

five_mobile_restricted_noisy_true Turtlebot 4 Report

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This is a summary of the data from the five_mobile_restricted_noisy_true experiment, Turtlebot #4.

The runtime of this experiment was 1 hours, 8 minutes, and 18.5 seconds.

The total number of external pose measurements received by the robot during this time was 29330 which means poses were received at an average of 7.1562767 poses per second.

Shown below is the summary of each filter's error for both x and y coordinates, and also the error in total distance.

```
summary(continuous$x_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -7.595e-02 -5.264e-03 -2.390e-06 -5.616e-05  5.324e-03  7.793e-02

summary(continuous$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -8.102e-02 -5.081e-03  7.813e-05  4.694e-05  5.199e-03  7.321e-02

summary(continuous$yaw_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -6.283000 -0.113300  0.006538 -0.000718  0.049320  6.278000

summary(continuous$dist_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 9.340e-06 4.794e-03 8.643e-03 1.654e-02 2.528e-02 8.278e-02

summary(discrete$x_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -6.76800 -0.02163  0.00617  2.43600  1.92800 34.94000

summary(discrete$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -9.84300 -0.23200  0.00000 -0.09149  0.14870 13.39000

summary(discrete$yaw_error)

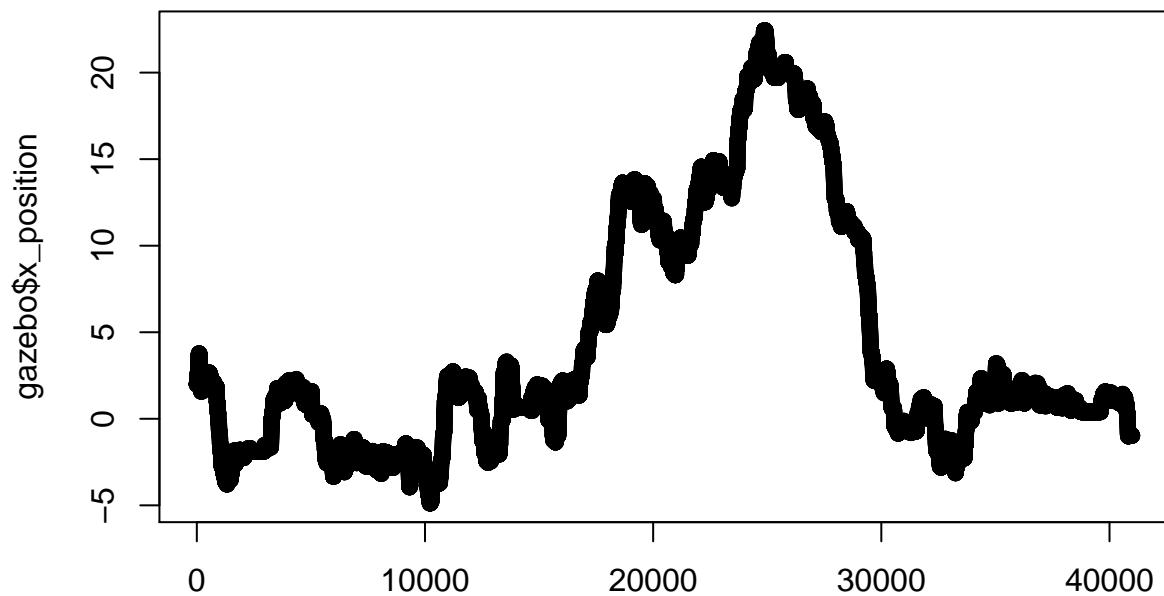
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -6.273000 -0.237900 -0.001012  0.007209  0.050460  6.279000

summary(discrete$dist_error)

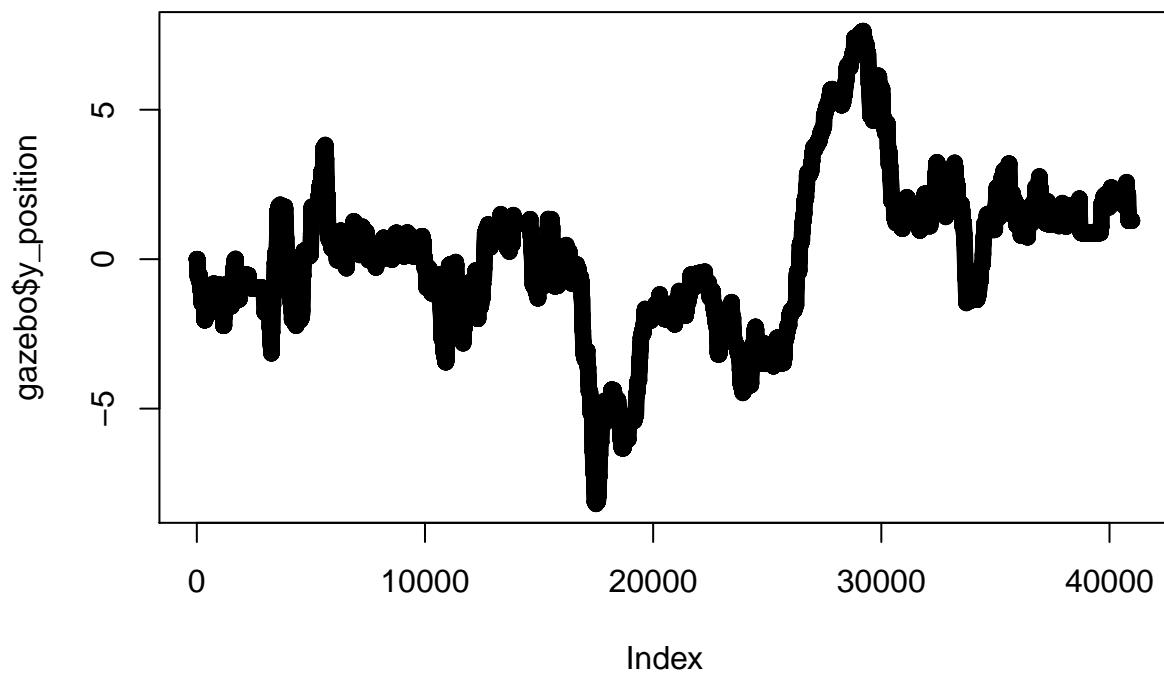
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 0.00000  0.02603  0.31850  3.39900  4.01800 37.15000

#sum(continuous$dist_error <= 0.25) / length(continuous$dist_error)
#sum(discrete$dist_error <= 0.25) / length(discrete$dist_error)
```

