

# five\_mobile\_noisy\_false Turtlebot 3 Report

Matthew Swartwout

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This is a summary of the data from the five\_mobile\_noisy\_false experiment, Turtlebot #3.

The runtime of this experiment was 1 hours, 8 minutes, and 19.1 seconds.

The total number of external pose measurements received by the robot during this time was 18183 which means poses were received at an average of 4.4358518 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. 
## -6.313e-02 -7.400e-07 -7.200e-07 -1.705e-04 -6.700e-07 7.484e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -7.261e-02 -2.770e-06 -2.690e-06 -3.919e-04 -2.580e-06 7.176e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.283000 -0.010080 -0.008182 -0.007246 -0.006469 6.237000
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 3.200e-07 2.750e-06 2.830e-06 5.513e-03 1.351e-04 7.637e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -19.540000 -5.609000 -0.000083 -2.384000  0.000375 13.920000
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -23.090000 -0.128000 -0.000007  0.241600  0.234100 16.590000
```

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

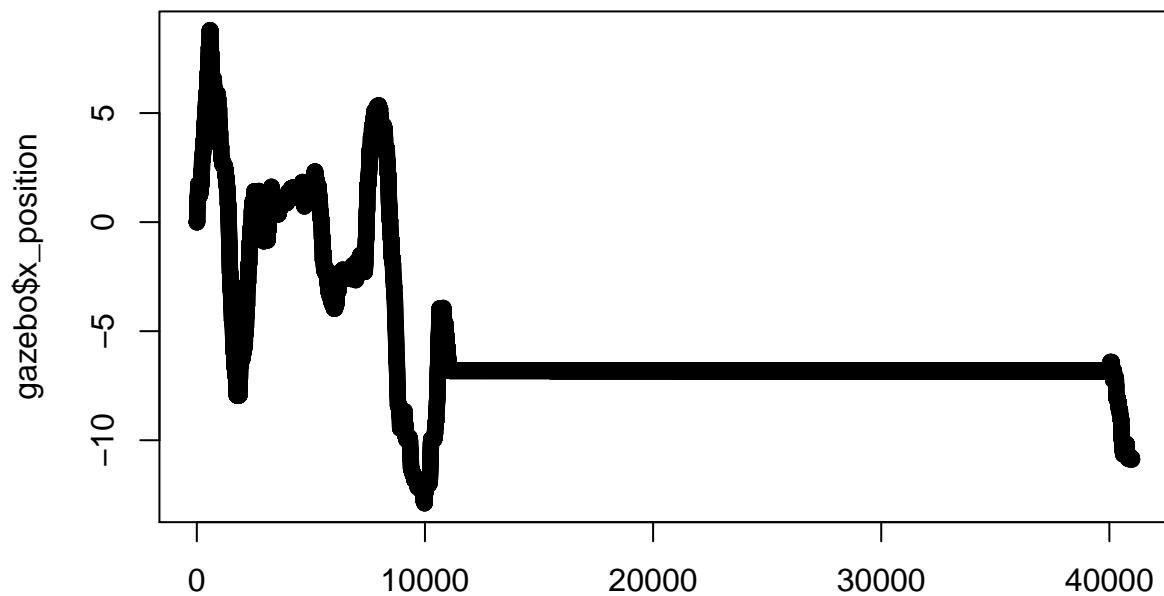
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.282000 -0.000023  0.000000 -0.001211  0.000016 6.281000
```

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

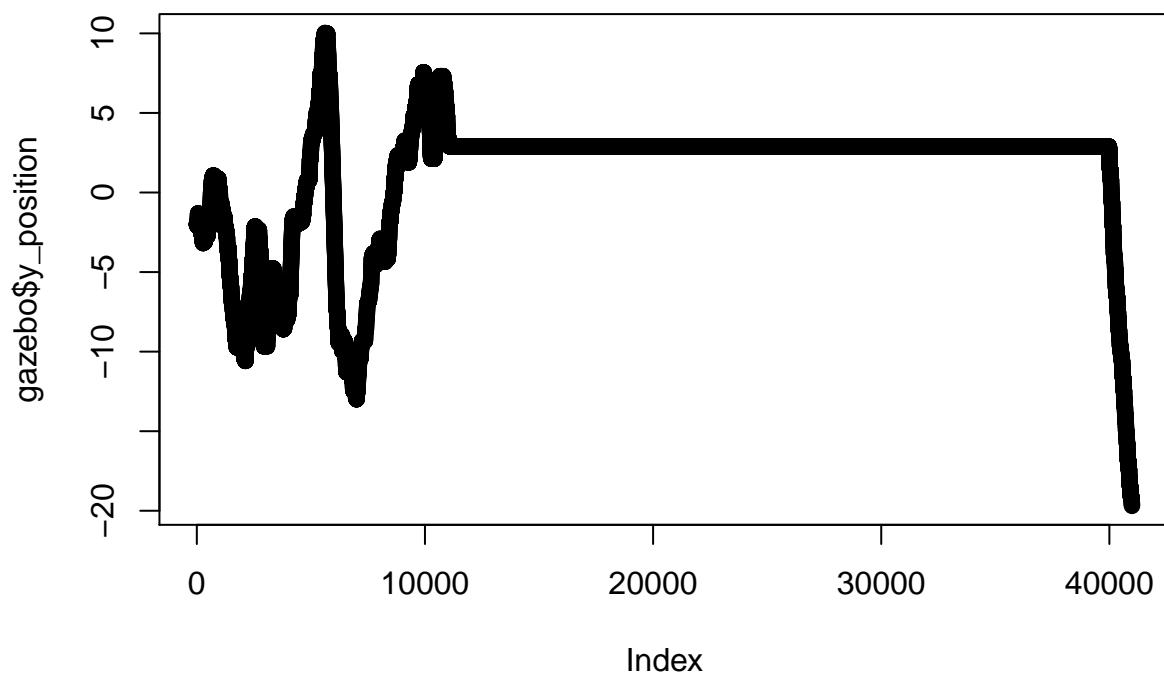
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 0.000000  0.000434  0.334200  3.811000  6.254000 25.120000
```

