five_mobile Turtlebot 3 Report

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This is a summary of the data from the five_mobile experiment, Turtlebot #3.

The runtime of this experiment was 0 hours, 0 minutes, and 57.9 seconds.

The total number of external pose measurements recieved by the robot during this time was 477 which means poses were received at an average of 8.238342 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.

```r
summary(continuous$x_error)
```

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -5.041e-02 -1.325e-05  7.616e-04  7.114e-03  1.440e-02  4.912e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -0.0434400 -0.0004504  0.0002136  0.0070660  0.0133000  0.0545800
```

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

```
##       Min.   1st Qu.     Median       Mean   3rd Qu.       Max.
## -6.283000 -0.031290   0.000515  -0.014630  0.070010  6.212000
```

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

```
##       Min.   1st Qu.     Median       Mean   3rd Qu.       Max.
## 9.000e-08 7.027e-04  7.368e-03  1.609e-02  3.173e-02 5.746e-02
```

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

```
##       Min.   1st Qu.     Median       Mean   3rd Qu.       Max.
## -2.470000 -0.015630   0.008614   0.713000  0.806500  7.300000
```

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

```
##       Min.   1st Qu.     Median       Mean   3rd Qu.       Max.
## -3.779000 -0.697500  -0.005473  -0.438800  0.012720  1.610000
```

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

```
##       Min.   1st Qu.     Median       Mean   3rd Qu.       Max.
## -6.230000 -0.075380   0.001304  -0.044170  0.052580  6.224000
```
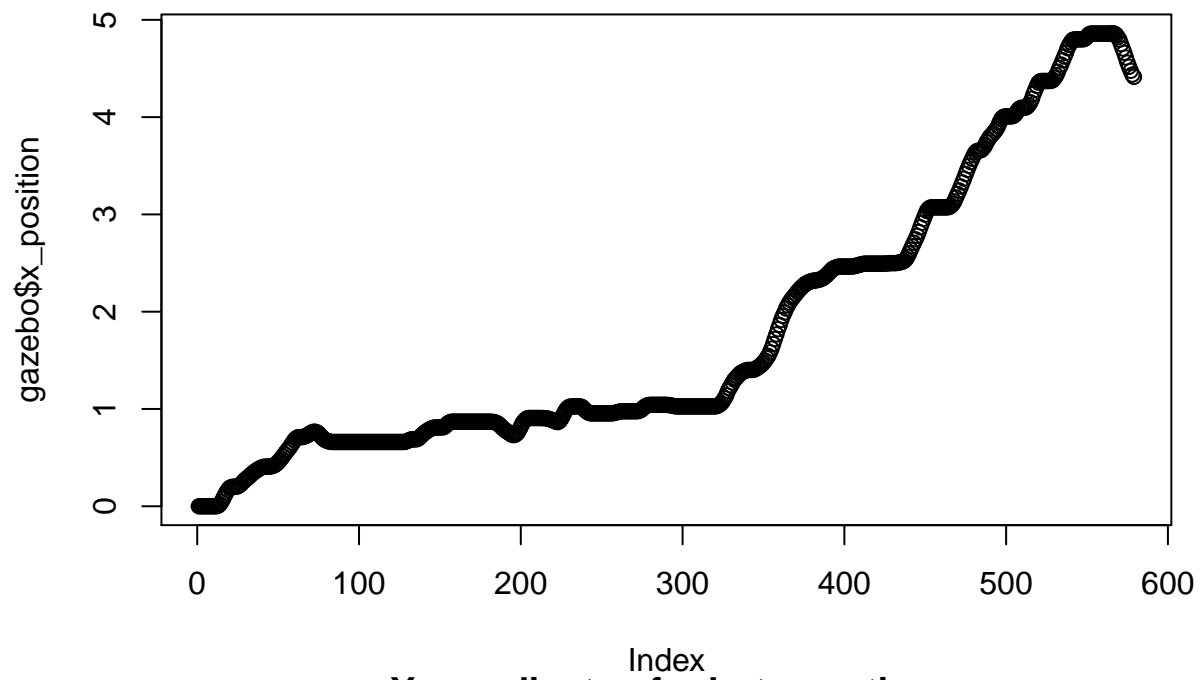
```r
summary(discrete$dist_error)
```

