

five_mobile_noisy_false Turtlebot 1 Report

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```
## Loading required package: data.table
```

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

The runtime of this experiment was 1 hours, 8 minutes, and 20.5 seconds.

The total number of external pose measurements received by the robot during this time was 17603 which means poses were received at an average of 4.2928911 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. 
## -6.359e-02 -2.556e-03  3.190e-06 -7.459e-05  2.838e-03  5.916e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -0.0641500 -0.0037560 -0.0000036 -0.0003239  0.0018170  0.0620200
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.28300 -0.08765  0.01832 -0.02490  0.04916  6.27300
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 6.000e-08 2.528e-04  6.023e-03 1.433e-02  3.026e-02 6.544e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -22.19000 -0.04921  0.00000 -0.47190  0.09087  92.35000
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -85.88000 -0.50050 -0.00001 -1.80800  0.03422  19.03000
```

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

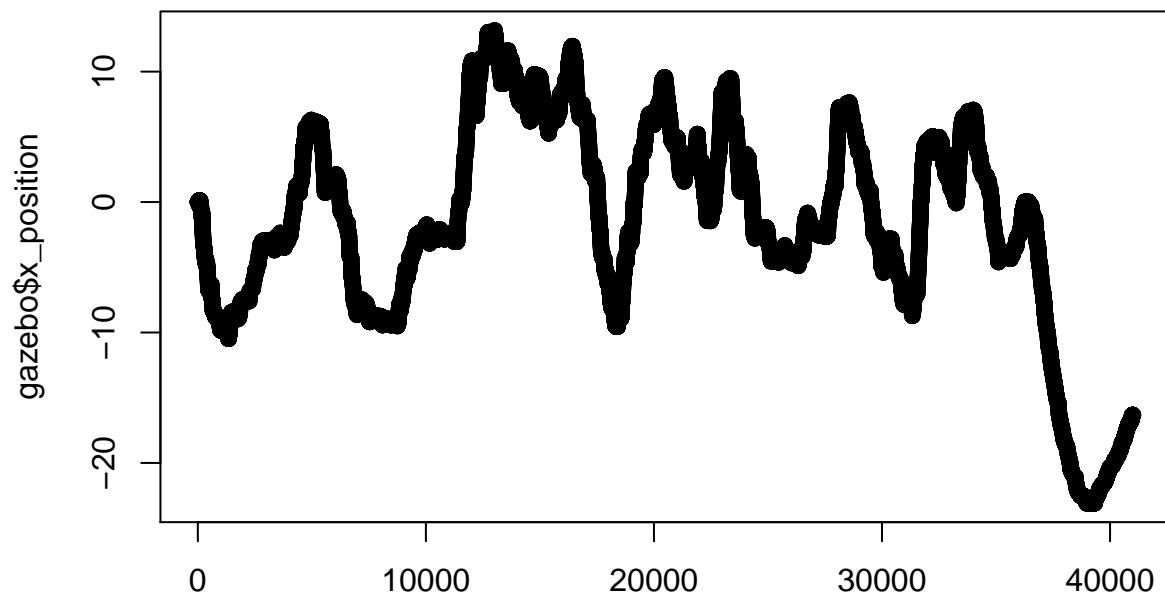
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.270000 -0.221000 -0.001006 -0.021720  0.018900  6.274000
```

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

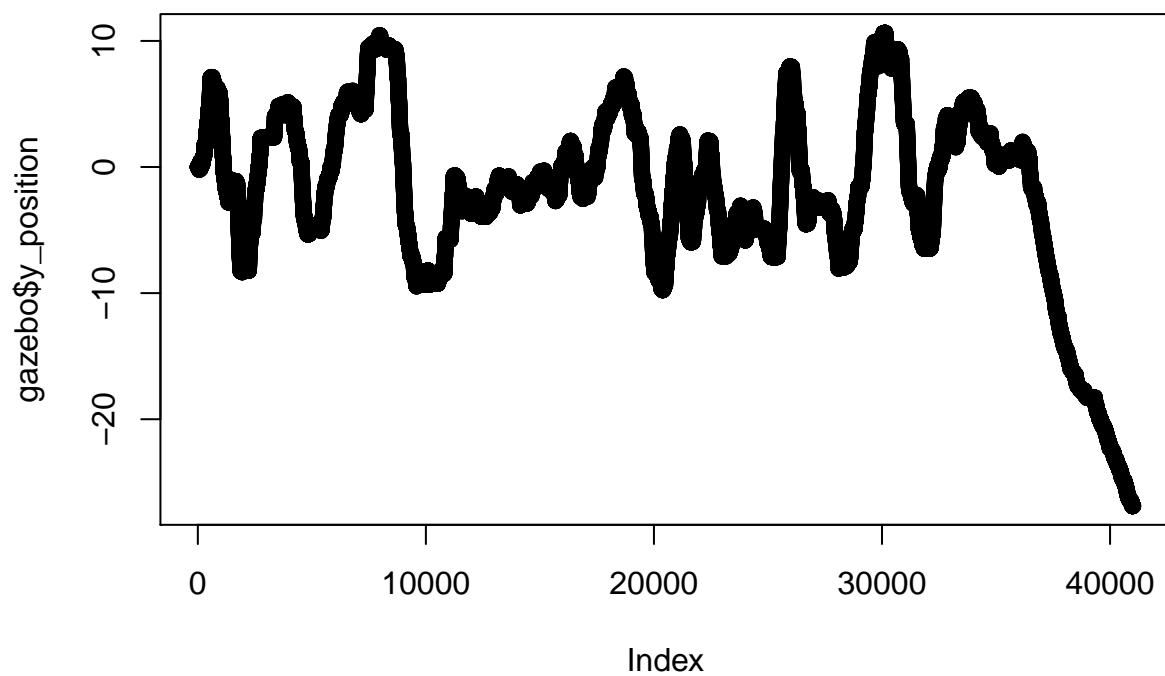
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 0.00000  0.00934  0.14930  5.32100  8.40300 126.10000
```

