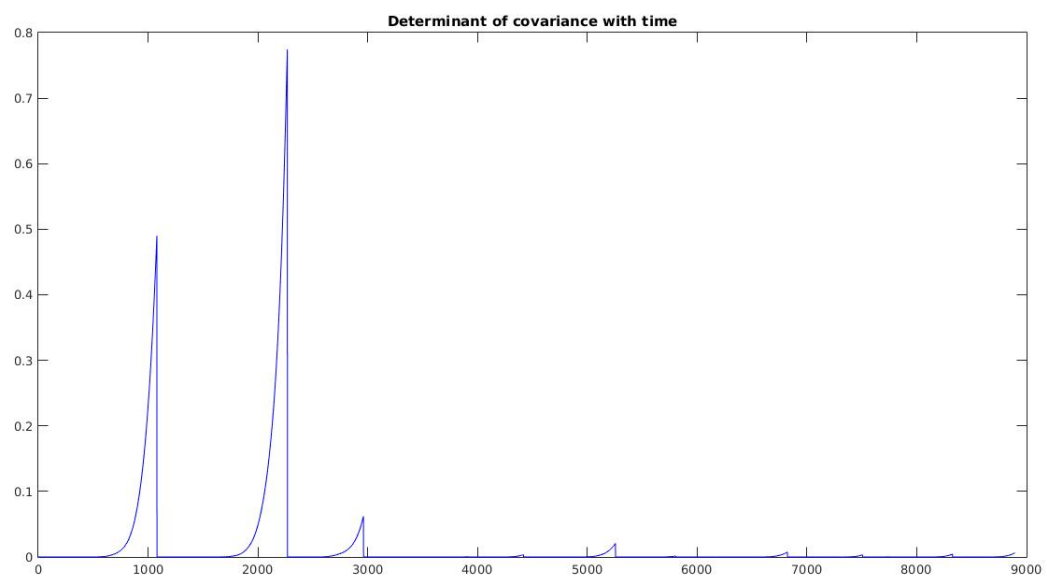# EE698G – ASSIGNMENT 4

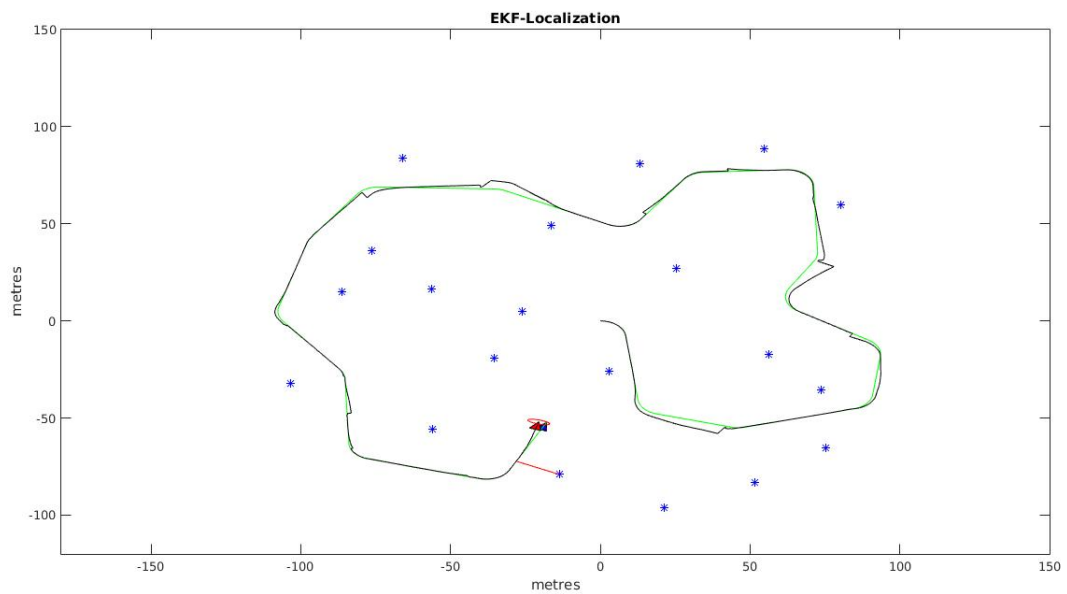**Deepak Gangwar**
