

one_stationary_noisy_true Turtlebot 1 Report

Matthew Swartwout

July 13, 2016

This is a summary of the data from the one_stationary_noisy_true experiment, Turtlebot #1.

The runtime of this experiment was 1 hours, 8 minutes, and 18.2 seconds.

The total number of external pose measurements received by the robot during this time was 0 which means poses were received at an average of 0 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.
## -1.893e-02 -2.968e-03 -3.943e-05 -3.702e-05  2.896e-03  1.790e-02
```

```
summary(continuous$y_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -2.017e-02 -2.999e-03 -5.518e-05 -3.727e-05  2.928e-03  1.785e-02
```

```
summary(continuous$yaw_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -6.283000  0.001741  0.003593 -0.008094  0.005345  0.007091
```

```
summary(continuous$dist_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 4.351e-05 3.324e-03 5.168e-03 5.506e-03 7.327e-03 2.017e-02
```

```
summary(discrete$x_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.442e-06 3.341e-06 5.228e-06 5.476e-06 7.609e-06 9.504e-06
```

```
summary(discrete$y_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.527e-10 2.510e-08 5.486e-08 6.802e-08 1.006e-07 2.360e-07
```

```
summary(discrete$yaw_error)
```

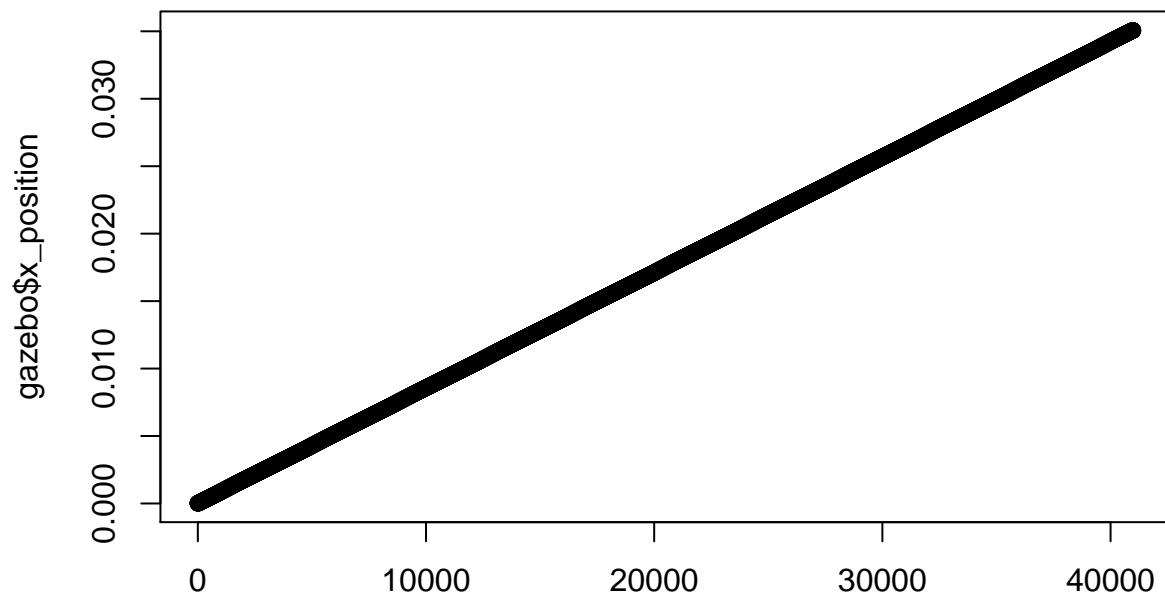
```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -5.303e-03 -1.192e-03 -6.549e-04 -7.978e-04 -2.381e-04  4.947e-05
```