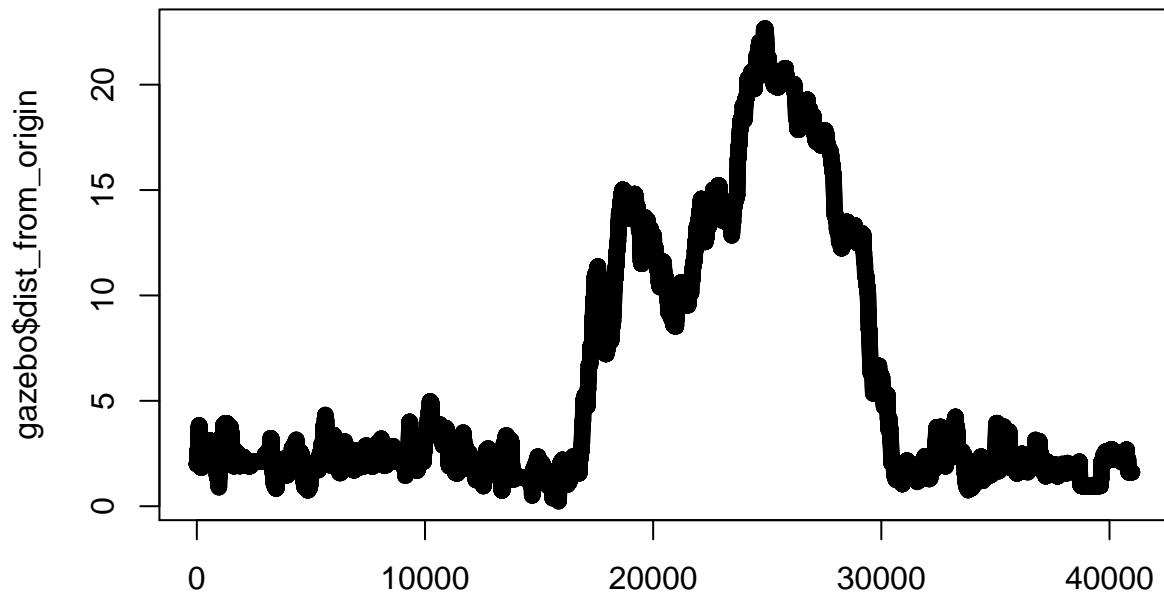
X coordinate of robot over time



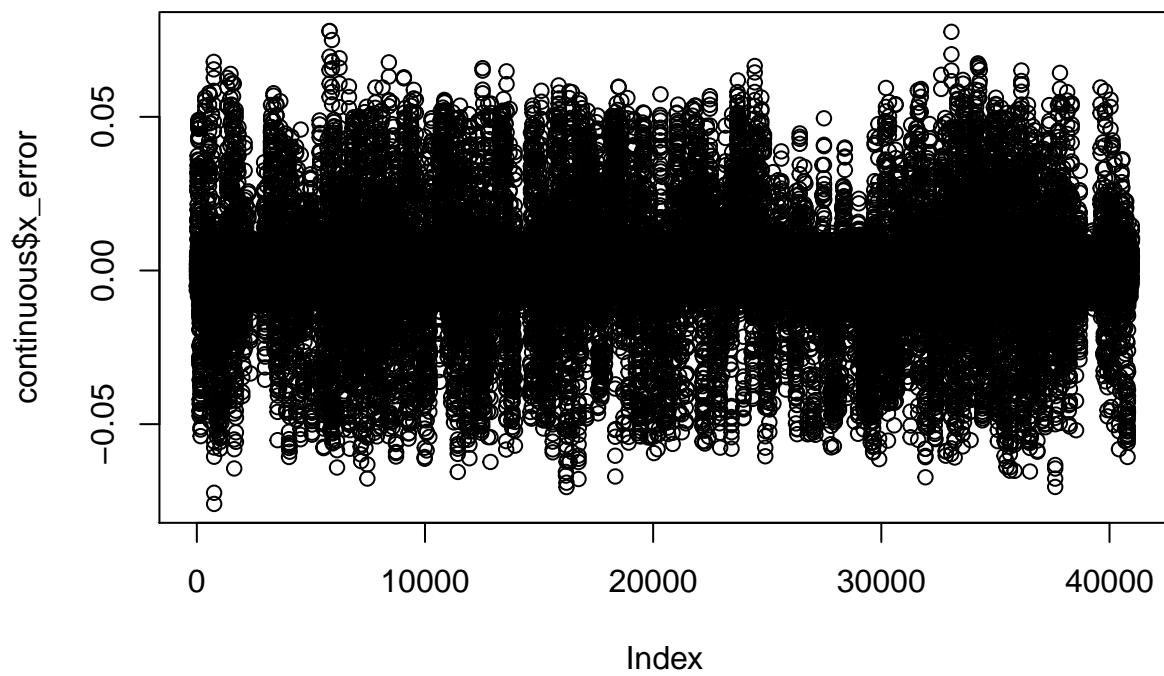
Y coordinate of robot over time