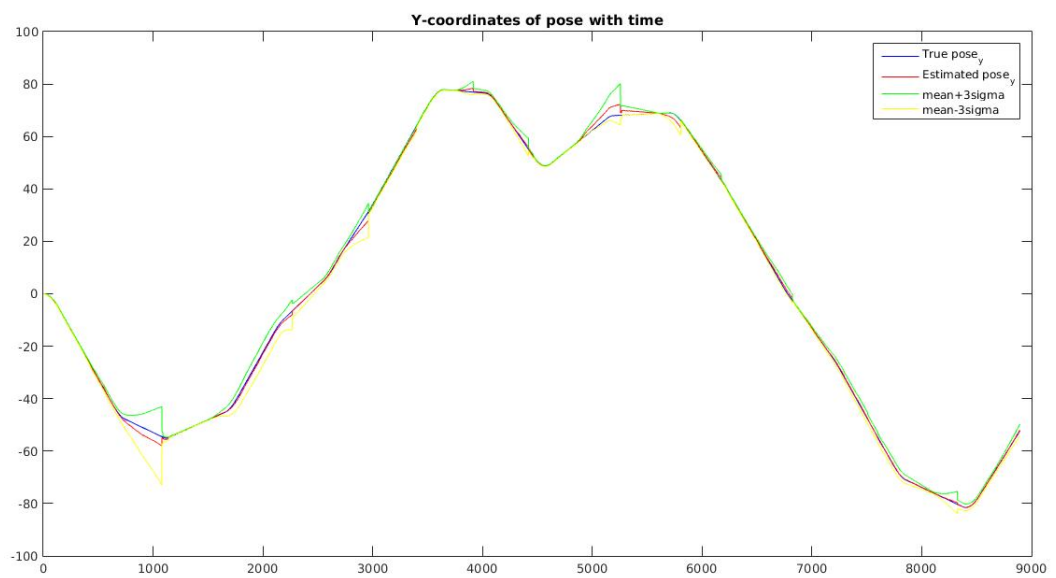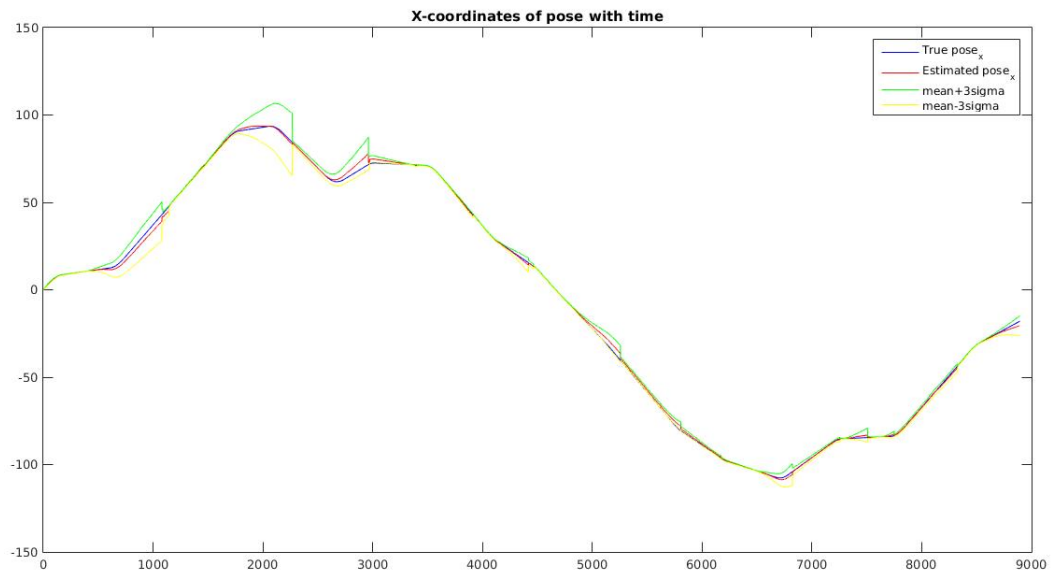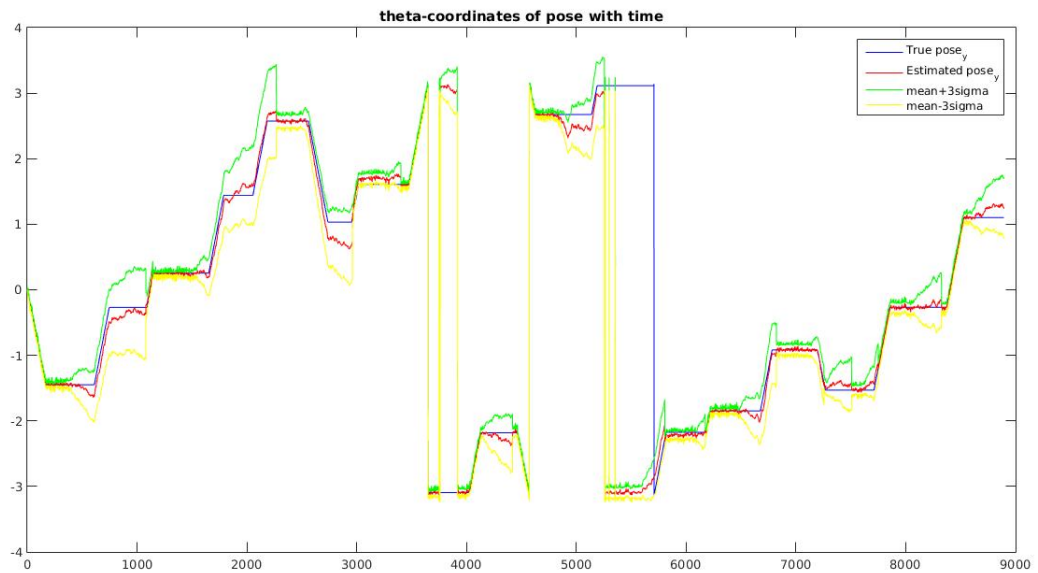
Roll No. 14208