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

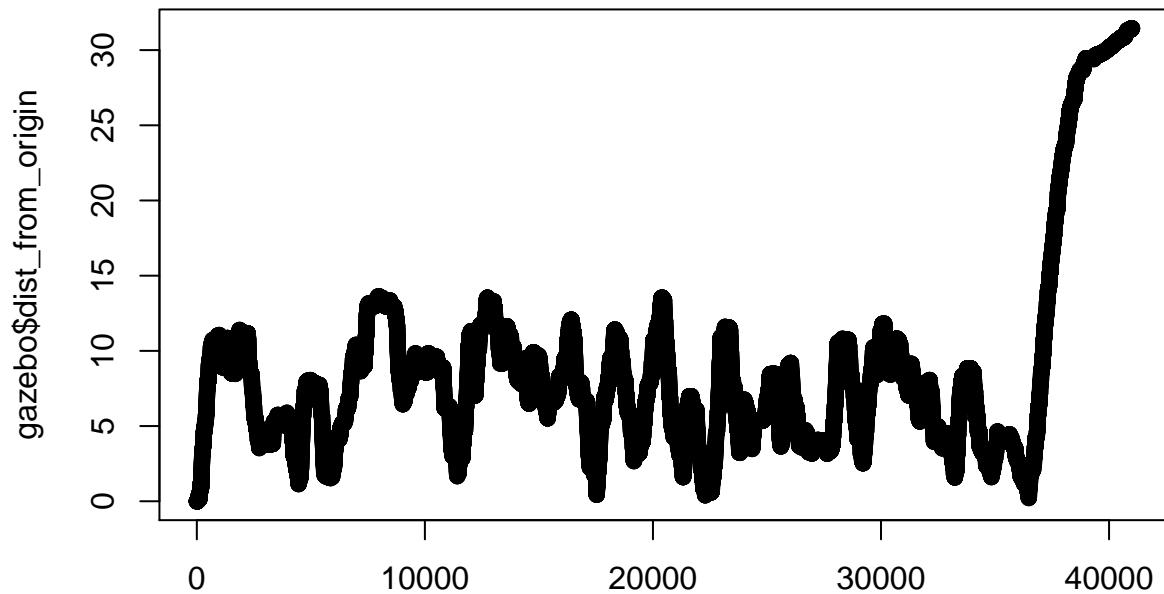
X coordinate of robot over time



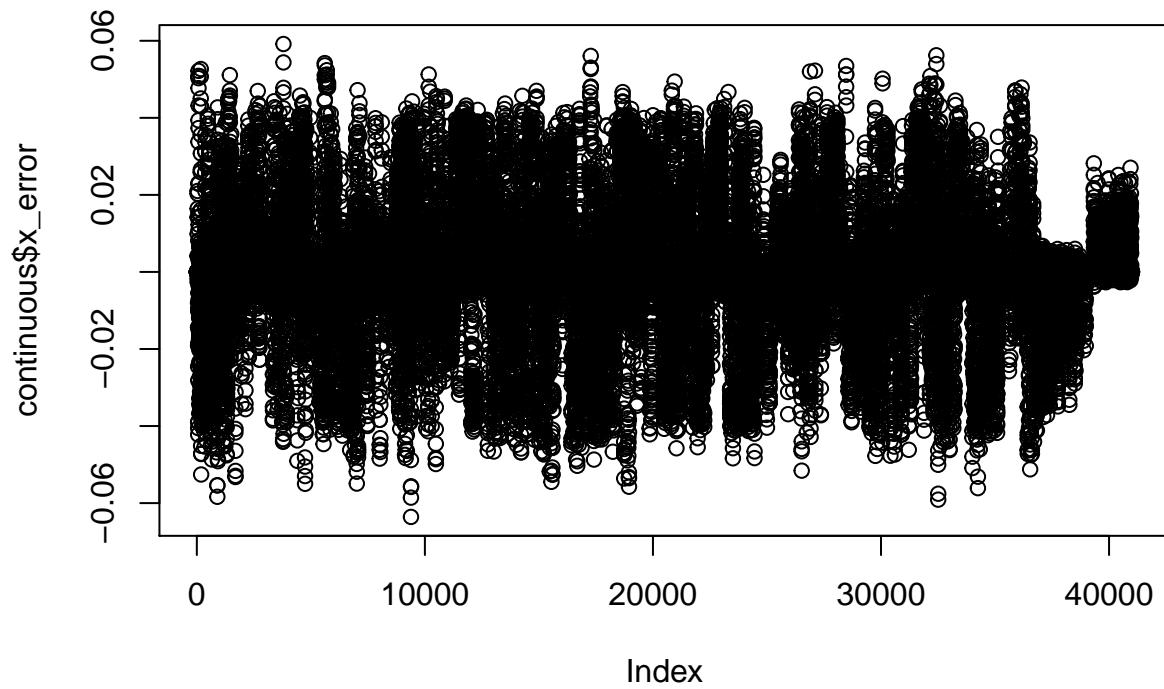