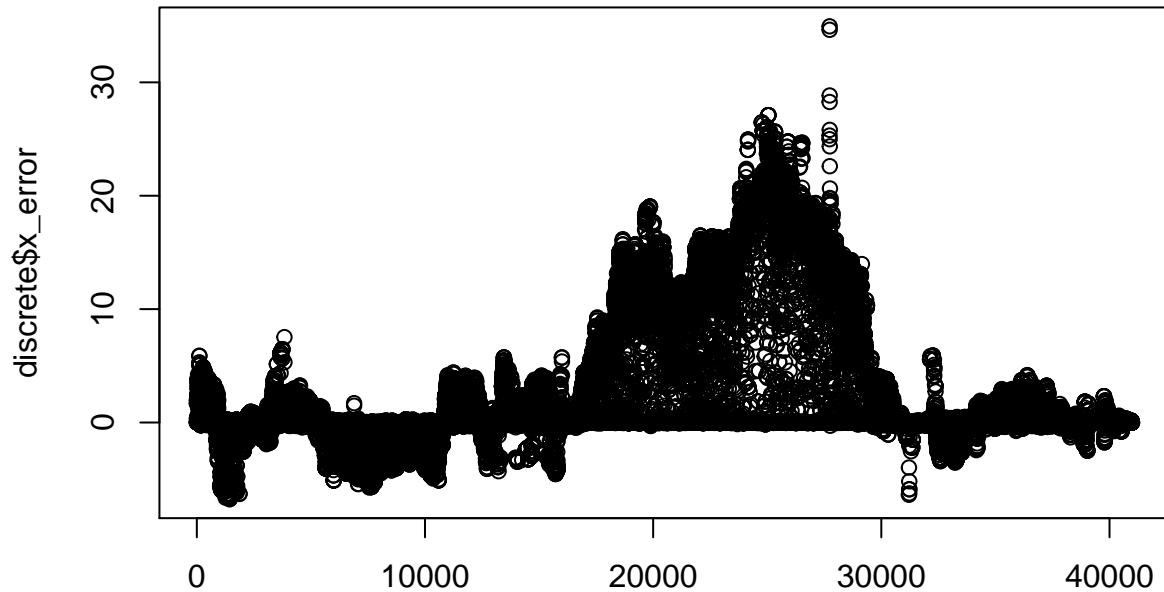
Distance from origin vs. time



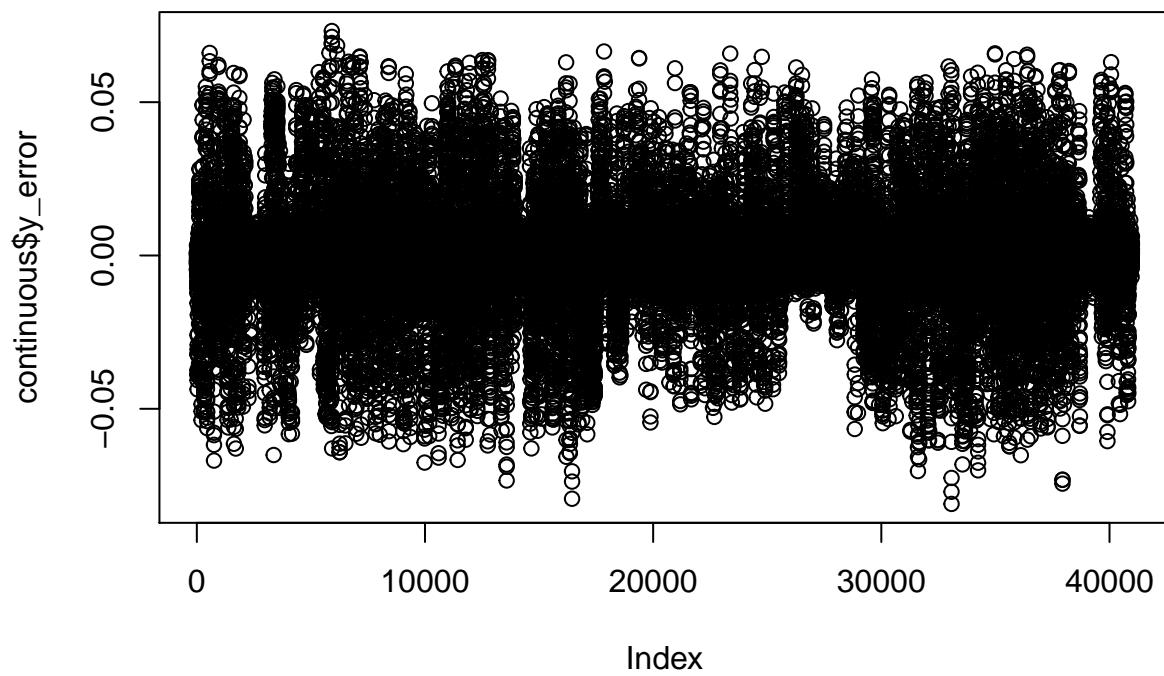