26/03/2017

1 EKF_UKF

1.1 EKF
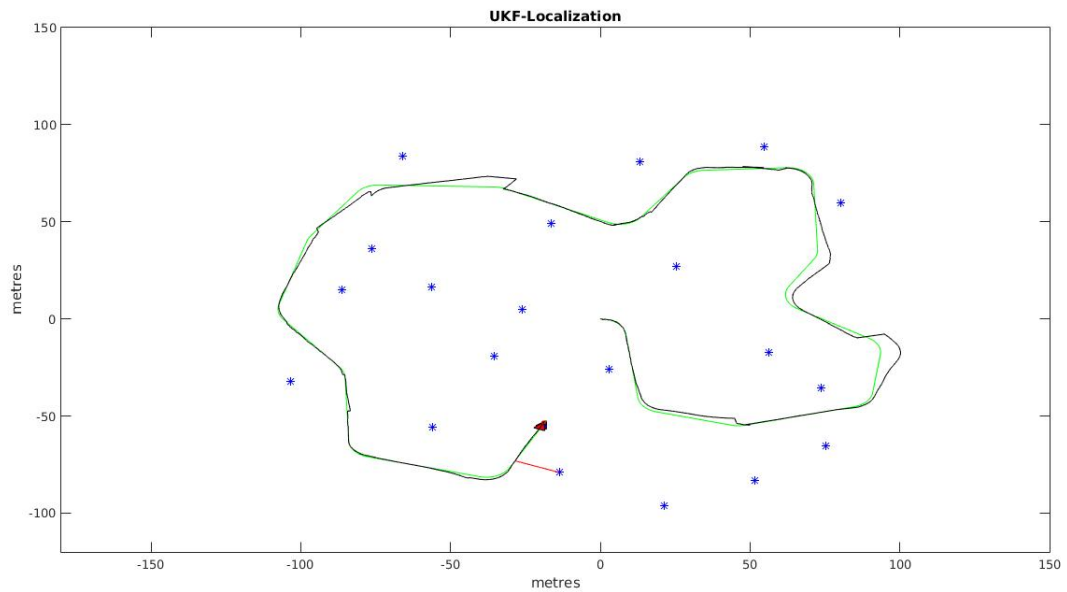
X-coordinates of pose with time
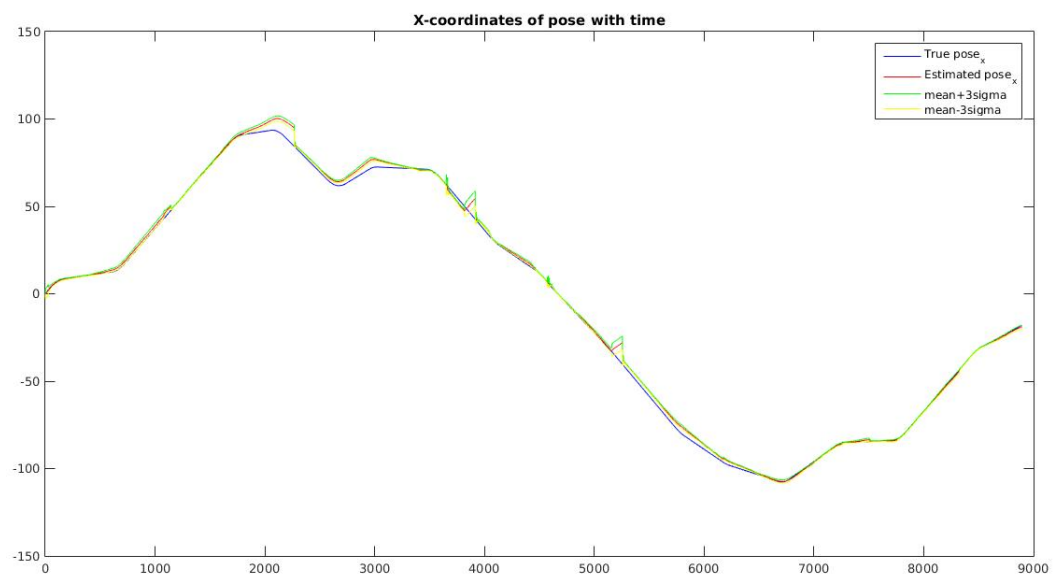