```
summary(discrete$dist_error)
```

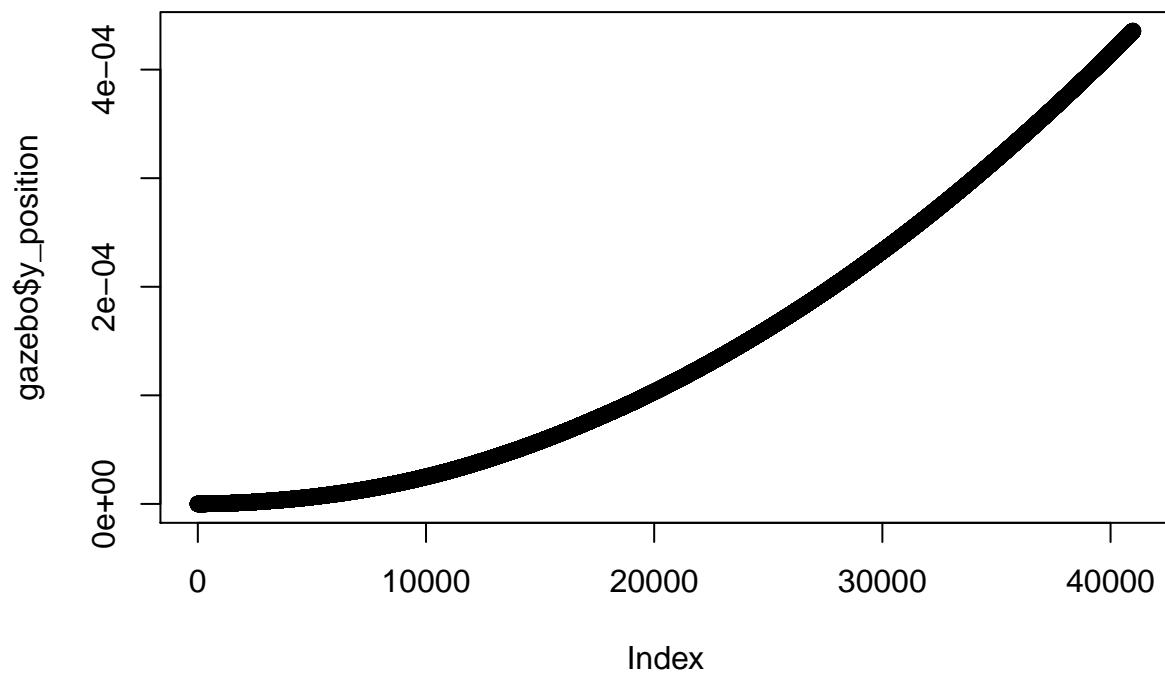
```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.442e-06 3.341e-06 5.229e-06 5.476e-06 7.609e-06 9.506e-06