Continuous x_error over time



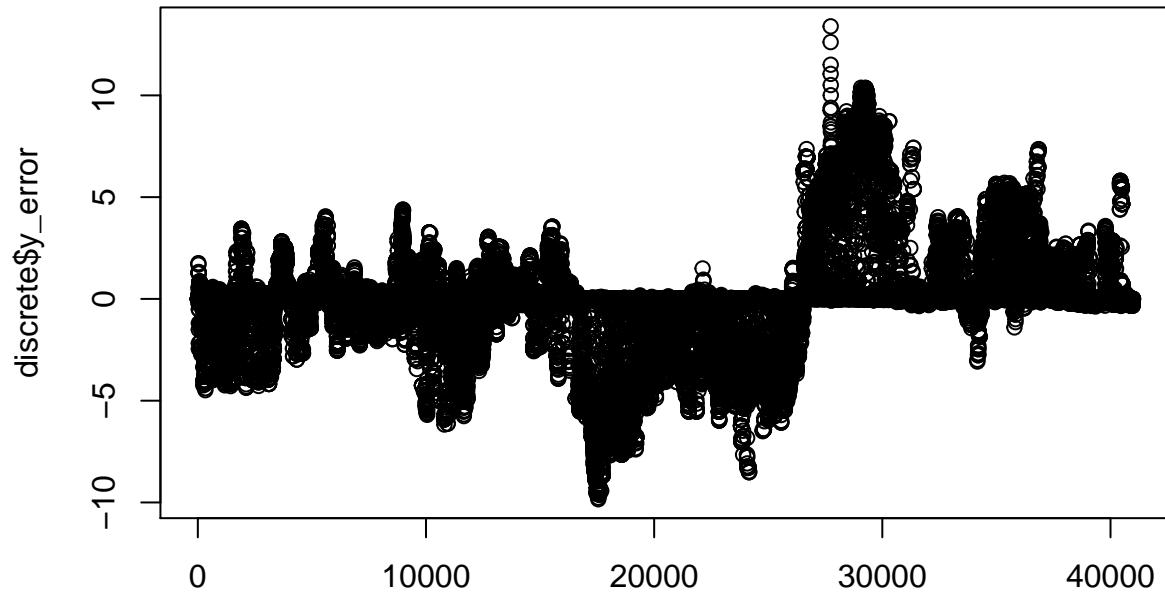
Discrete x_error over time



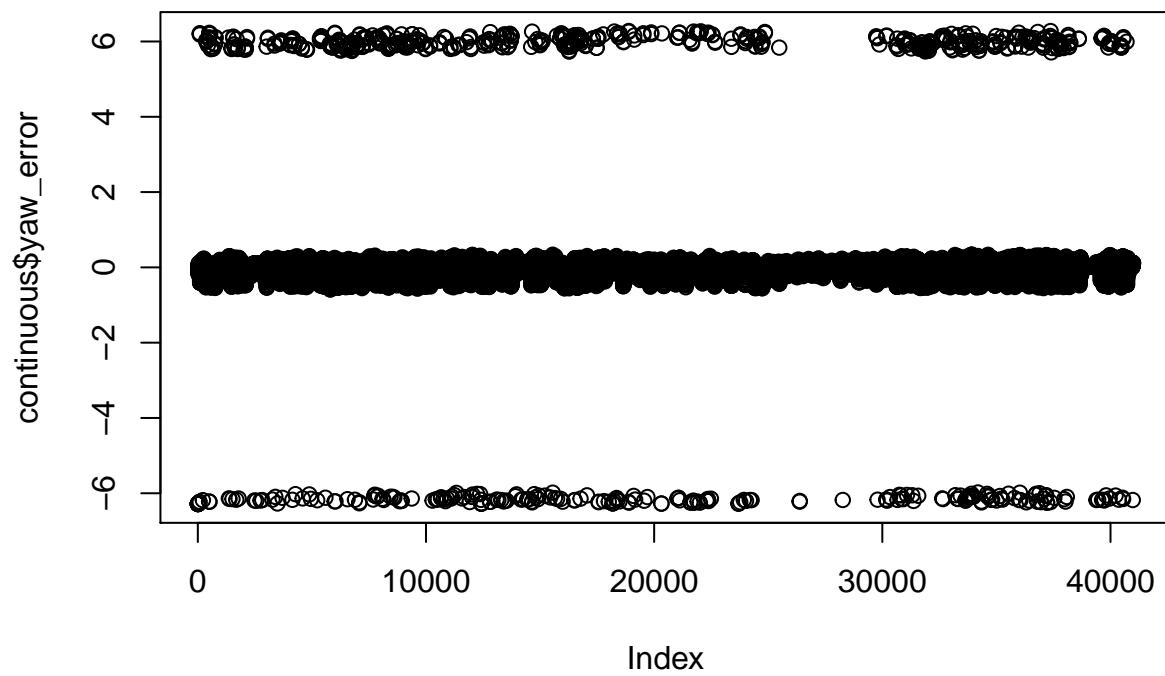