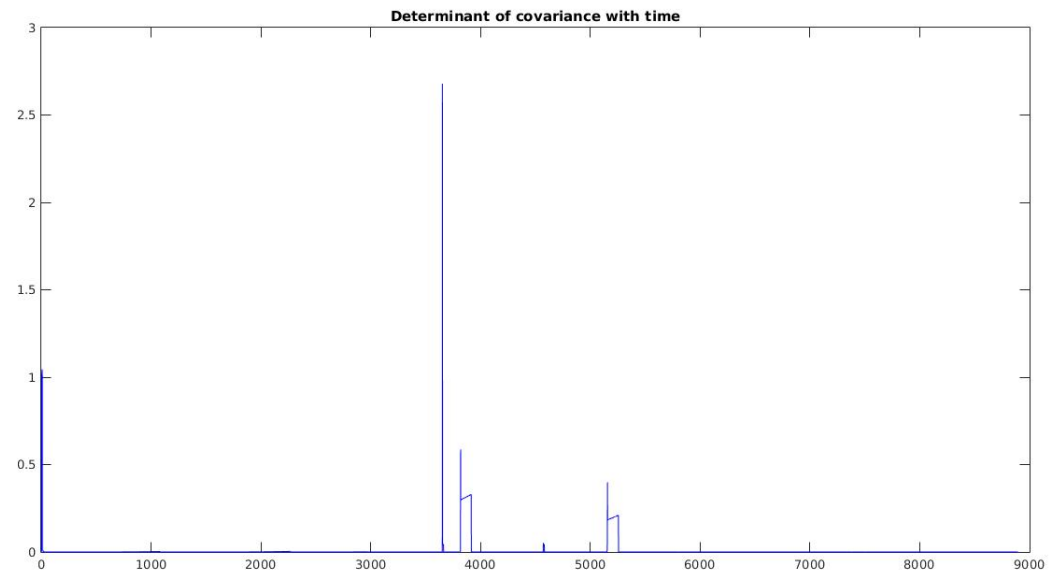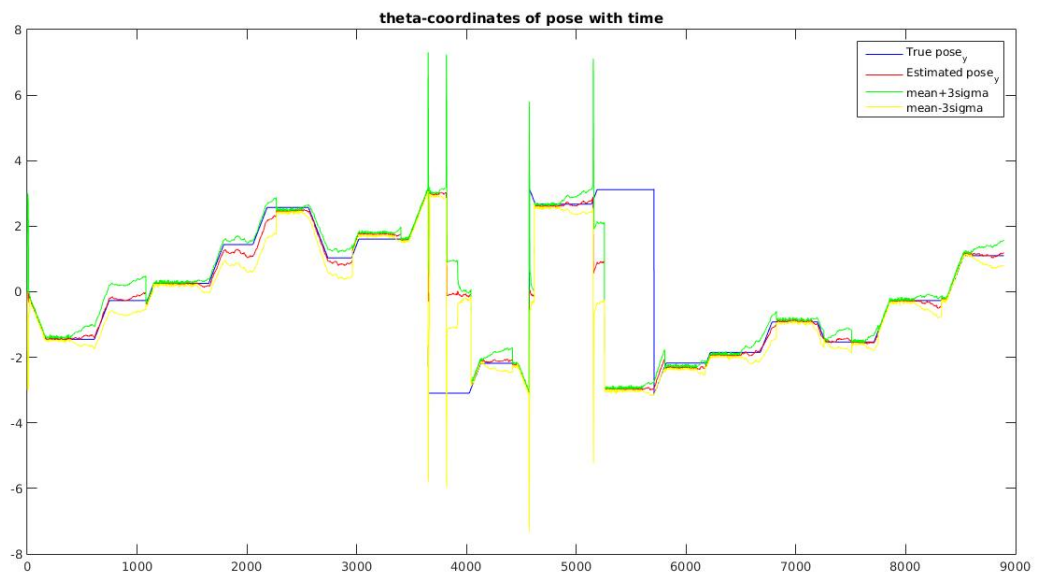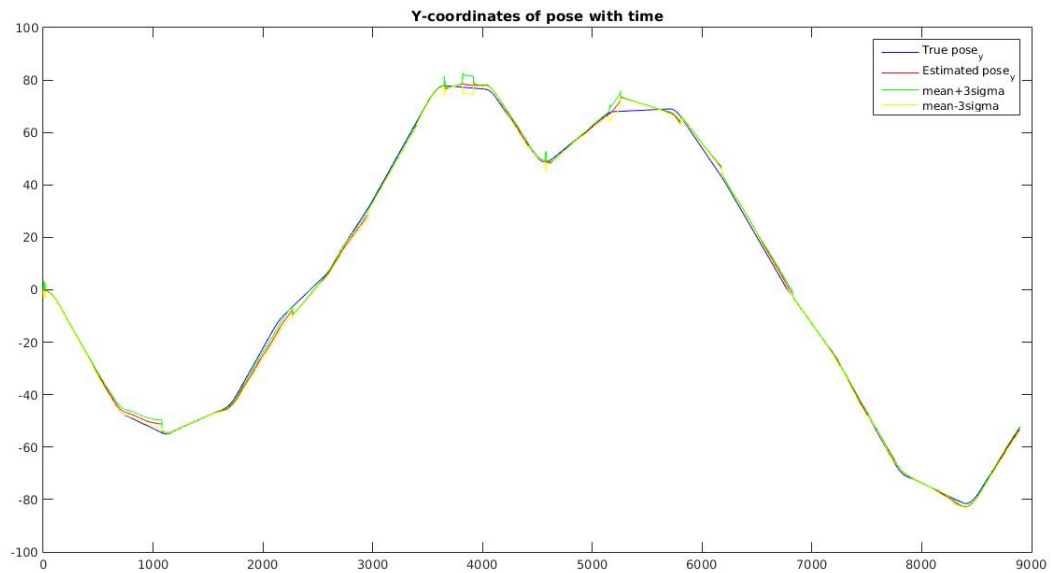