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

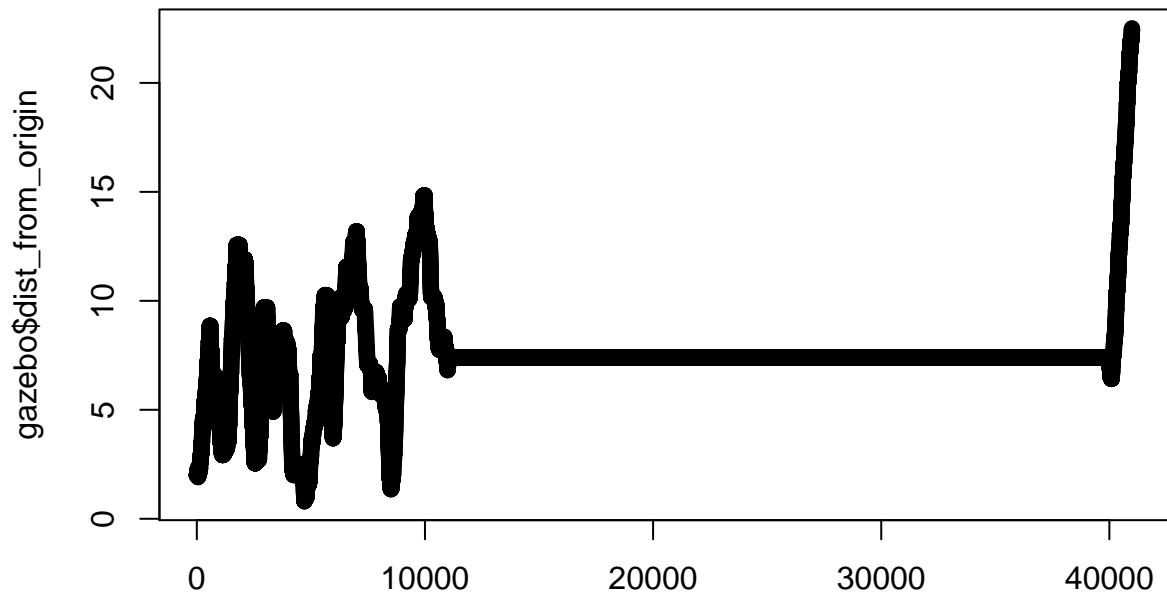
**X coordinate of robot over time**



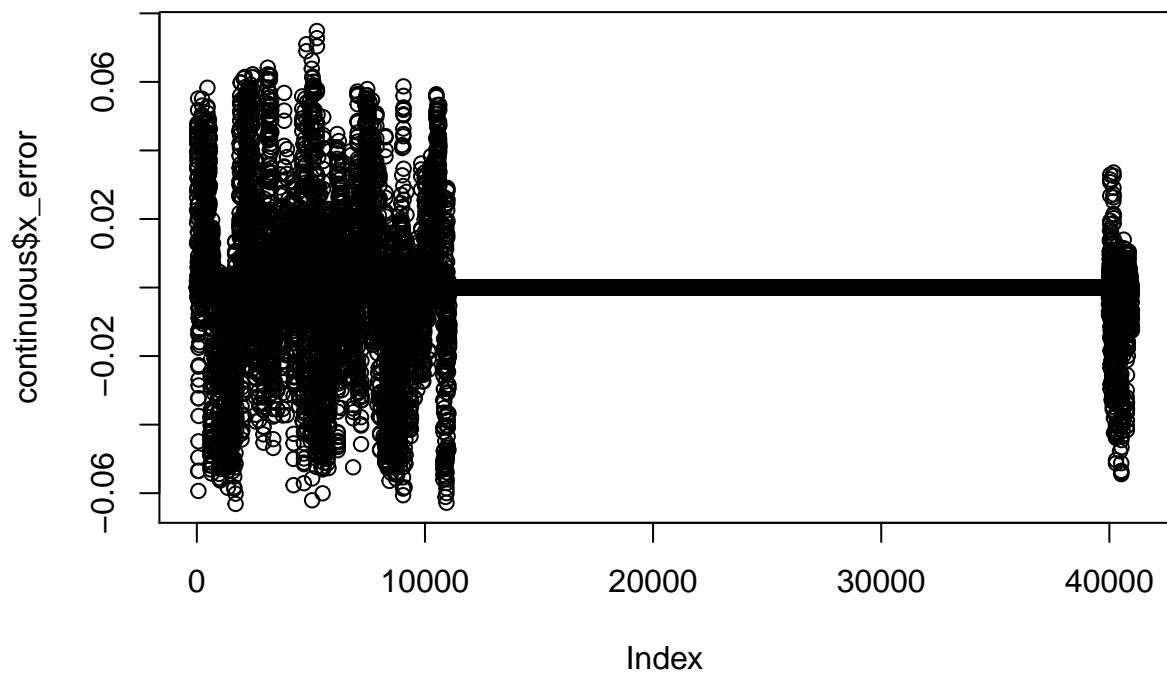
**Y coordinate of robot over time**



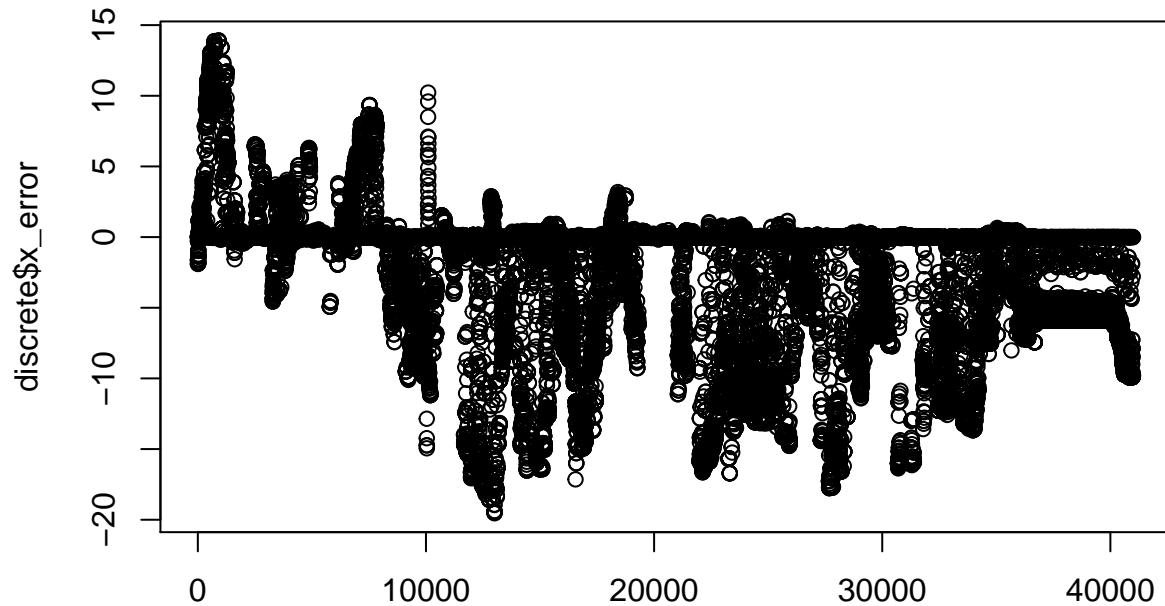
**Distance from origin vs. time**



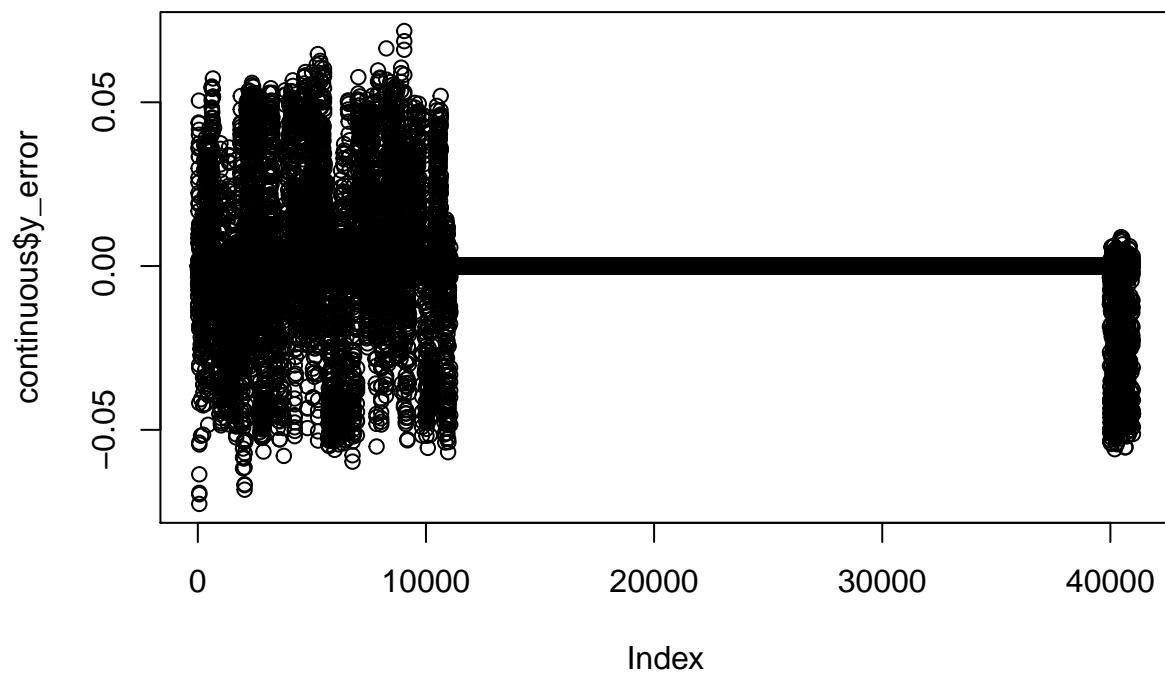
**Continuous x\_error over time**



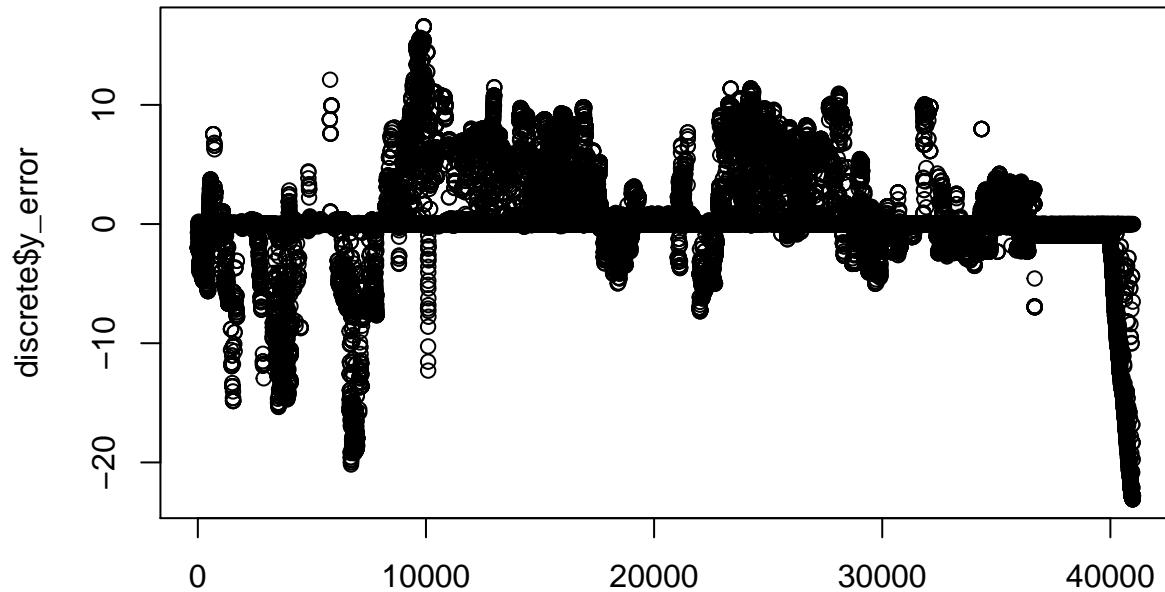