```
##     Min. 1st Qu.  Median    Mean 3rd Qu.     Max.
## 0.00000 0.01901 0.15730 1.32000 2.33700 7.30000
```
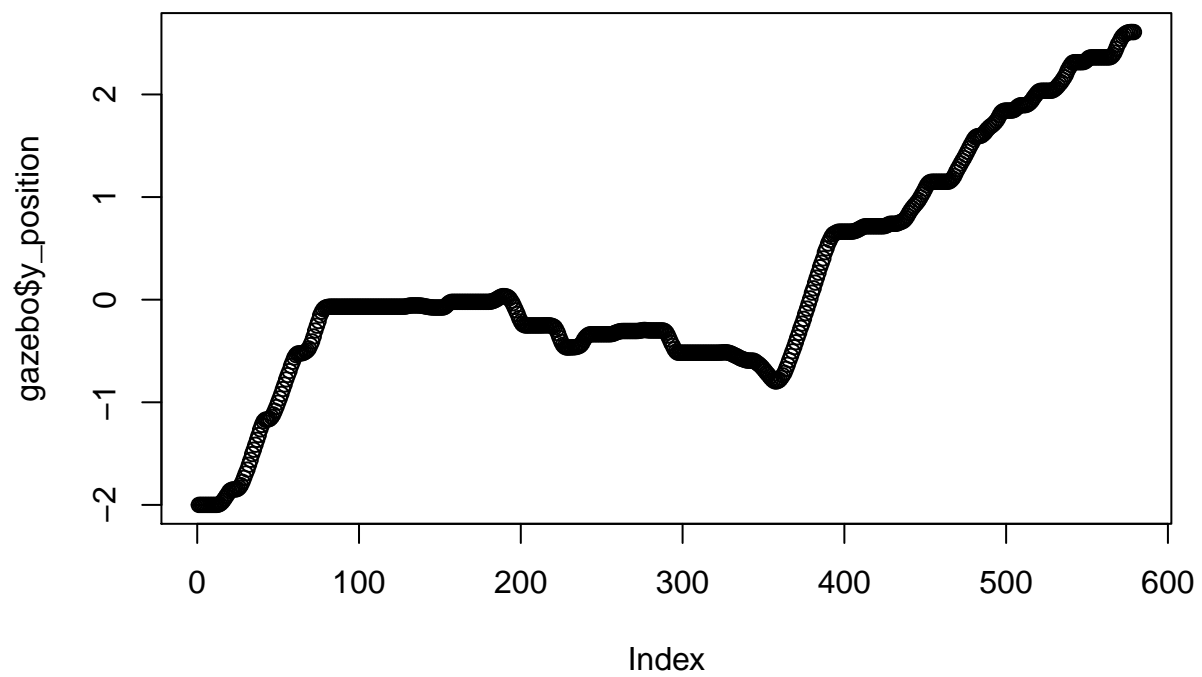
```r