```

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

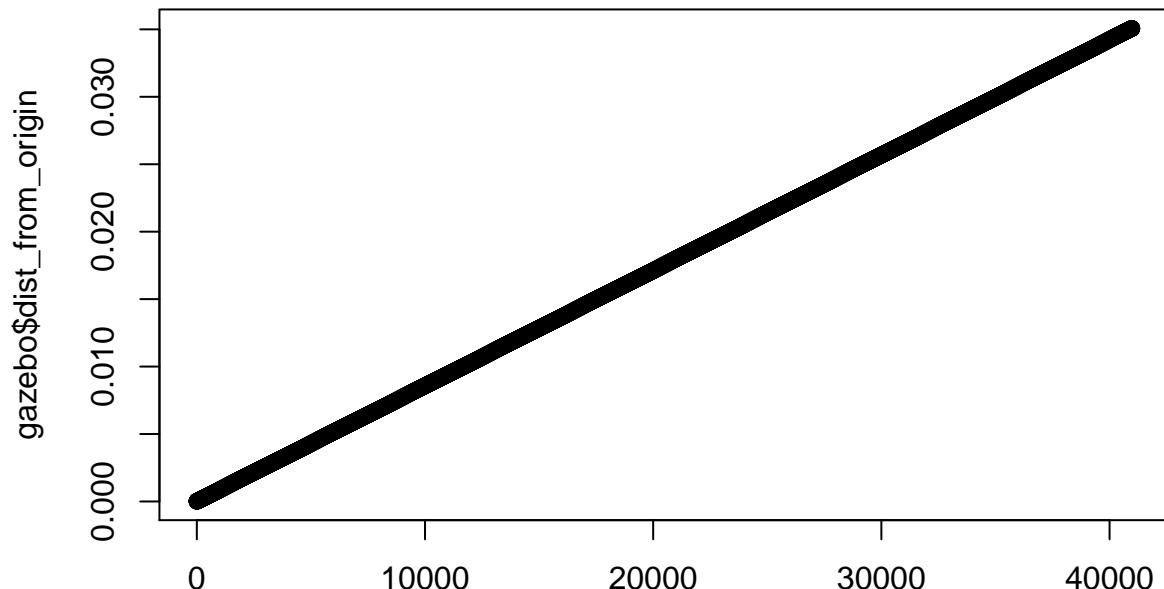
X coordinate of robot over time



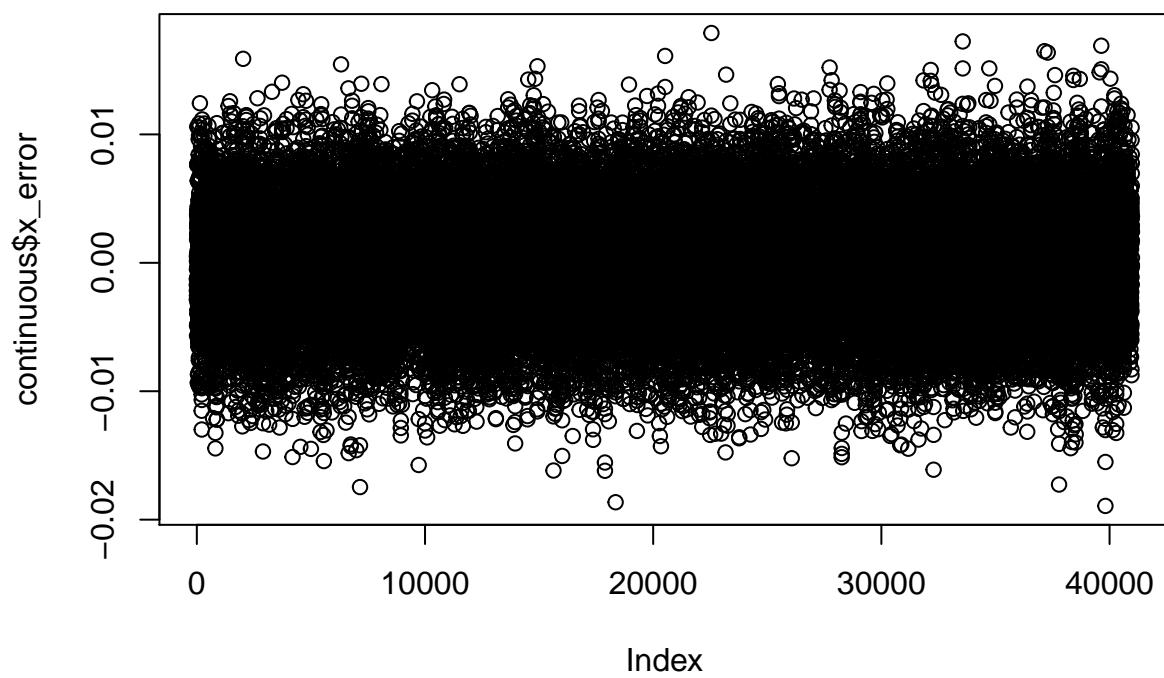