Y-coordinates of pose with time

1.2 UKF

1.2.1 Before the suggestions sent in the mail

Code for this part is present in UKF_predict1.m

Determinant of covariance with time

X-coordinates of pose with time

Legend: True pose$_x$, Estimated pose$_x$, mean+3sigma, mean-3sigma

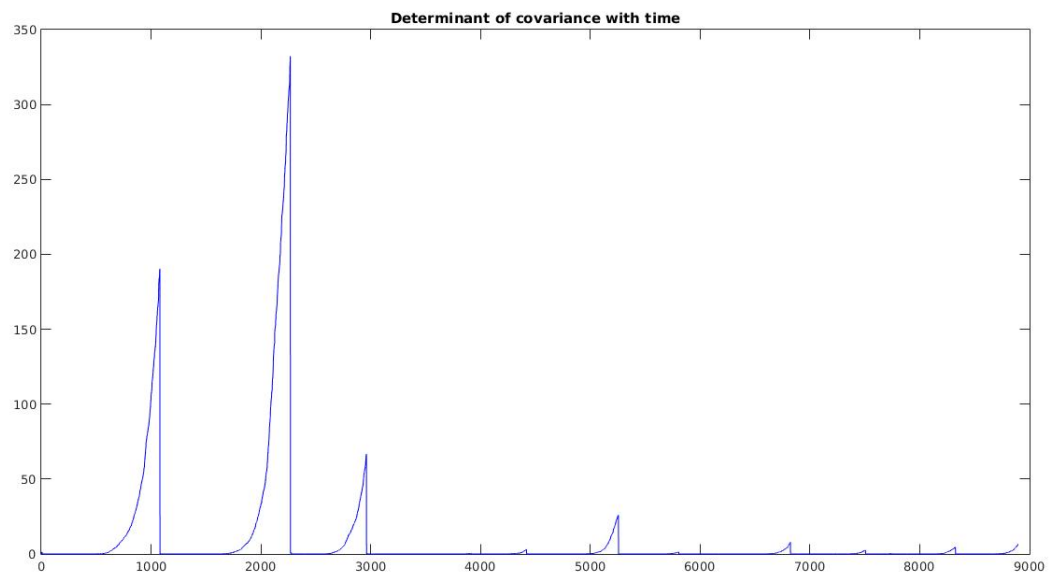**Y-coordinates of pose with time**

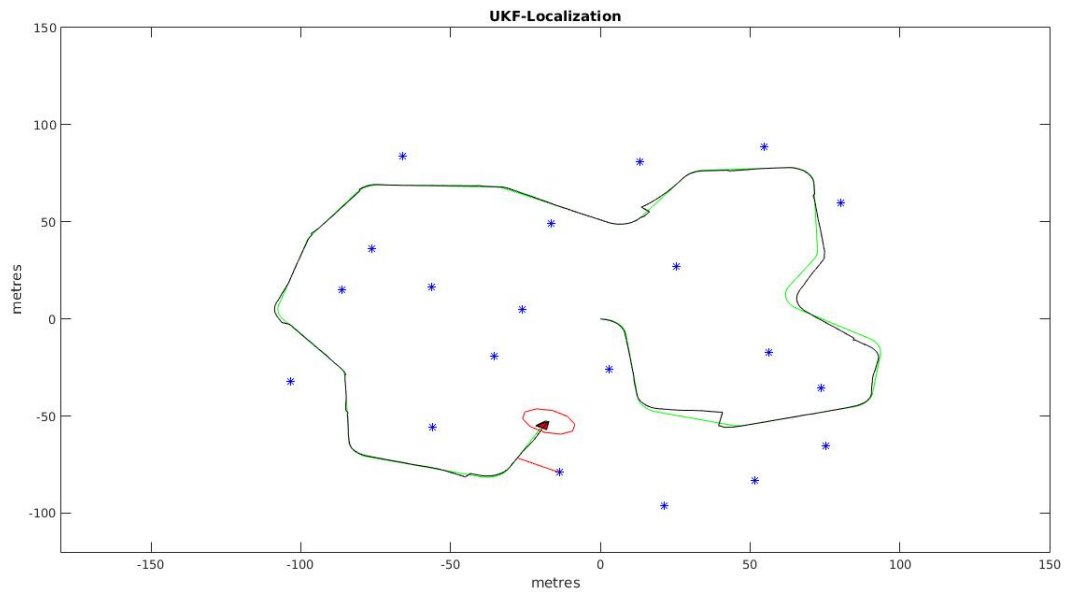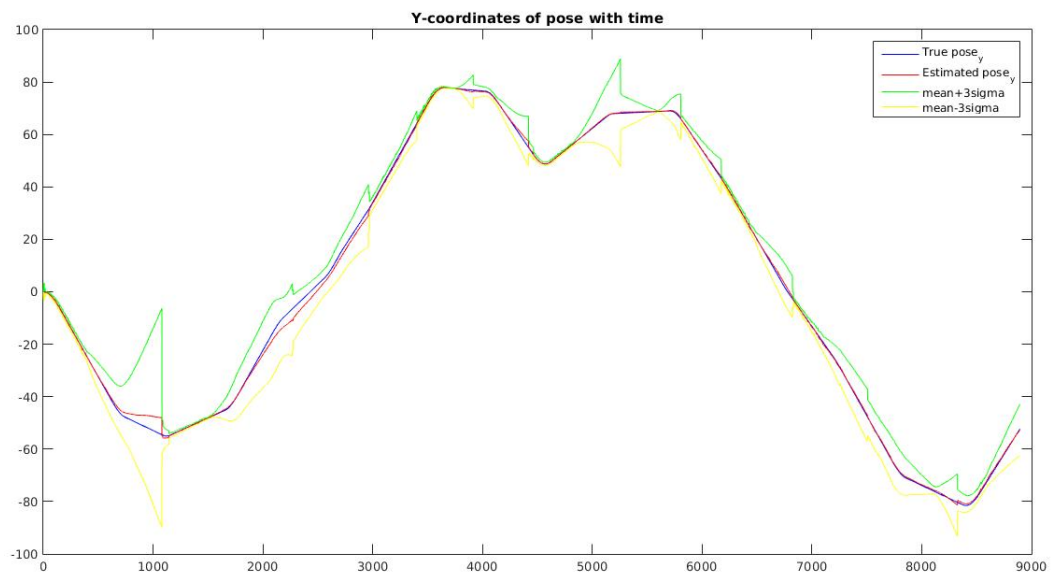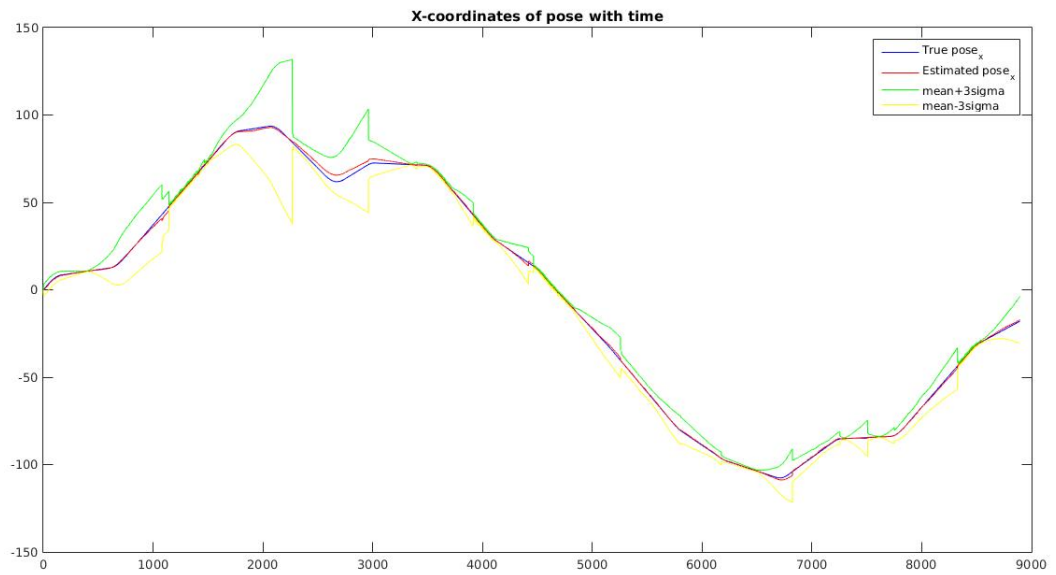**theta-coordinates of pose with time**

