two_mobile_restricted Turtlebot 1 Report

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

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

The runtime of this experiment was 0 hours, 2 minutes, and 0.1 seconds.

The total number of external pose measurements recieved by the robot during this time was 26 which means poses were received at an average of 0.2164863 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.
## -0.001176  0.020060  0.032750  0.028970  0.036370  0.070750
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -0.153500 -0.143800 -0.097540 -0.079380  0.003249  0.034000
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -6.274000 -0.003353  0.001266  0.006349  0.011220  6.231000
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 5.500e-07 3.420e-02 1.029e-01 9.840e-02 1.483e-01 1.583e-01
```

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

```
##     Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
## -0.50000  0.09073  0.10060  0.09599  0.10930  0.21520
```

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

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.5024  0.5421  0.5410  0.6451  0.6874
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -6.270000 -0.002031  0.015160 -0.005054  0.033700  6.216000
```

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

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.2012  0.5143  0.5514  0.5597  0.6525  0.6966
```
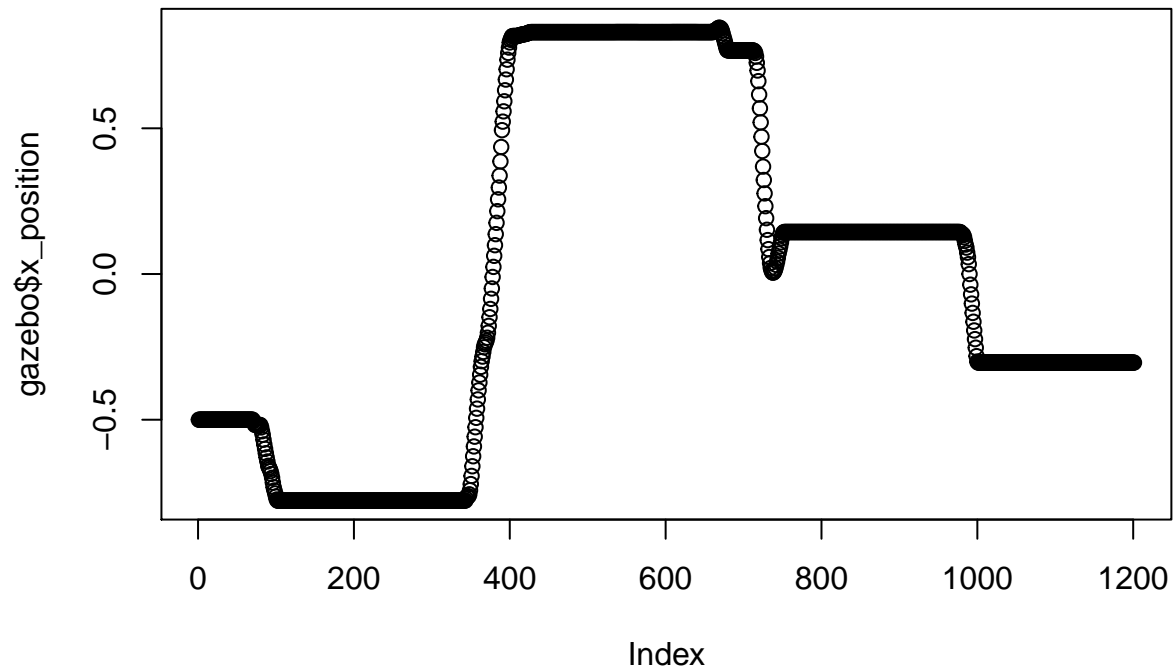
```
sum(continuous$dist_error <= 0.25) / length(continuous$dist_error)
```
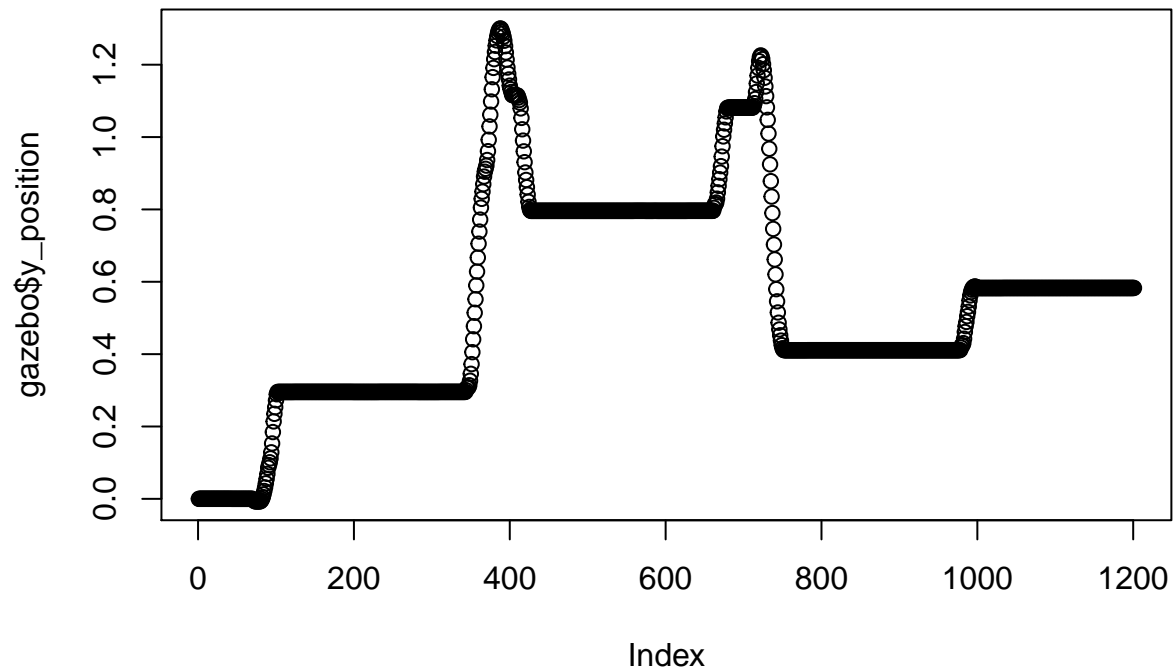
```
## [1] 1
```

```
sum(discrete$dist_error <= 0.25) / length(discrete$dist_error)
```
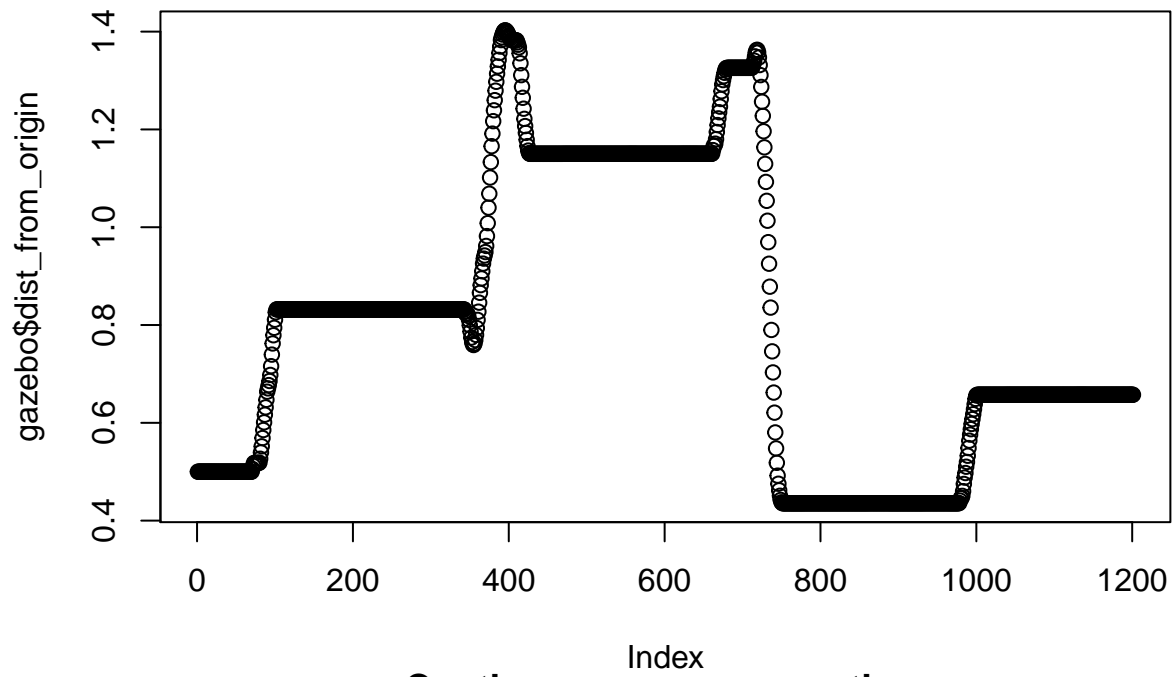