Y coordinate of robot over time



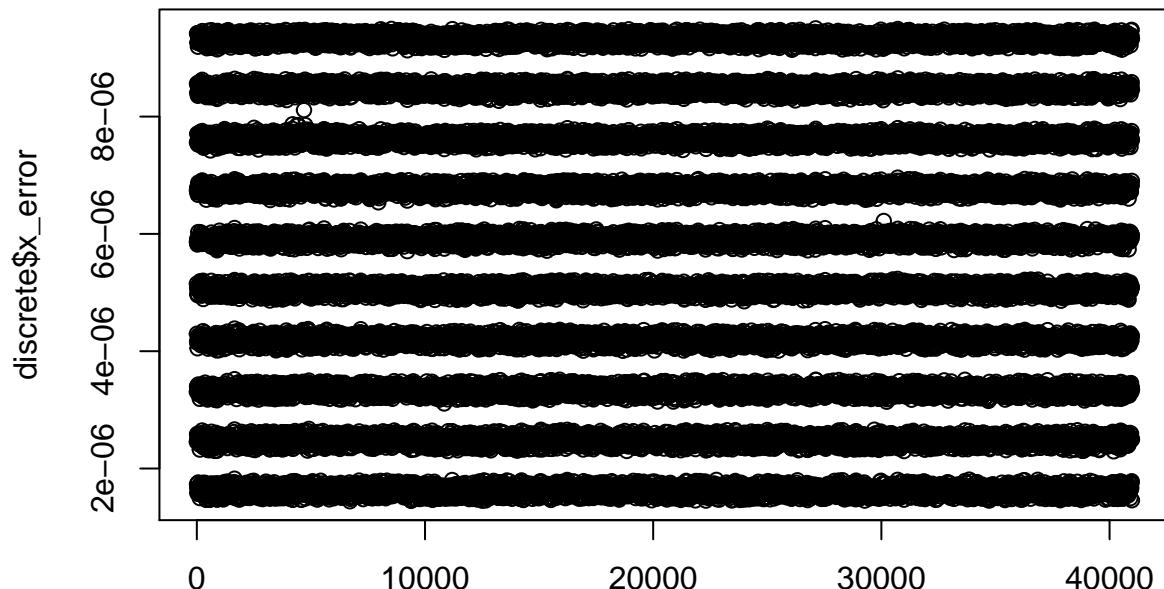
Distance from origin vs. time



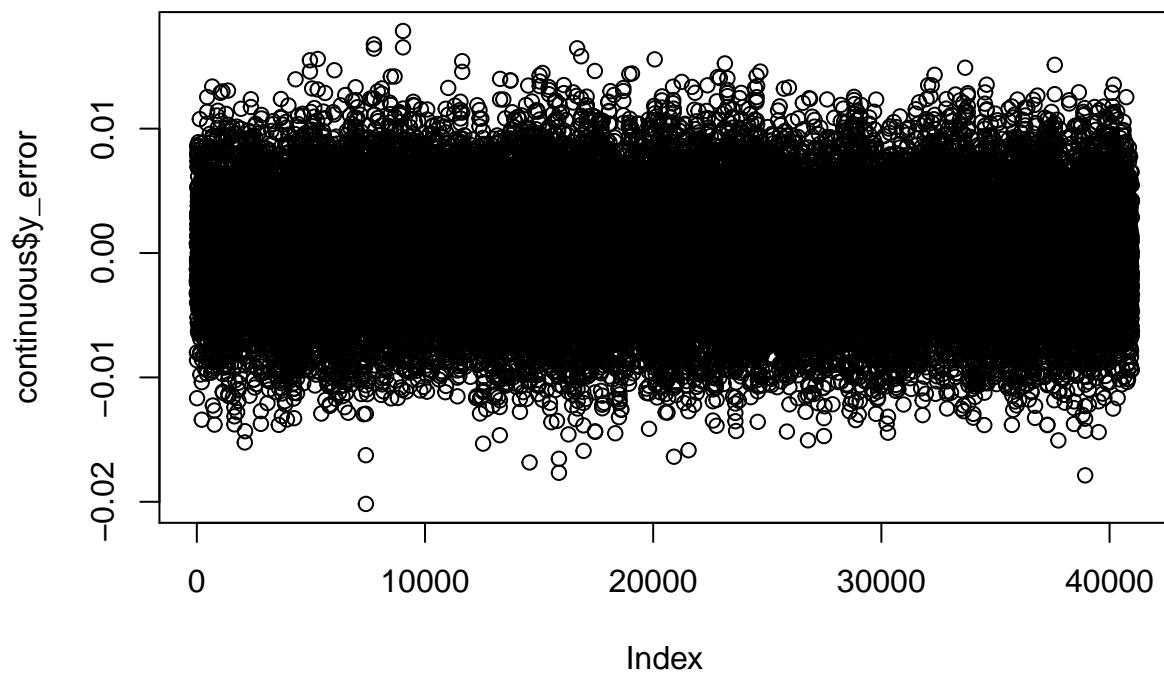
Continuous x_error over time



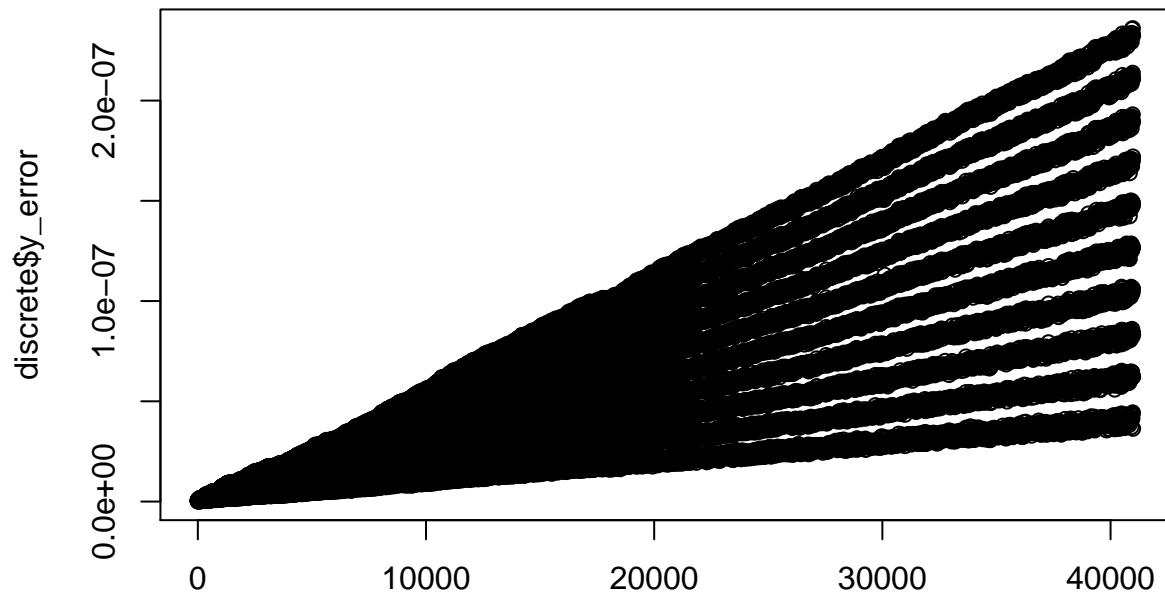