#sum(continuous$dist_error <= 0.25) / length(continuous$dist_error)
#sum(discrete$dist_error <= 0.25) / length(discrete$dist_error)
```
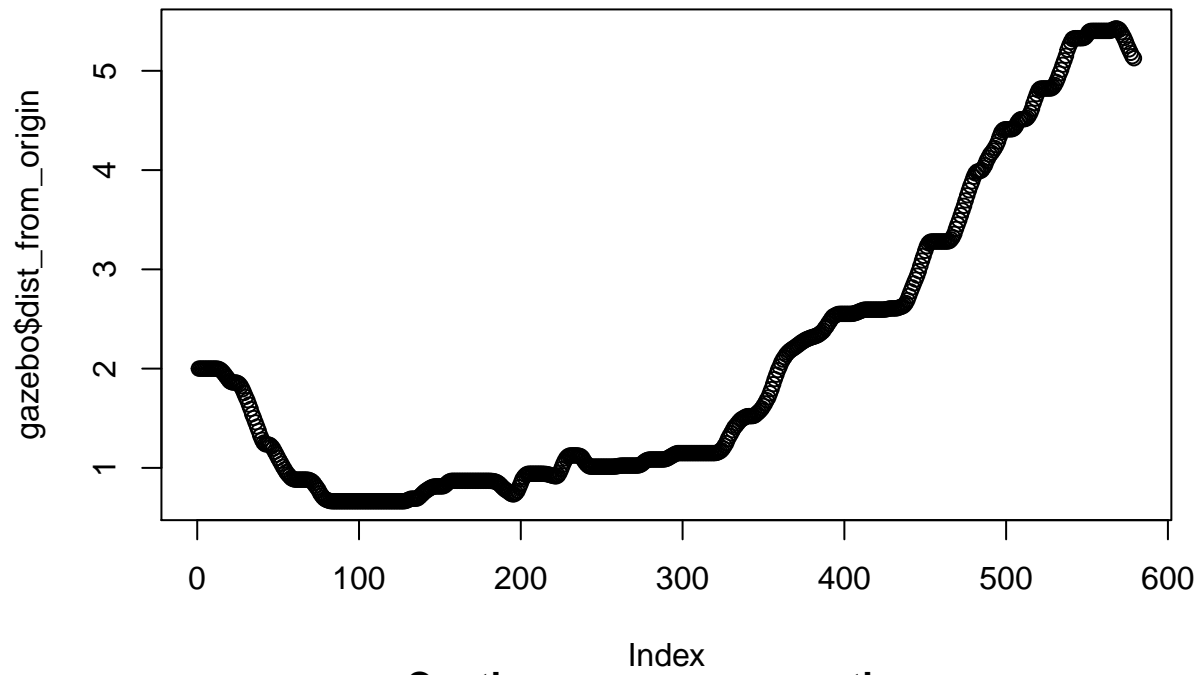