Y coordinate of robot over time



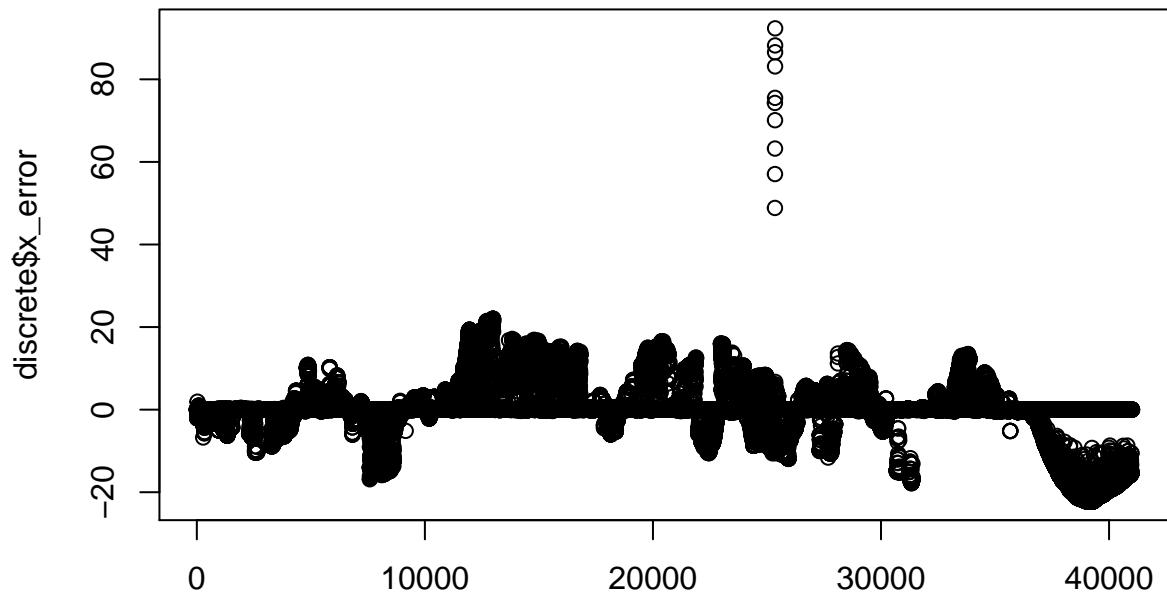
Distance from origin vs. time



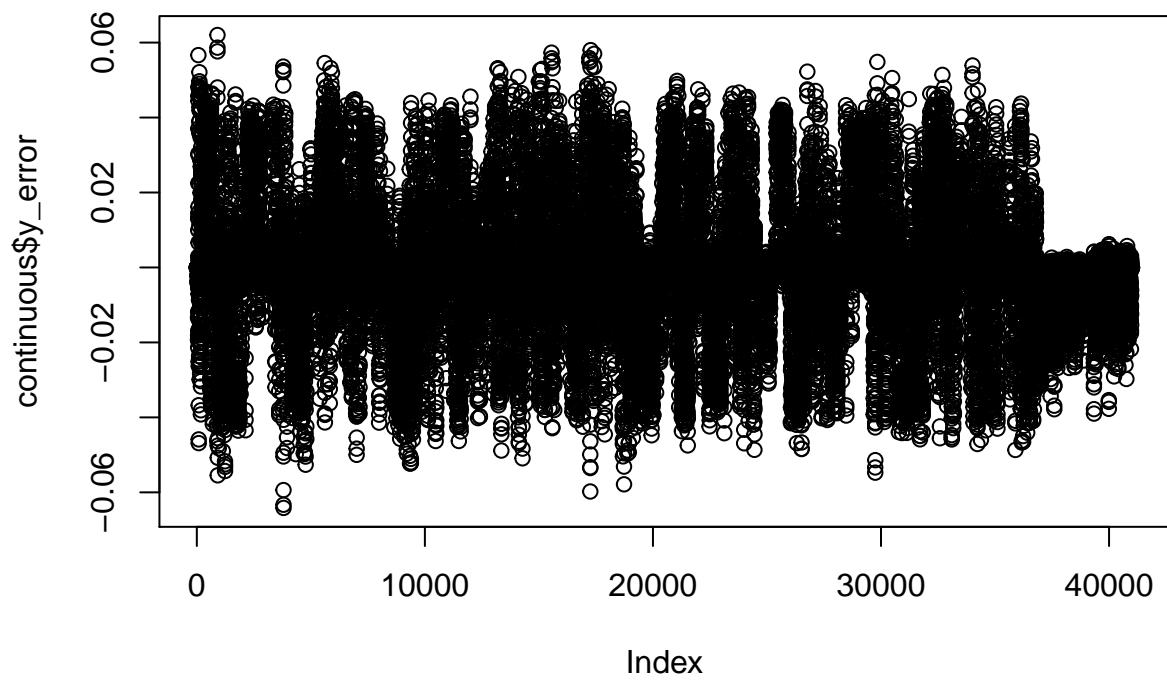
