

five_mobile_noisy_true Turtlebot 2 Report

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July 13, 2016

This is a summary of the data from the five_mobile_noisy_true experiment, Turtlebot #2.

The runtime of this experiment was 1 hours, 8 minutes, and 19.6 seconds.

The total number of external pose measurements received by the robot during this time was 16384 which means poses were received at an average of 3.9964875 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. 
## -5.701e-02 -5.467e-03 -2.310e-06 -1.801e-05  5.595e-03  6.111e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.361e-02 -5.678e-03 -4.902e-05 -1.523e-04  5.581e-03  6.703e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.283000 -0.112800 -0.010900  0.003094  0.019540  6.279000
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 2.163e-05 5.136e-03 9.573e-03 1.462e-02 2.371e-02 6.873e-02
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -16.080000 -0.010390  0.000671  0.682300  0.397200 17.010000
```

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

```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -24.920000 -0.027350  0.000016 -0.269600  0.084810 20.760000
```

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

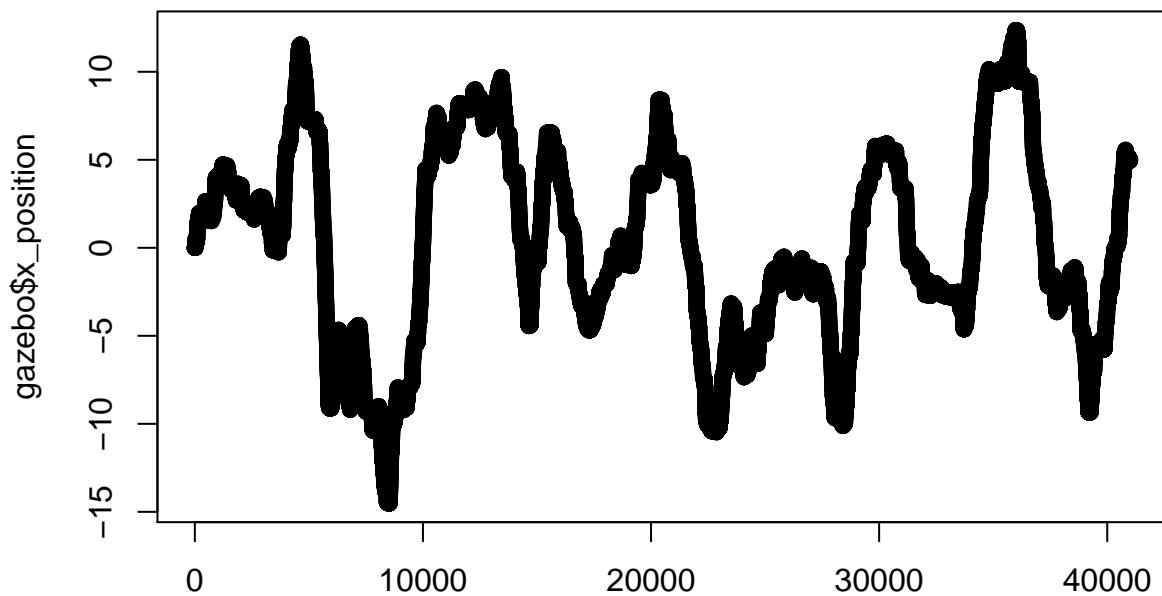
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## -6.271000 -0.253400 -0.002364  0.004491  0.025780  6.276000
```