1.2.2 Before the suggestions sent in the mail

For this Part,

An augmented state vector is made as suggested.

Code is present in UKF_predict.m

UKF-Localization

Determinant of covariance with time

X-coordinates of pose with time

Y-coordinates of pose with time
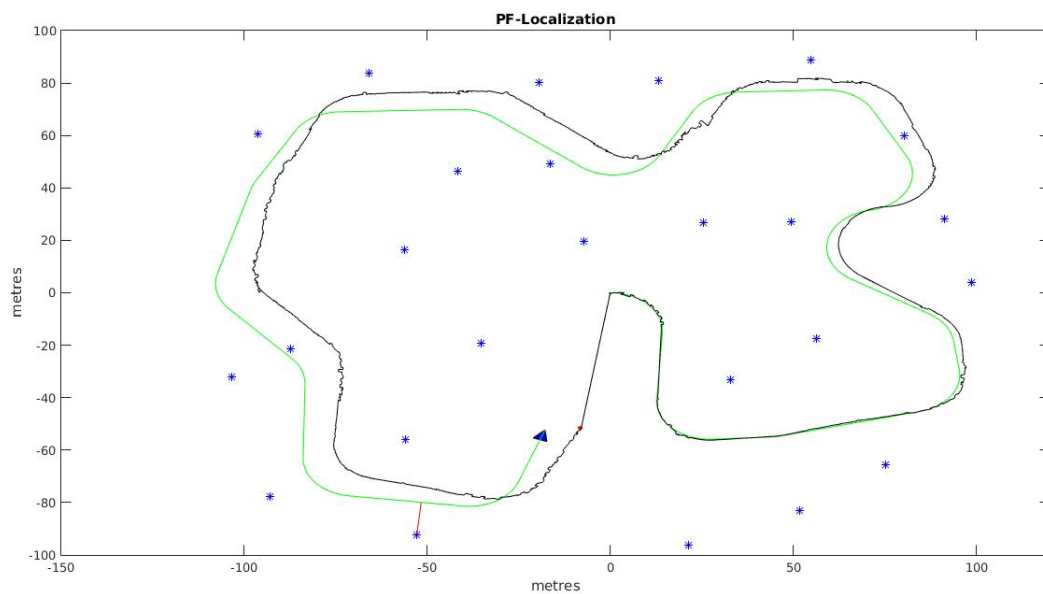
theta-coordinates of pose with time
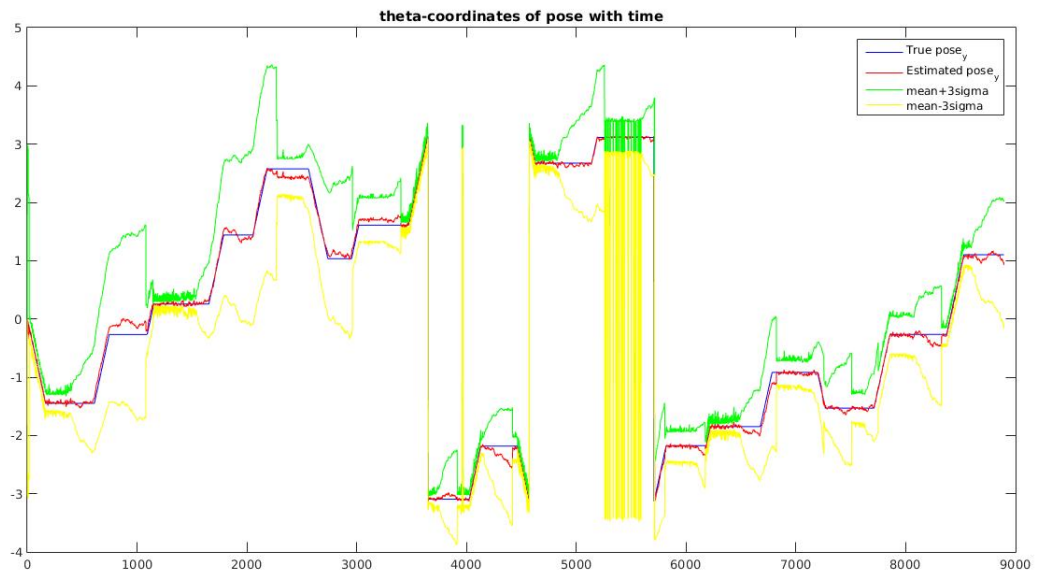