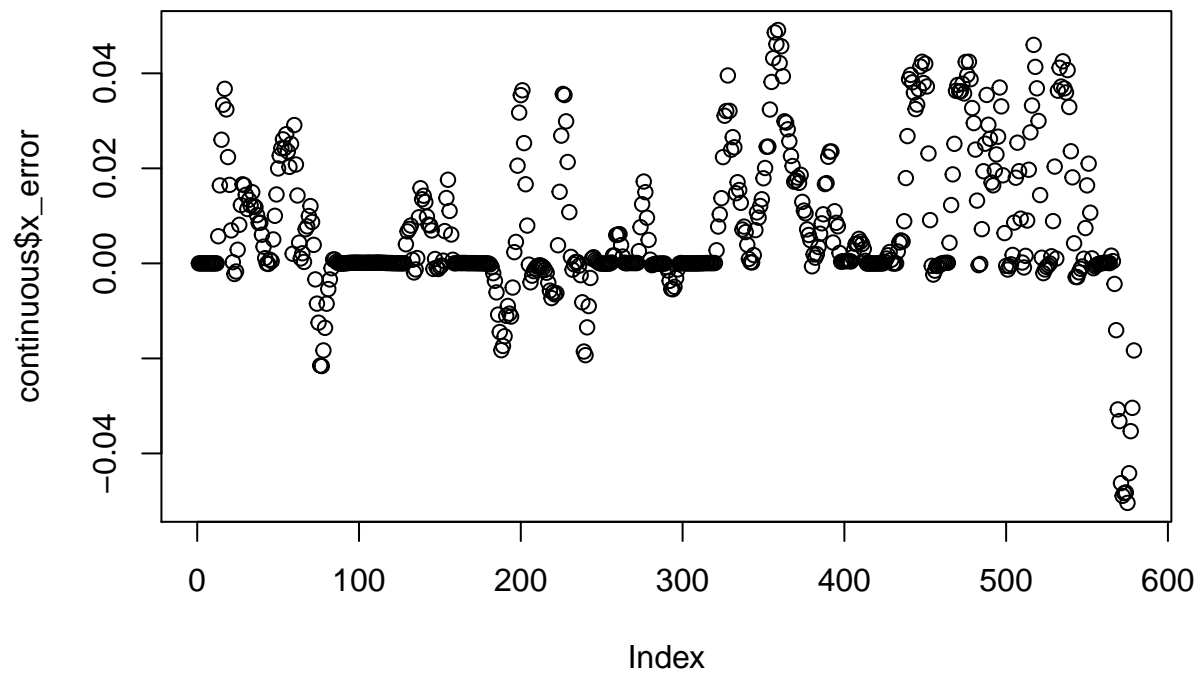
X coordinate of robot over time
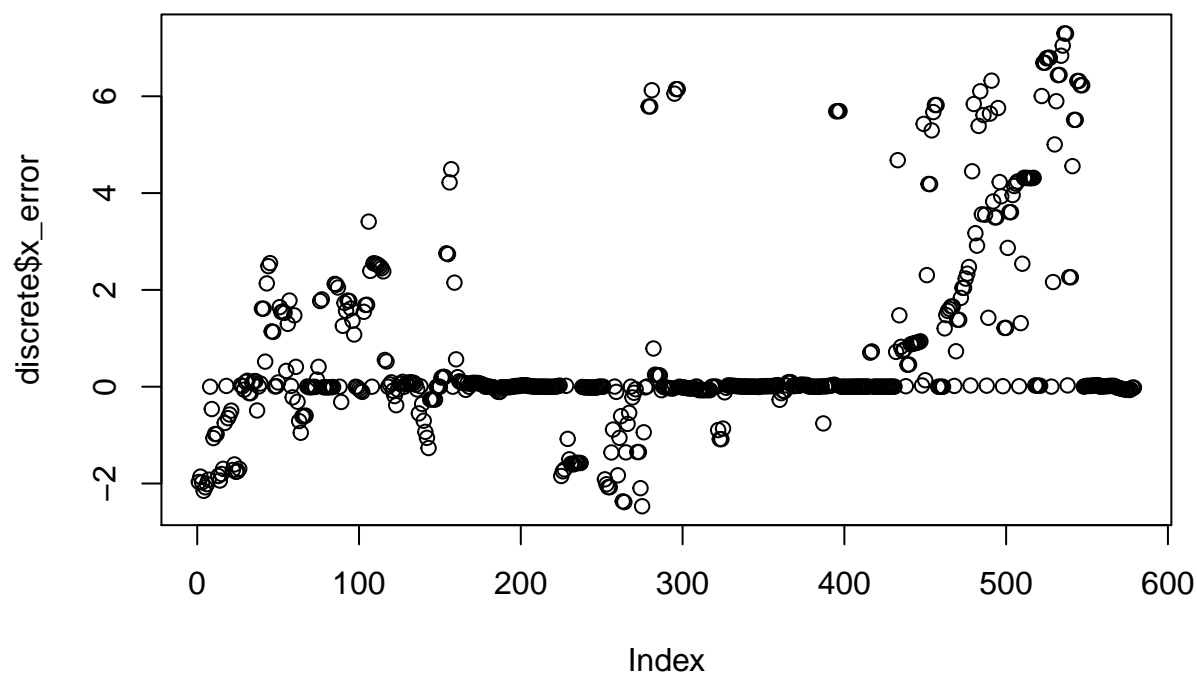

Y coordinate of robot over time