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

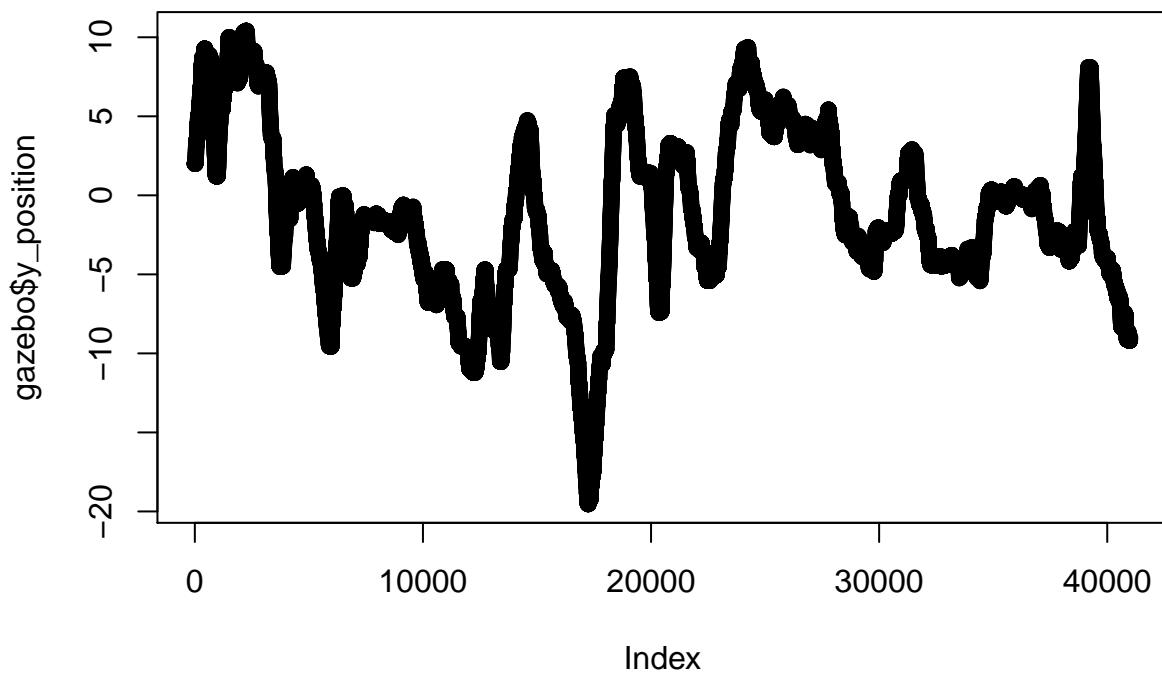
```
##      Min.   1st Qu.   Median   Mean   3rd Qu.   Max. 
## 0.000000  0.00923  0.07812  3.16400  5.89100 25.00000
```

