stationary) at Roof of Garage in 3-Dimension



From the garage spot stationary and moving graph, we can find the accuracy of altitude is great as same as latitude and longitude in both stationary and moving mode. Compared with stationary data set in the second spot, we found rtk-gps is much more accuracy in all direction.

## Conclusion

- 1 RTK-gps at least for our project material set, should be set up in a clear space, then it works.
- 2 It improves position accuracy that the correction messages from the base.
- 3 As gps we used before, the moving mode works better than stationary mode due to multipath effects.