**Discrete x\_error over time**



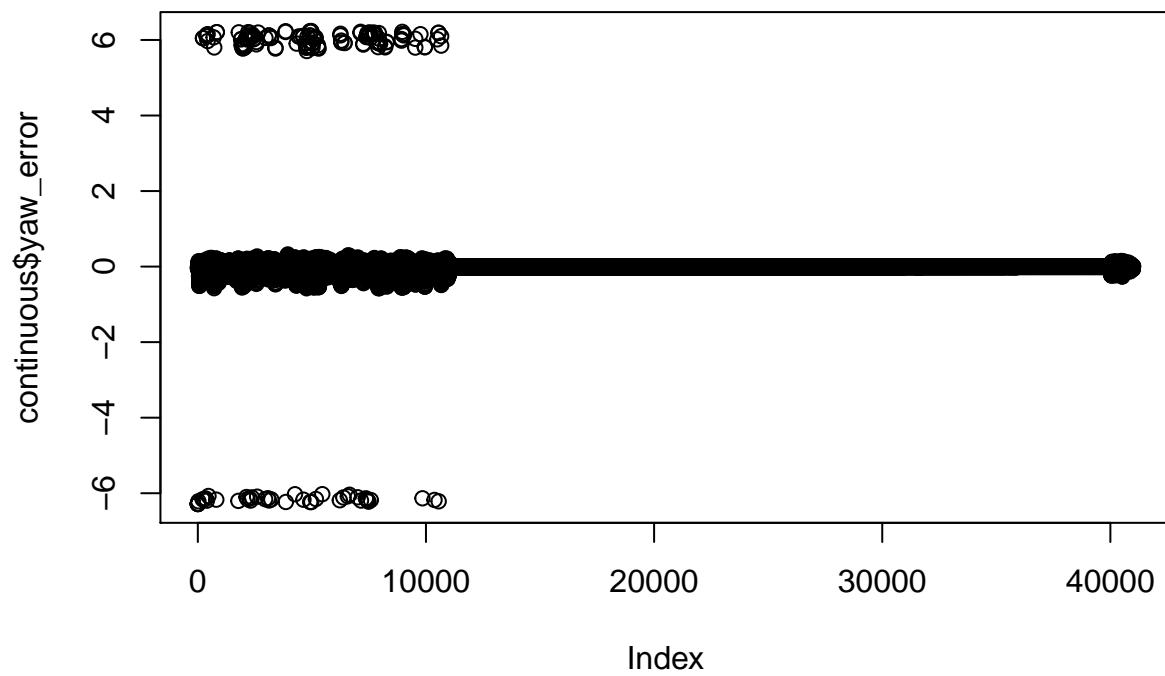
**Continuous y\_error over time**



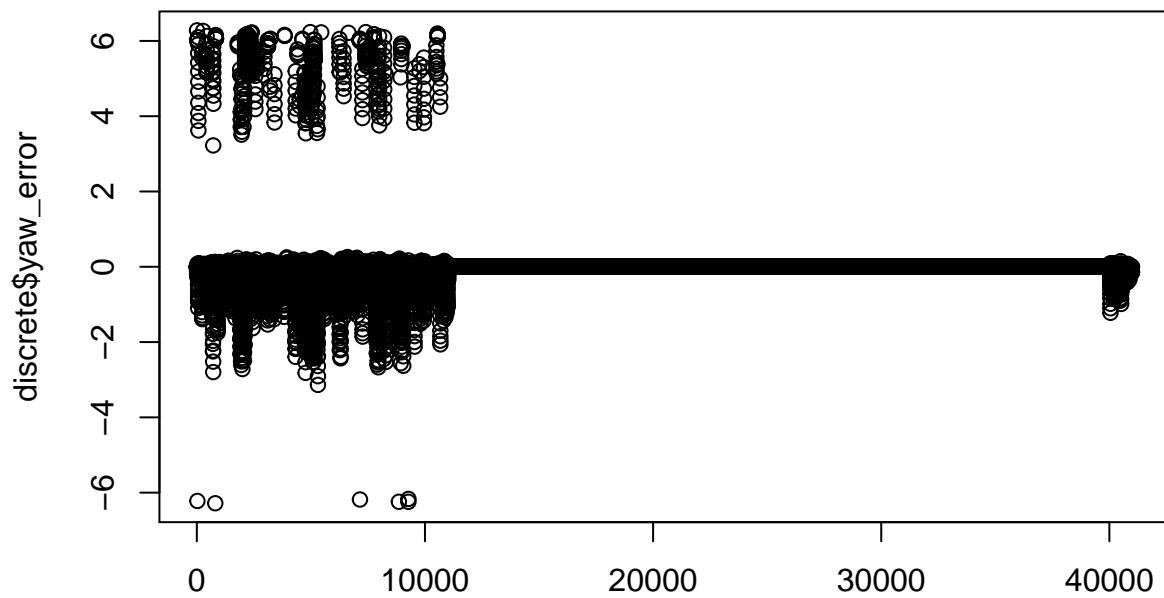
**Discrete y\_error over time**



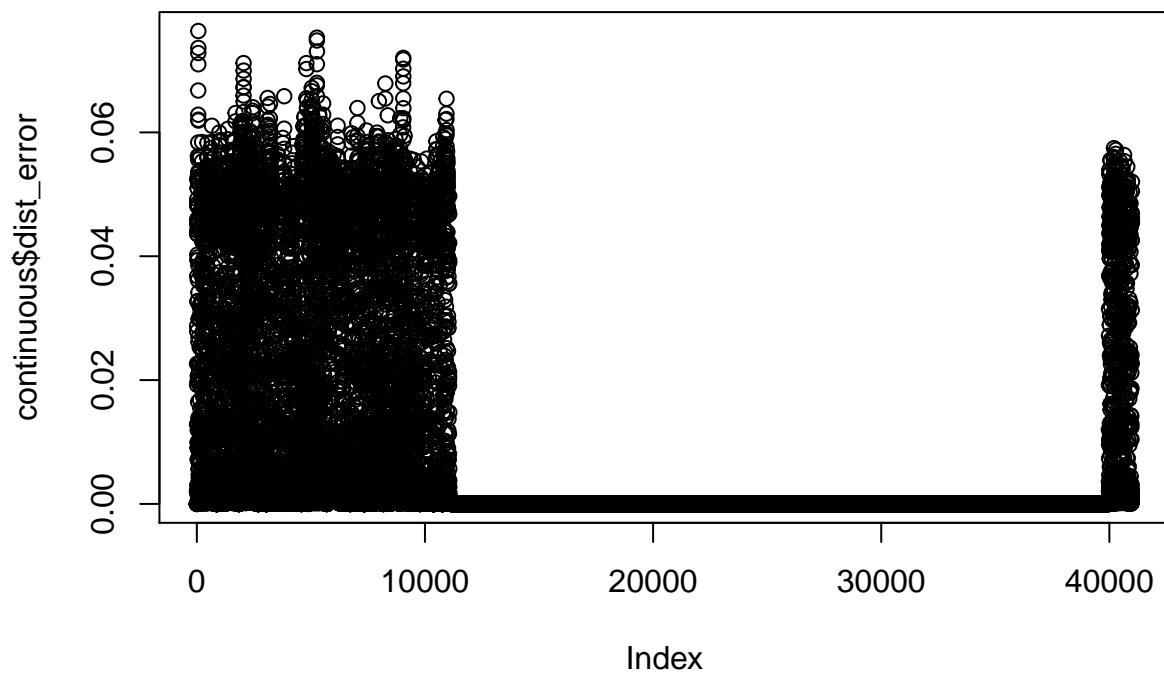
**Continuous yaw error over time**



**Discrete yaw error over time**



**Continuous total distance error over time**



### Discrete total distance error over time