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

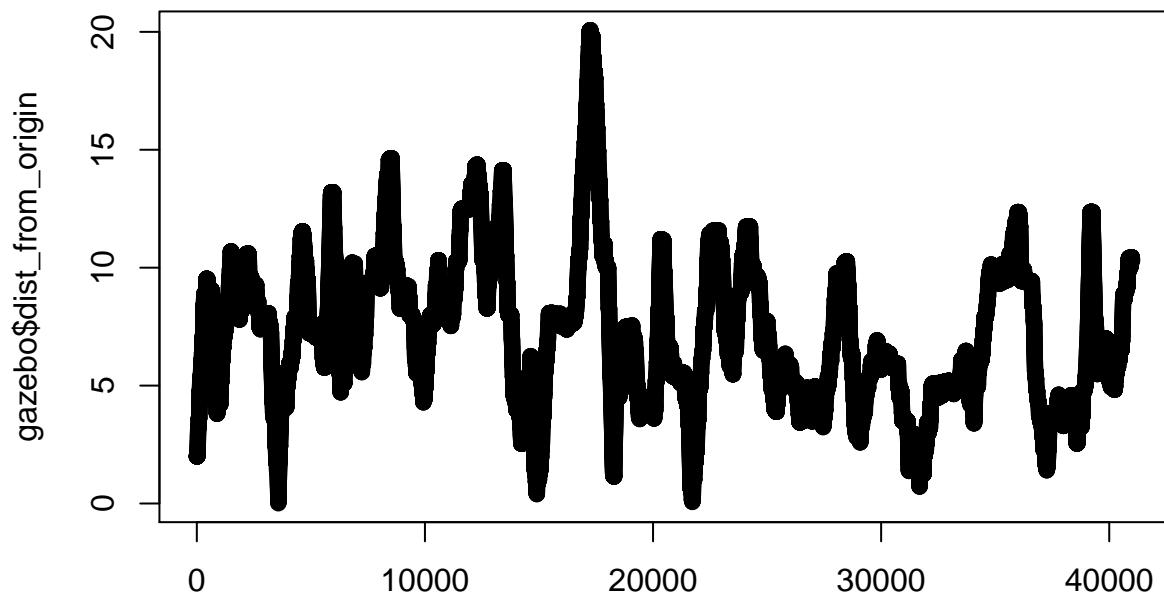
X coordinate of robot over time



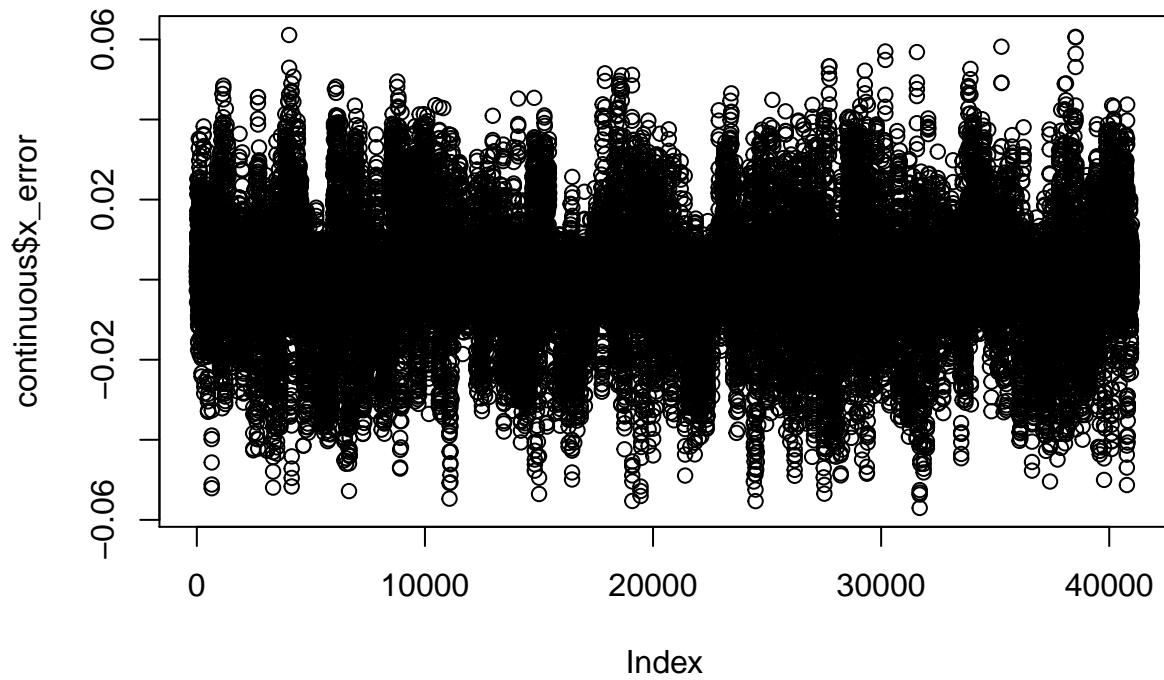
Y coordinate of robot over time