```
## [1] 0.02164863
```

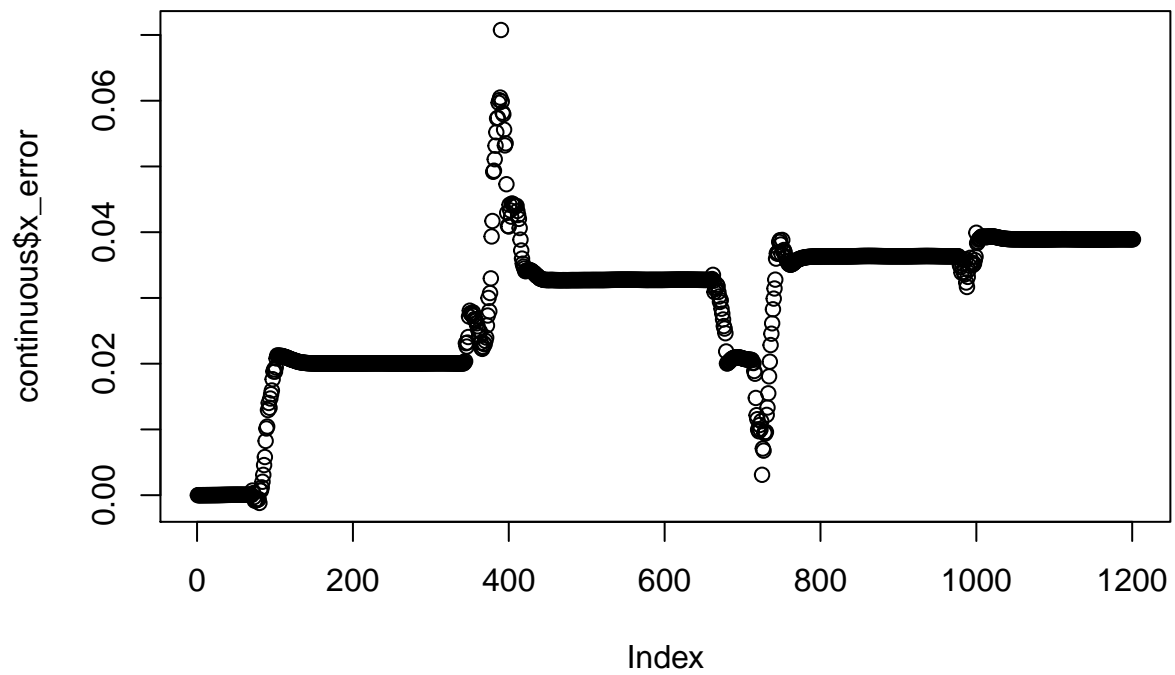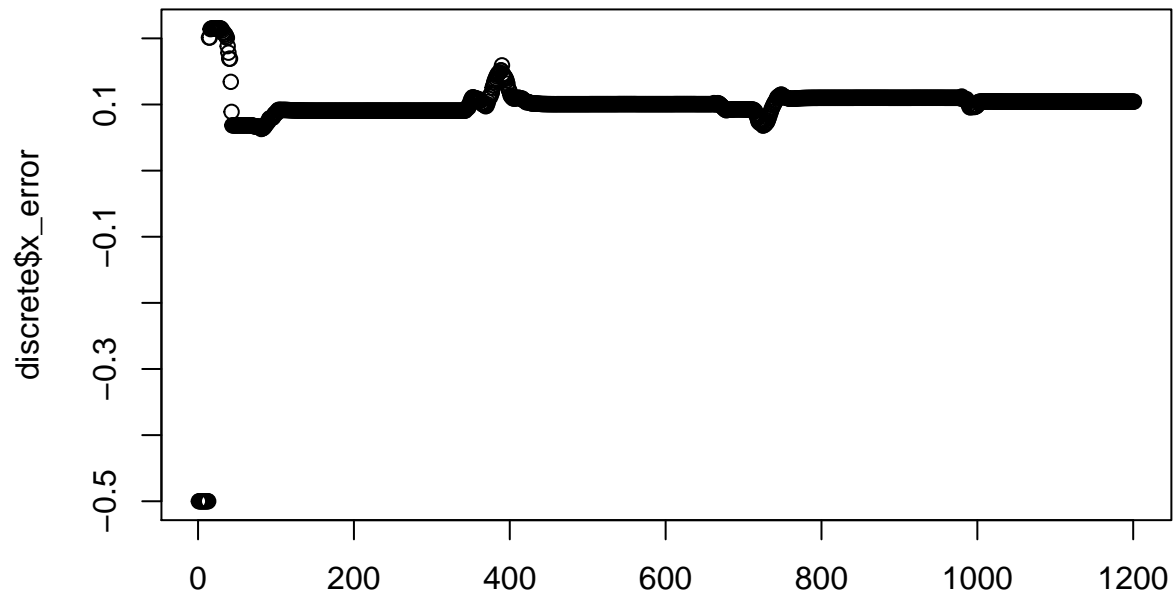**X coordinate of robot over time**

Y coordinate of robot over time
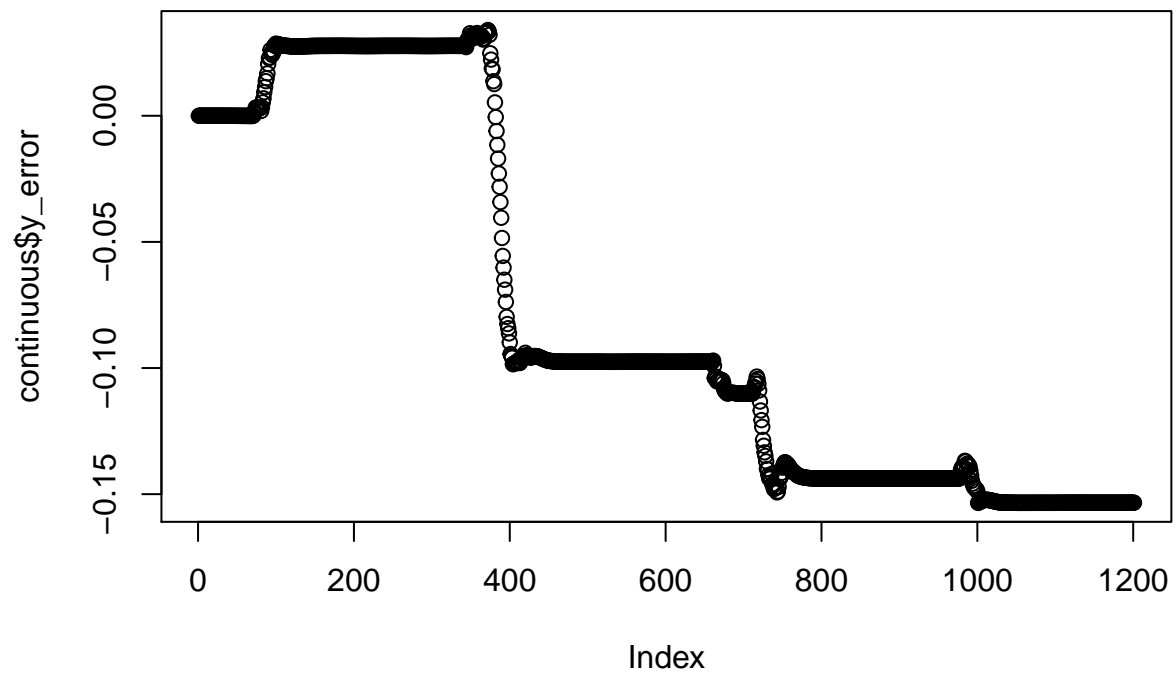
Distance from origin vs. time
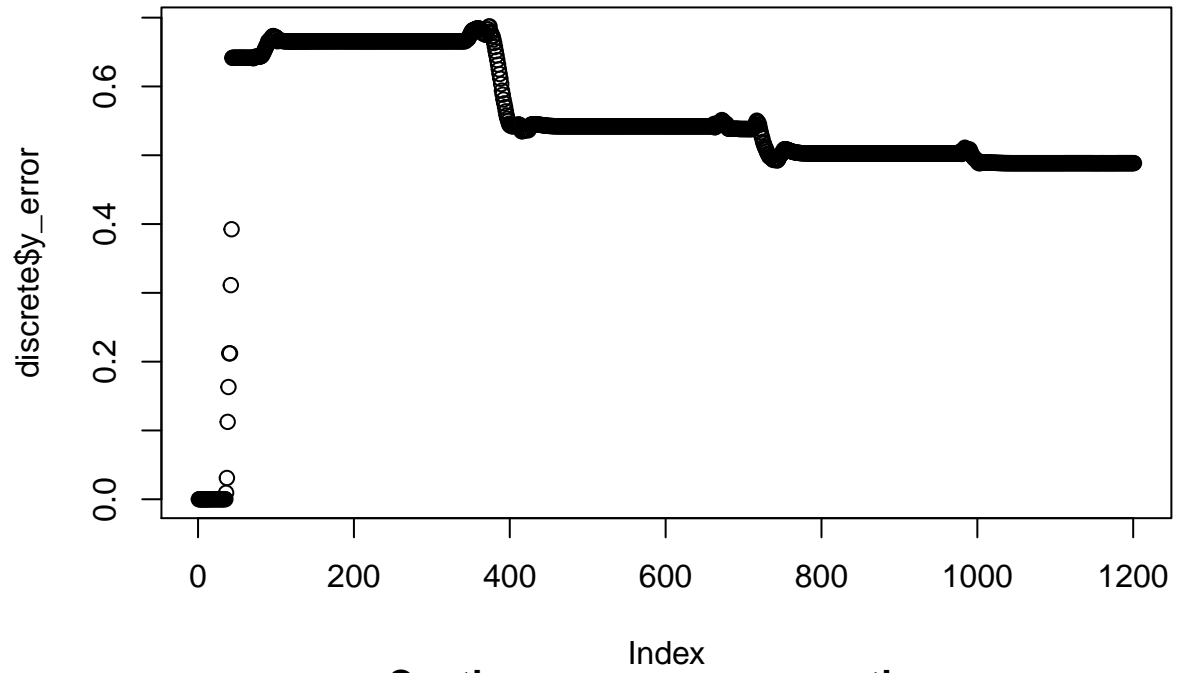

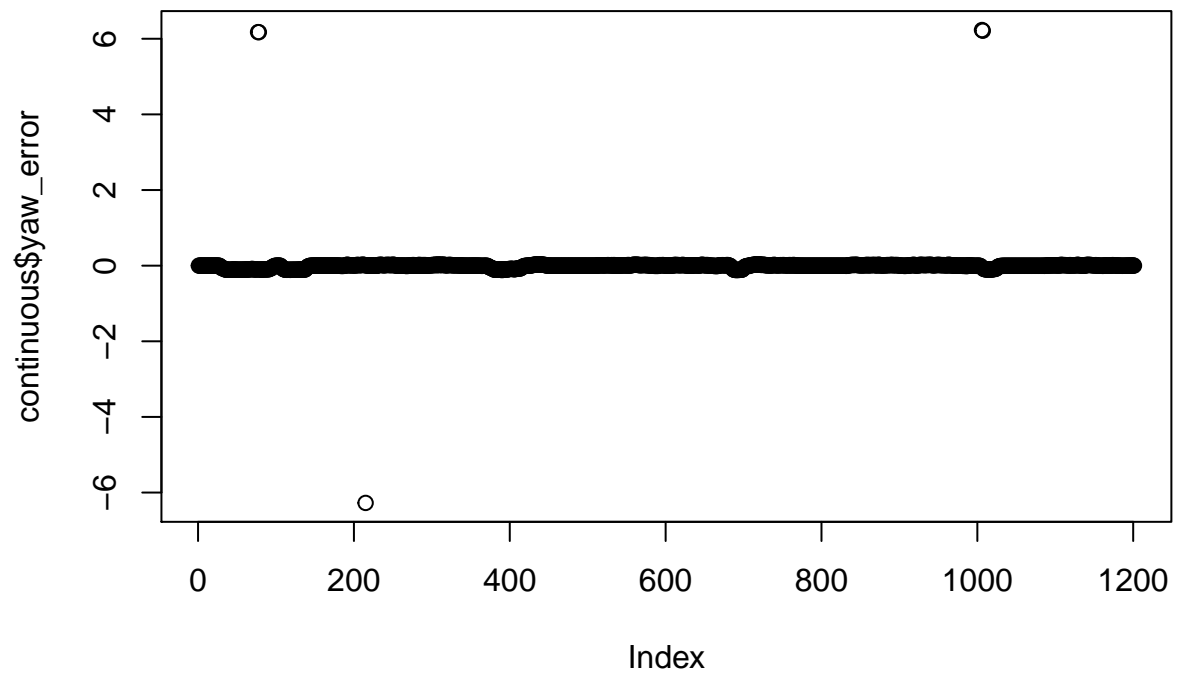# Continuous x_error over time