Discrete x_error over time



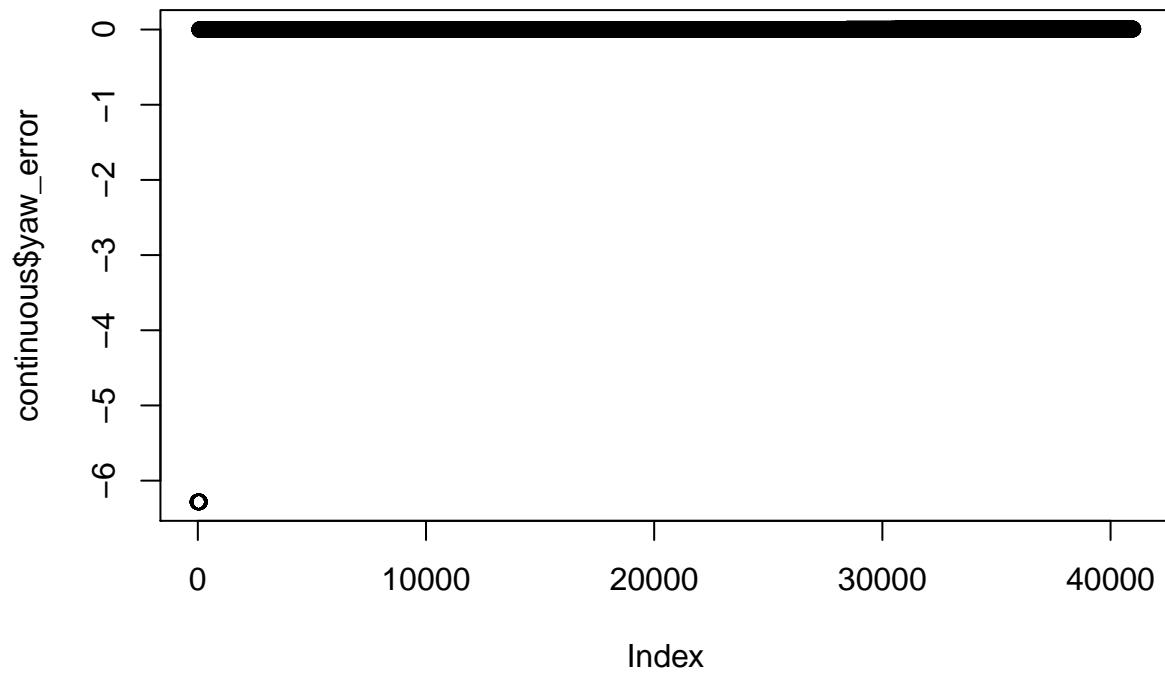
Continuous y_error over time



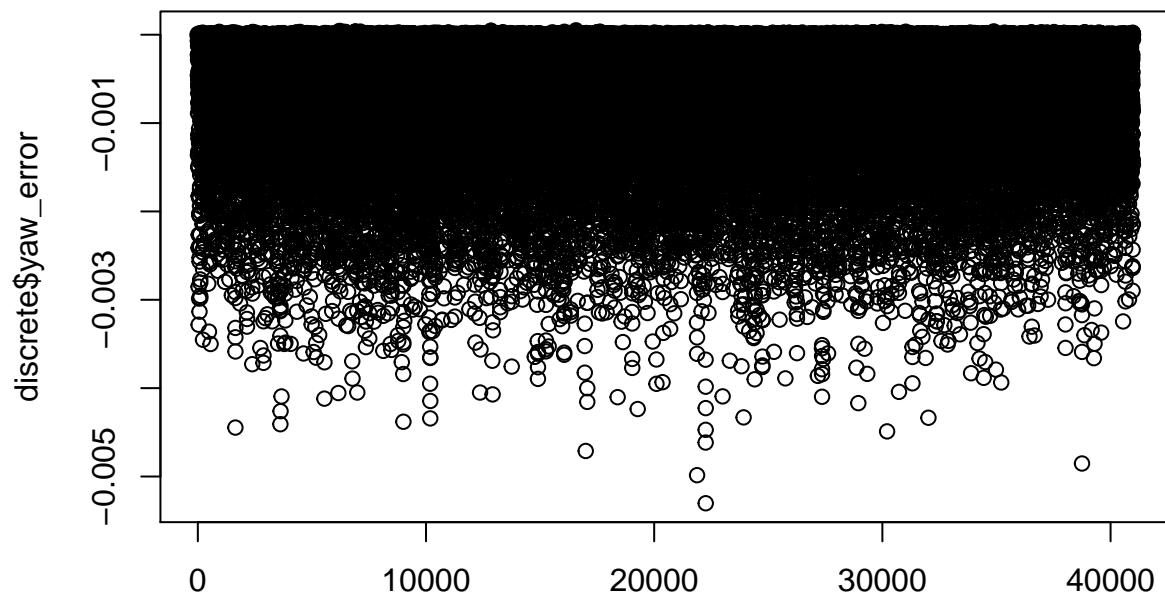
Discrete y_error over time