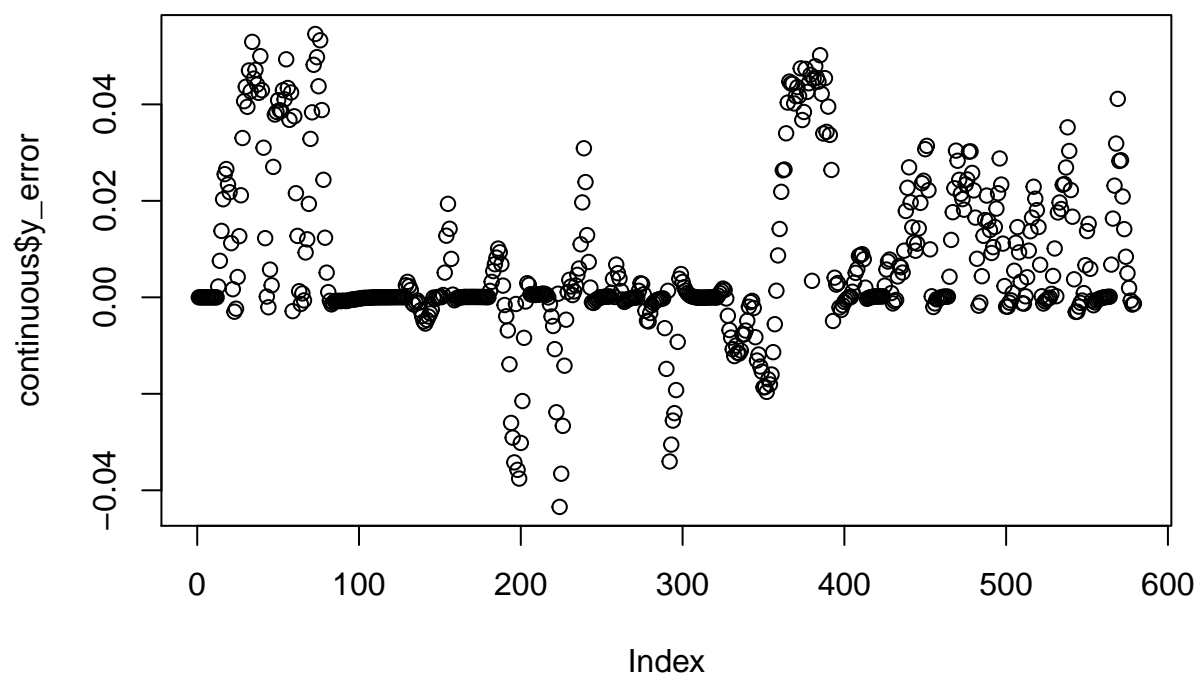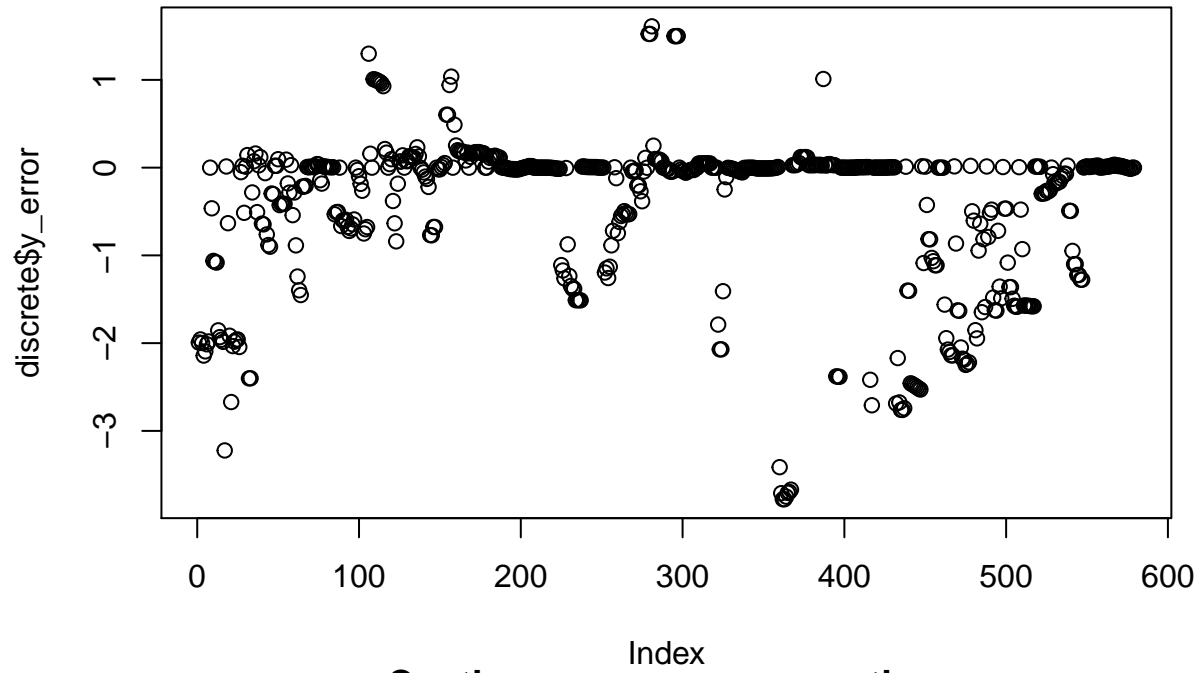**Distance from origin vs. time**

Continuous x_error over time

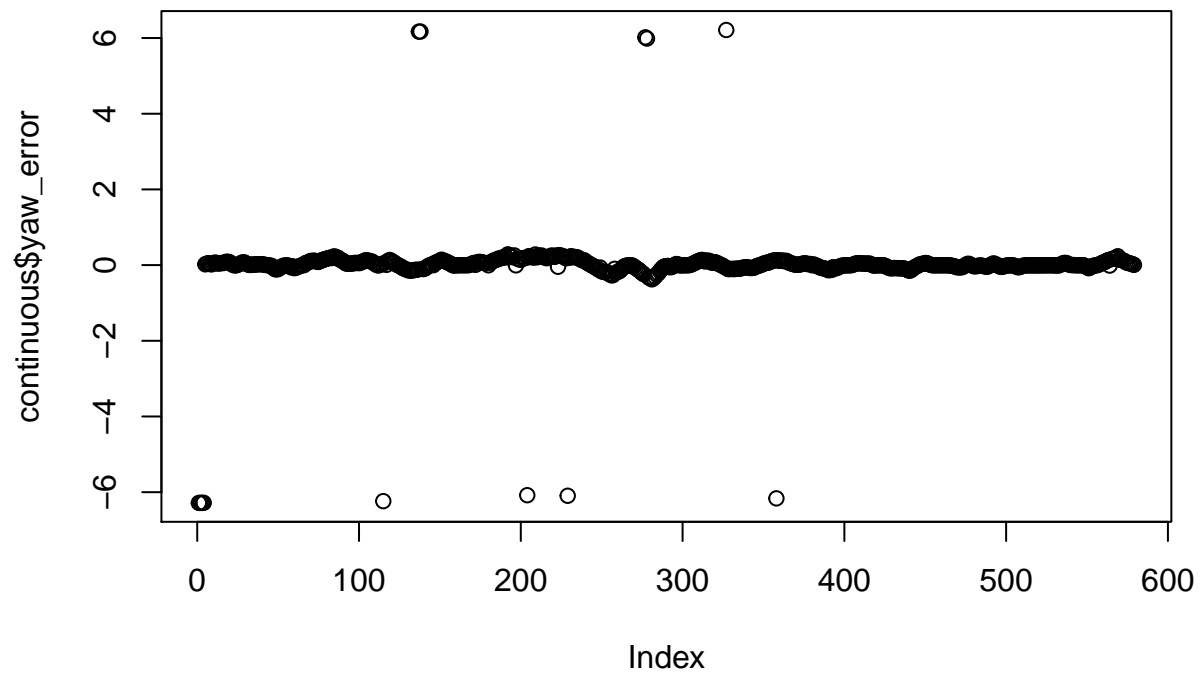## Discrete