Continuous x_error over time



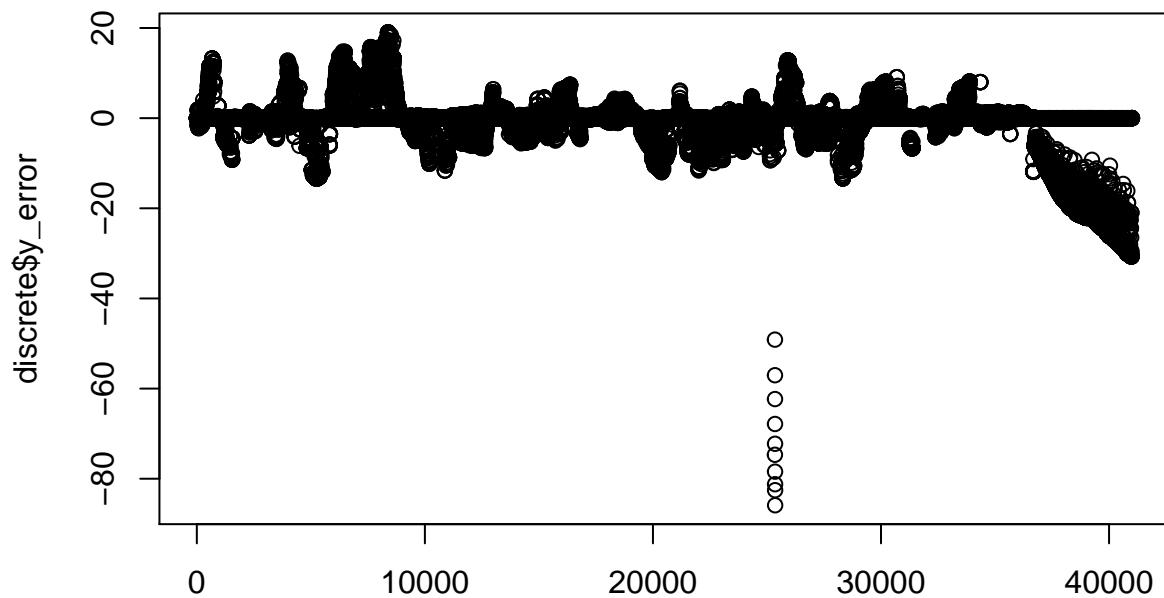
Discrete x_error over time



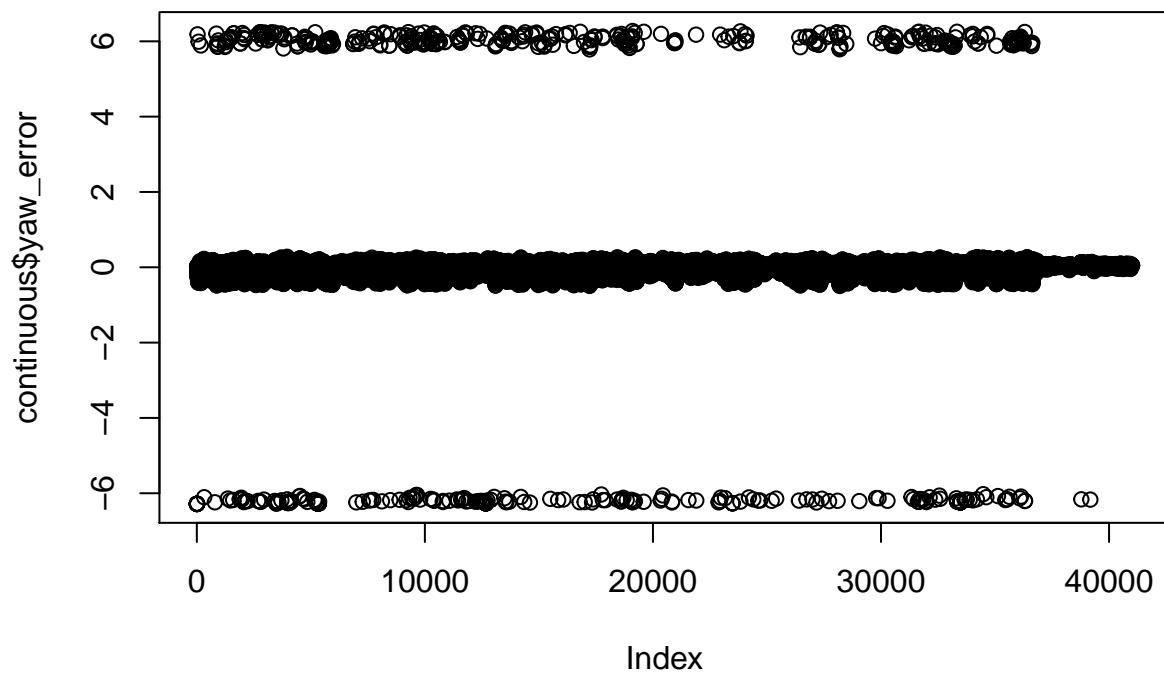