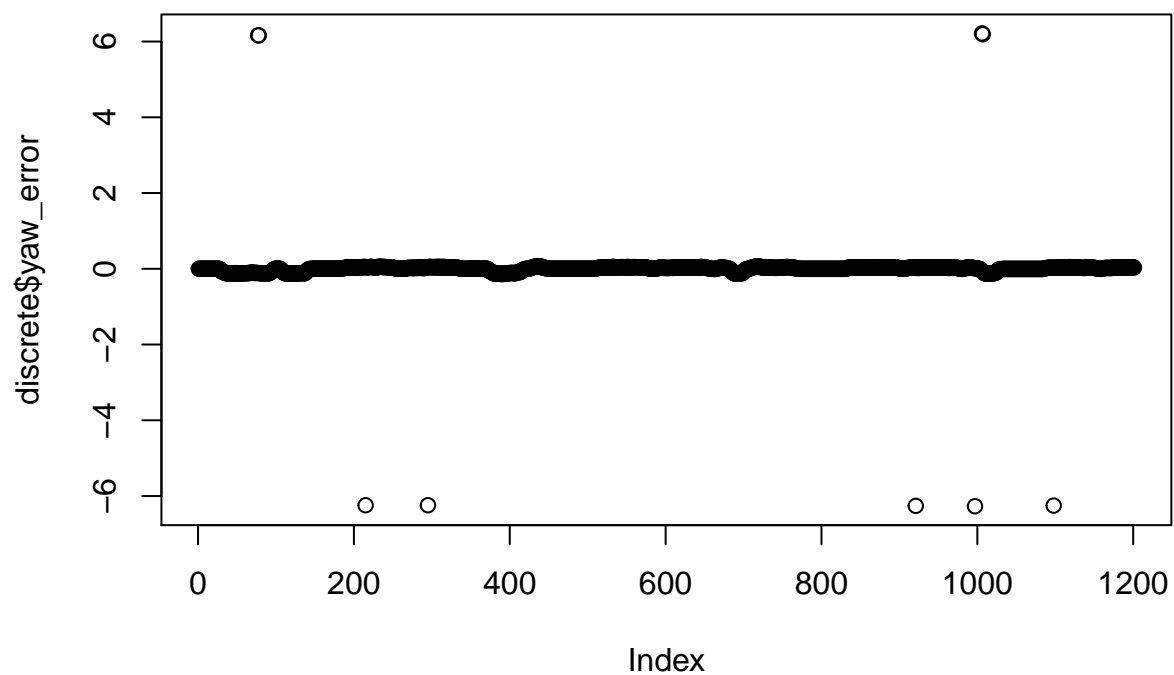# Discrete x_error over time

Continuous y_error over time

Discrete y_error over time

Continuous yaw error over time

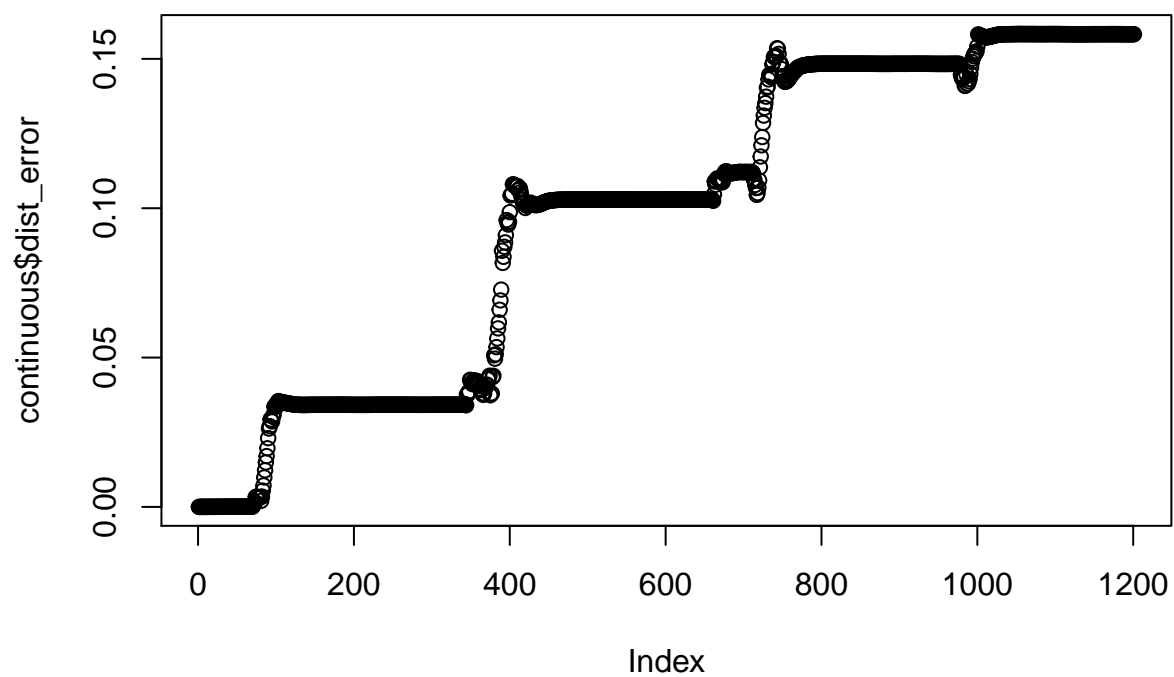## Discrete yaw error over time

Continuous total distance error over time

Discrete total distance error over time