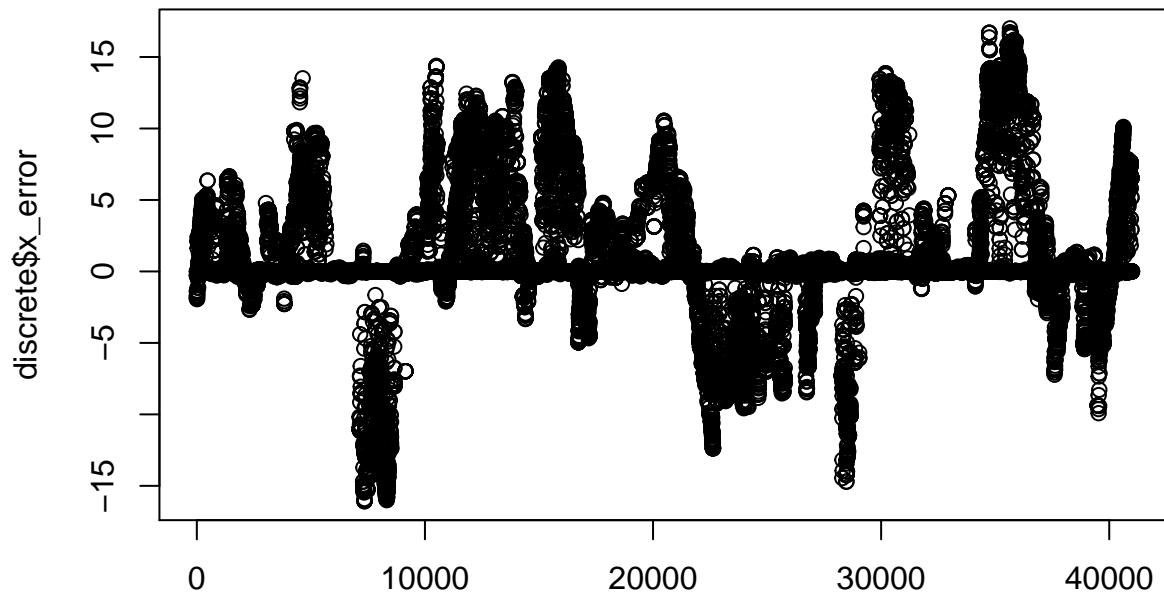
Distance from origin vs. time



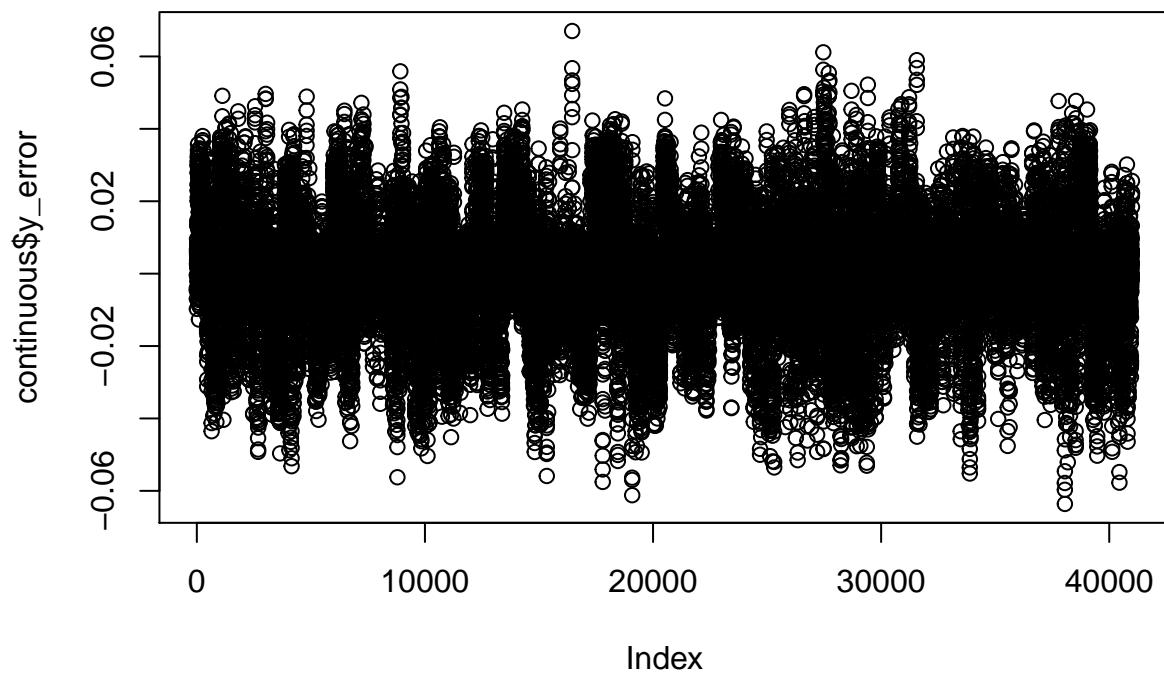
Continuous x_error over time



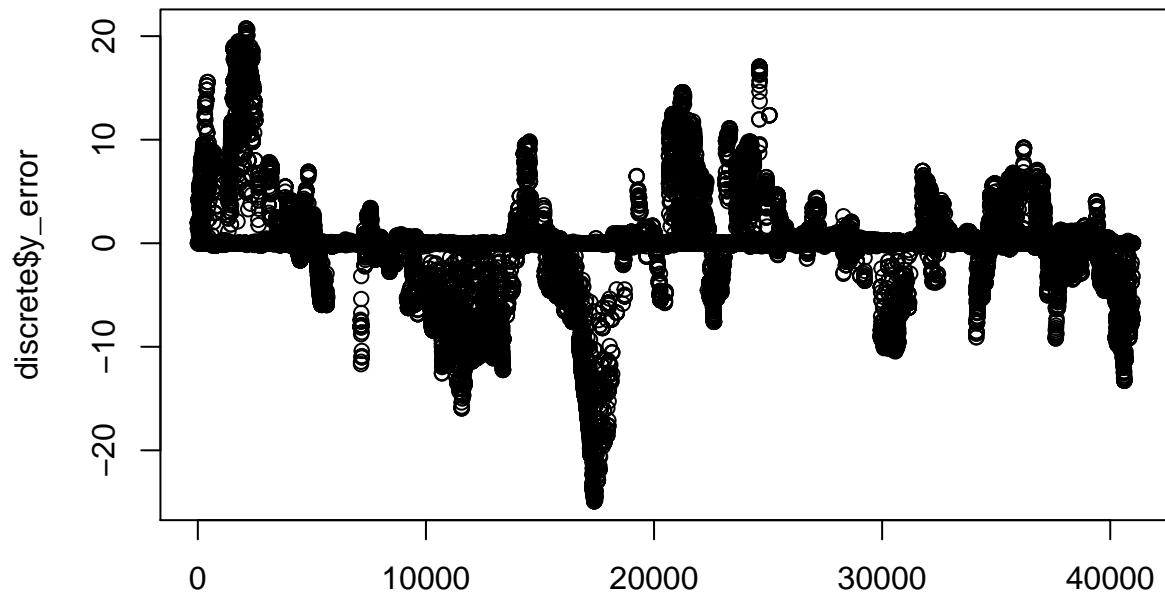