UKF is better approximation than EKF. It is harder to implement in real systems and is slower than EKF due to the computational extensive steps like matrix square root and sigma pounts.
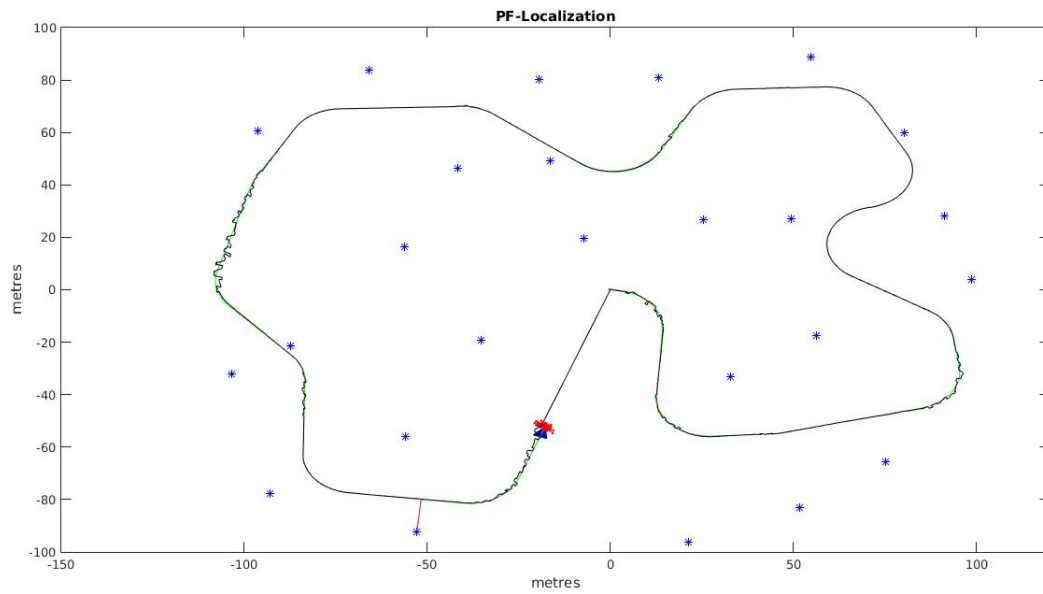
2 PF

2.1 Particle filter with 20 particles

PF-Localization

2.2 Particle filter with 200 particles

Clearly,

By increasing the number of particles robot can be localized more precisely but it also increases the computation power and the process becomes very slow.