

two_mobile Turtlebot 1 Report

Matthew Swartwout

July 05, 2016

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

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

The runtime of this experiment was 0 hours, 3 minutes, and 59.7 seconds.

The total number of external pose measurements recieved by the robot during this time was 0 which means poses were received at an average of 0 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.
## -0.95930 -0.23880 -0.08629 -0.16190  0.05122  0.14840
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -0.102100  0.008431  0.067830  0.064870  0.095390  0.263100
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -6.229000 -0.023370 -0.005614 -0.015590  0.004786  6.194000
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000001  0.0948700  0.1370000  0.2469000  0.3114000  0.9598000
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -0.80970 -0.13330 -0.02245 -0.09323  0.09935  0.14510
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -0.04028  0.05303  0.08884  0.11360  0.16740  0.30210
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -6.264000 -0.018560 -0.006293 -0.016220 -0.001497  6.216000
```

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

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000001  0.1077000  0.1474000  0.2312000  0.2934000  0.8098000
```

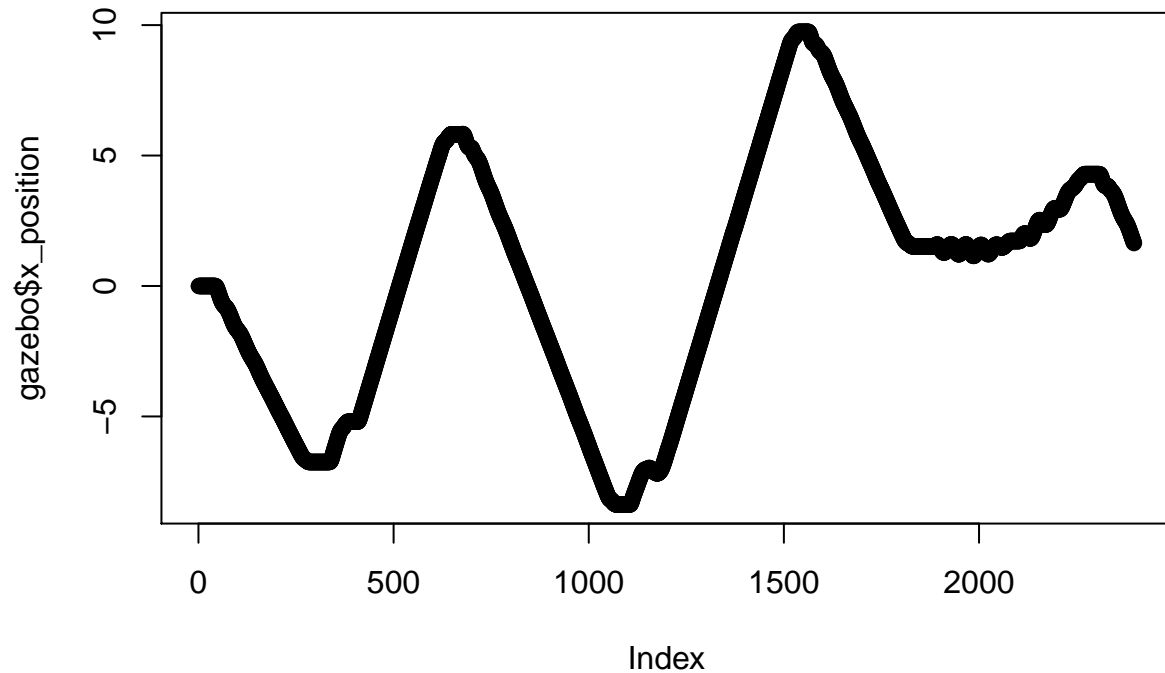
```
sum(continuous$dist_error <= 0.25) / length(continuous$dist_error)
```

```
## [1] 0.6687526
```

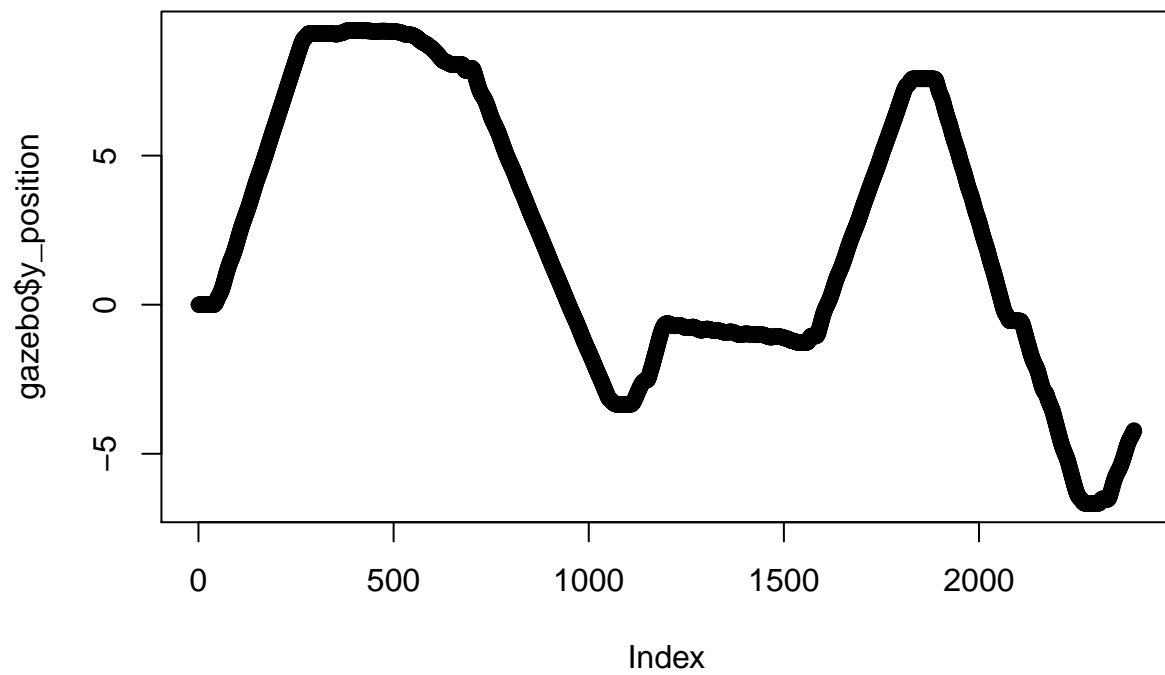
```
sum(discrete$dist_error <= 0.25) / length(discrete$dist_error)
```

```
## [1] 0.6816854
```