Discrete x_error over time



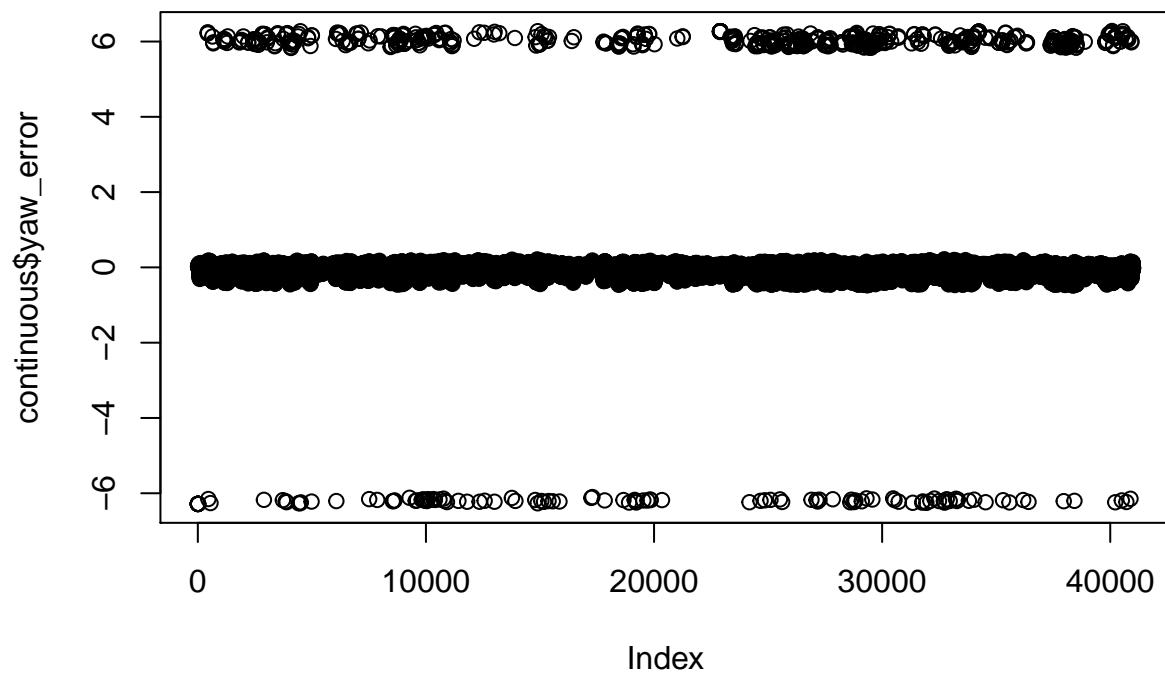
Continuous y_error over time



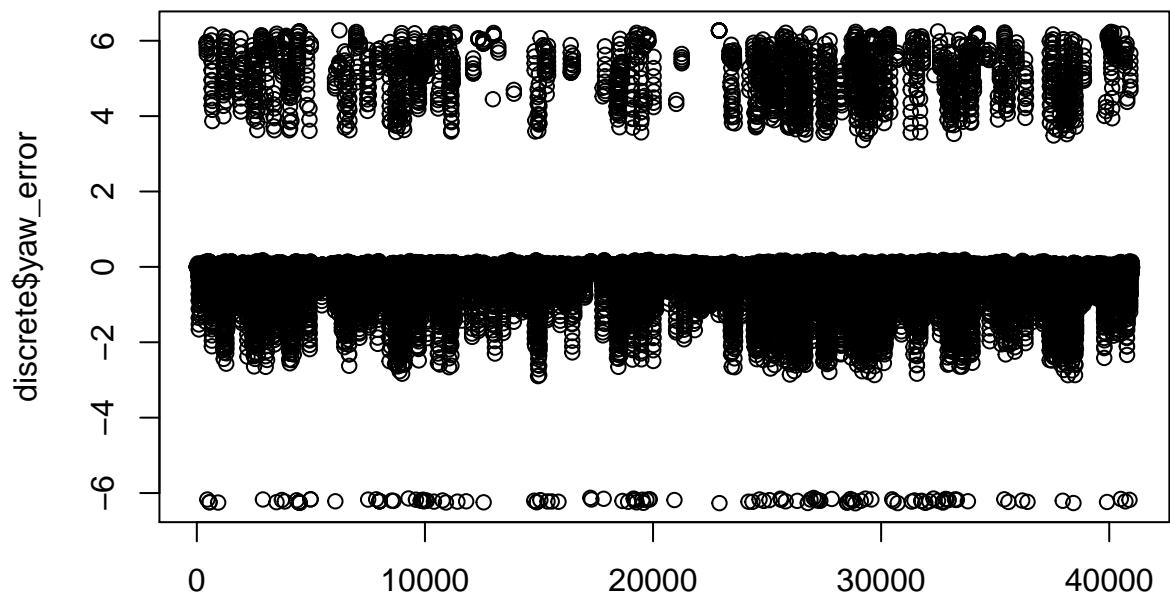
Discrete y_error over time