Continuous y_error over time



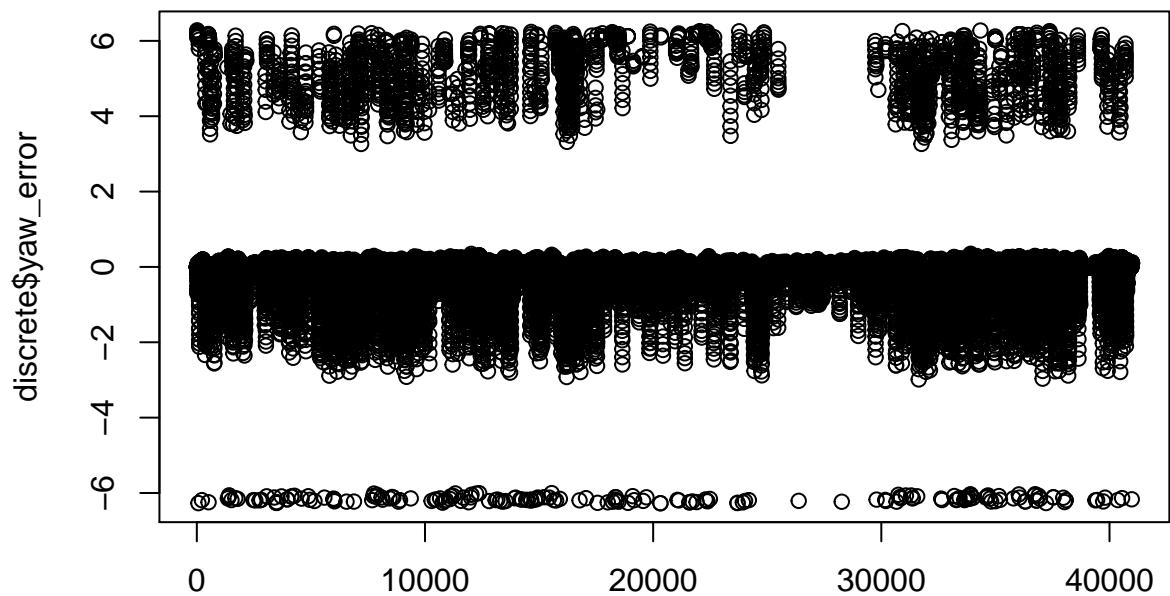
Discrete y_error over time



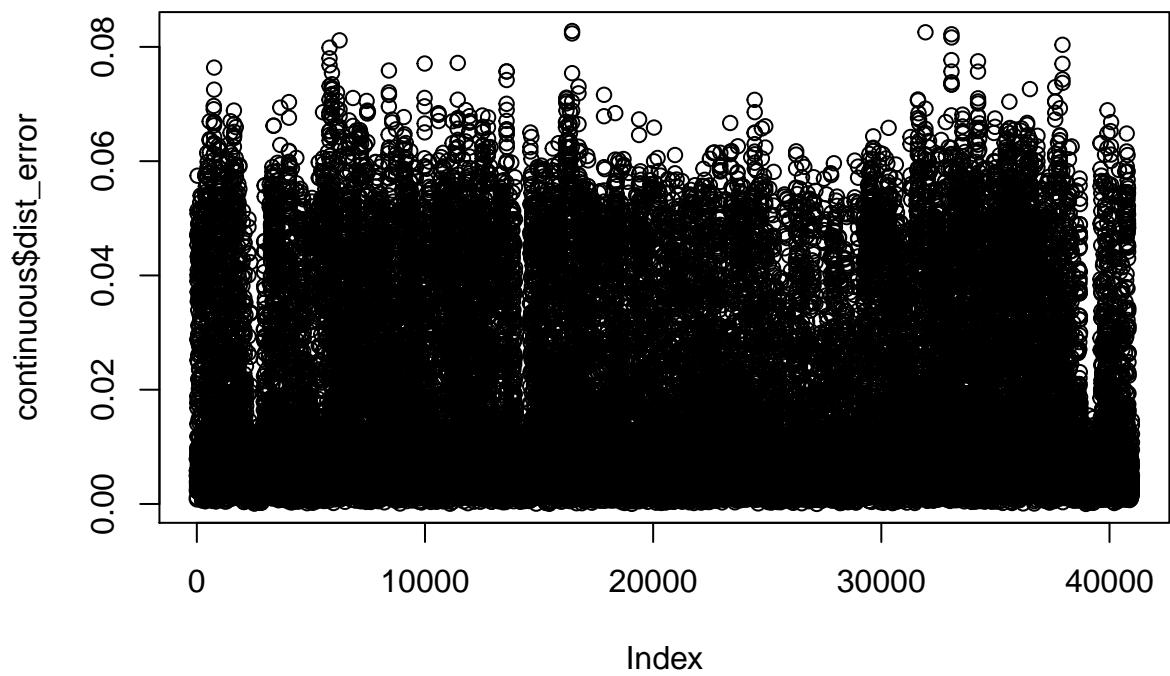
Continuous yaw error over time



Discrete yaw error over time



Continuous total distance error over time



Discrete total distance error over time