x_error over time

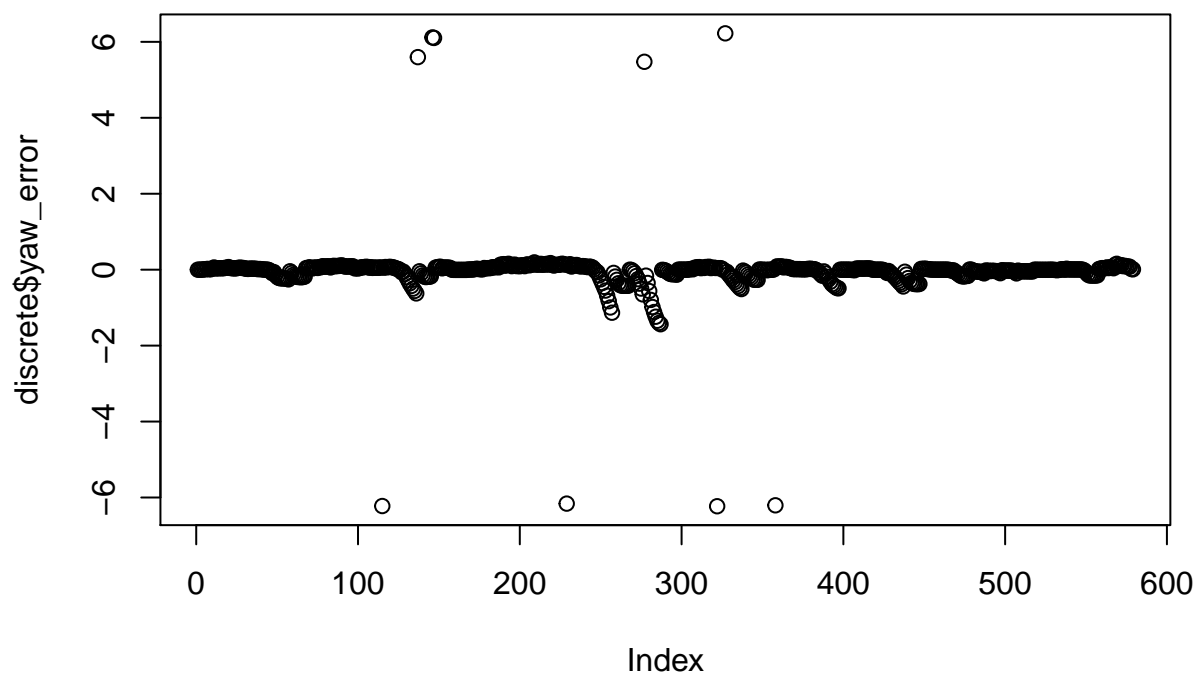## Continuous y_error over time

Discrete y_error over time

Continuous yaw error over time