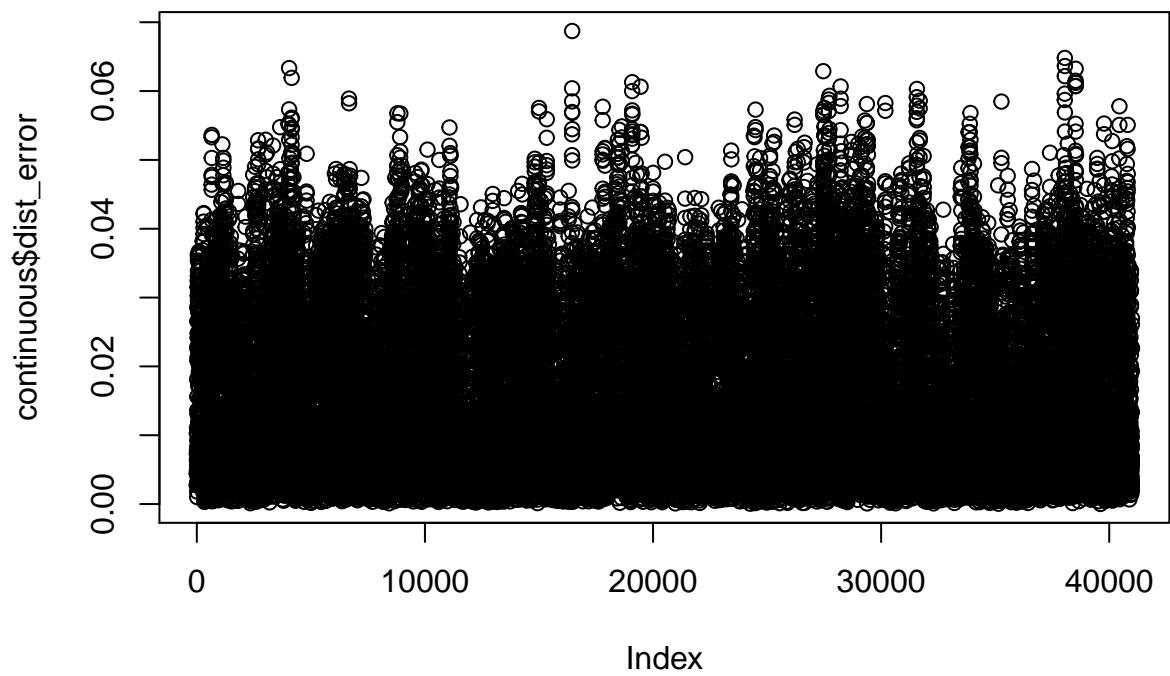
Continuous yaw error over time



Discrete yaw error over time



Continuous total distance error over time



Discrete total distance error over time