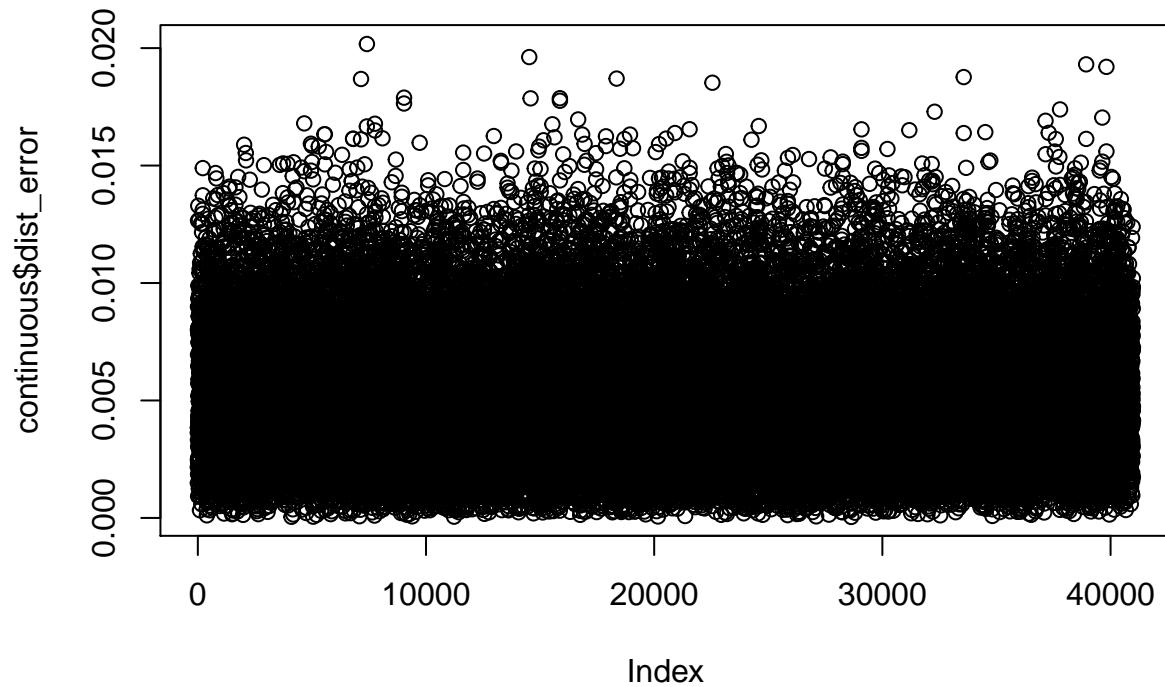
Continuous yaw error over time



Discrete yaw error over time



Continuous total distance error over time



Discrete total distance error over time