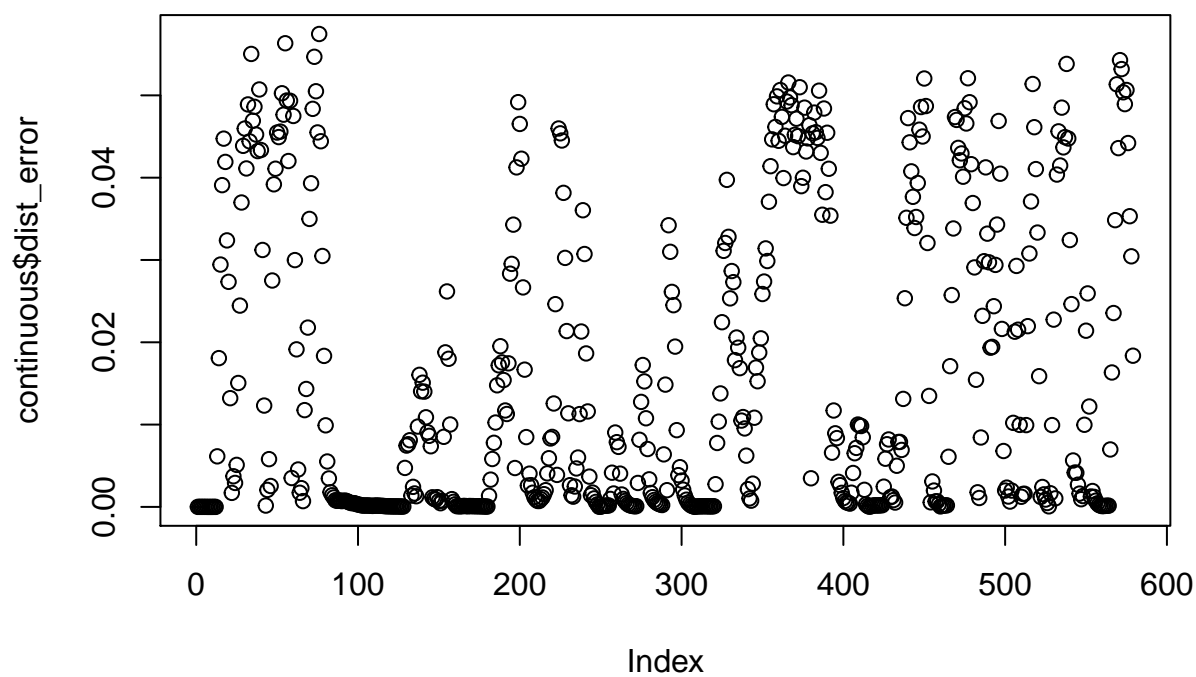## Discrete yaw error over time

Continuous total distance error over time

Discrete total distance error over time