Continuous y_error over time



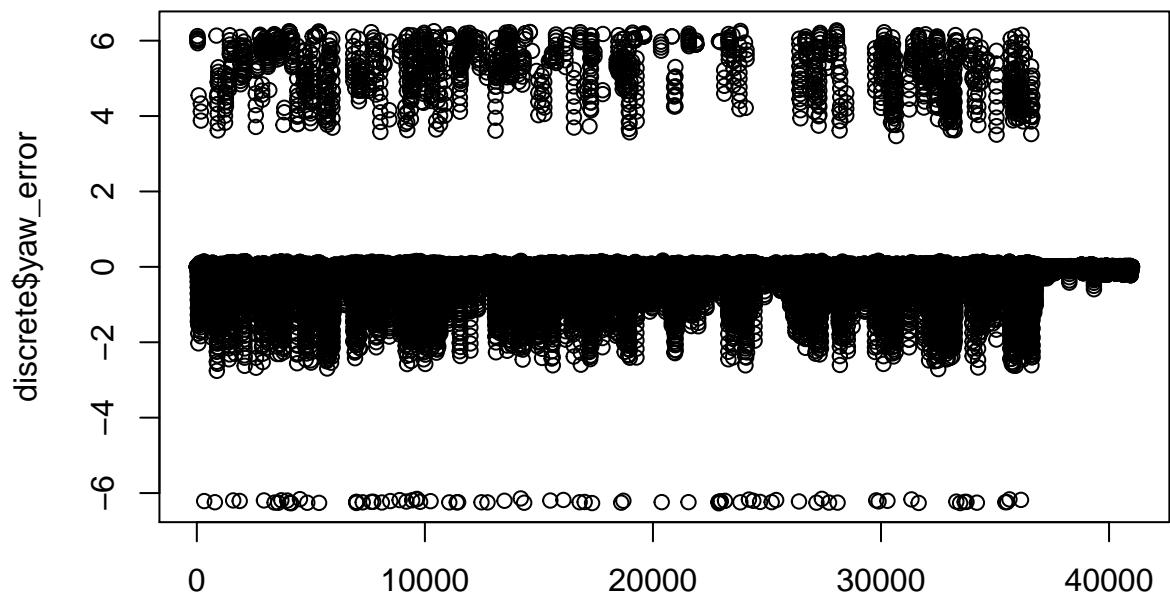
Discrete y_error over time



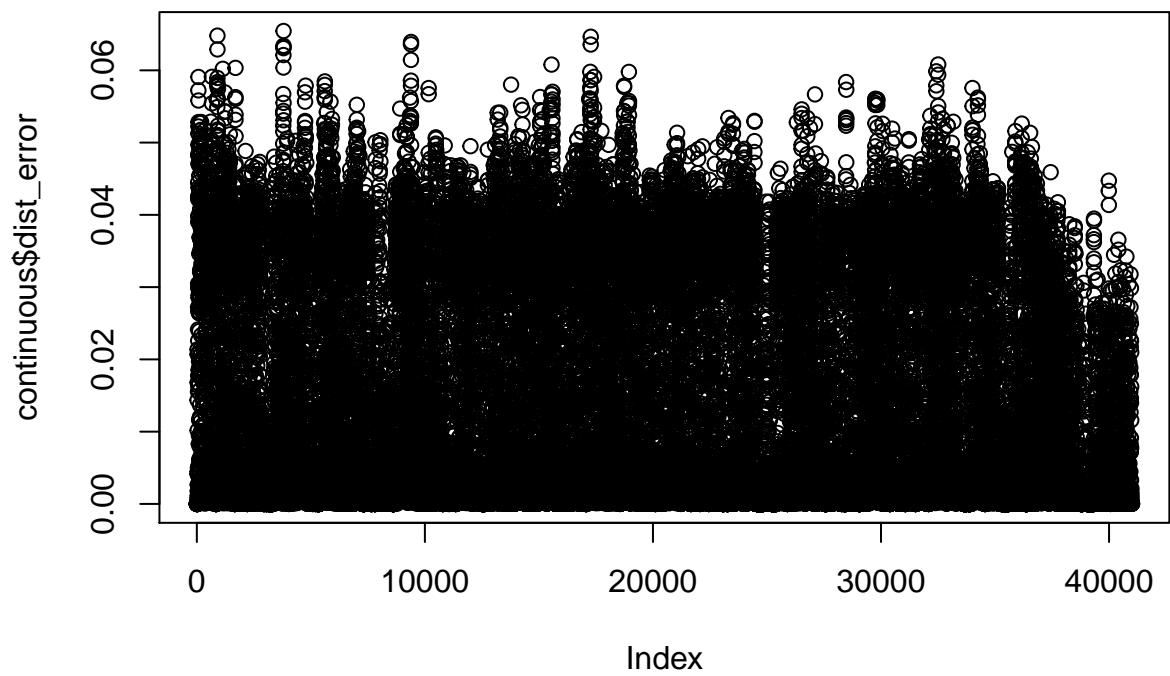
Continuous yaw error over time



Discrete yaw error over time



Continuous total distance error over time



Discrete total distance error over time