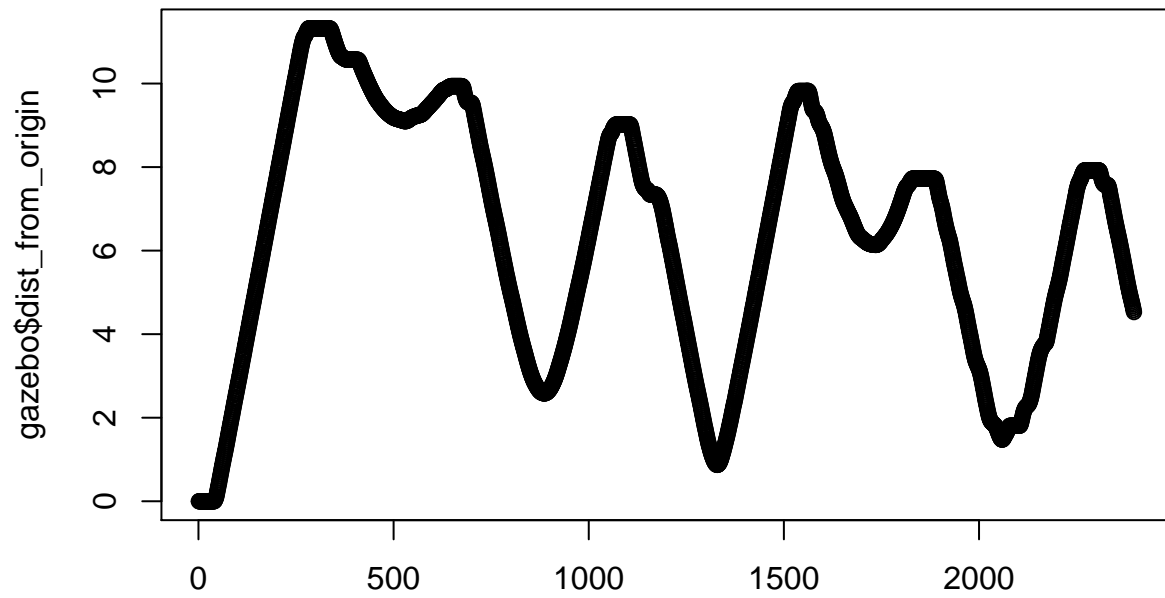
X coordinate of robot over time



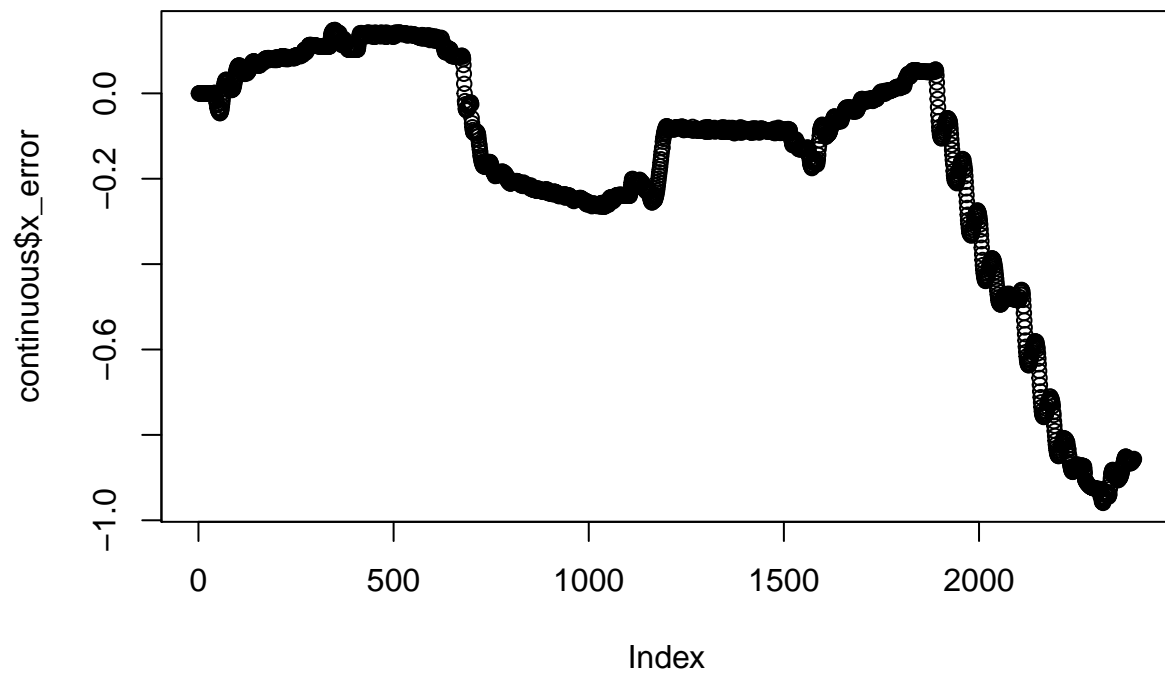
Y coordinate of robot over time



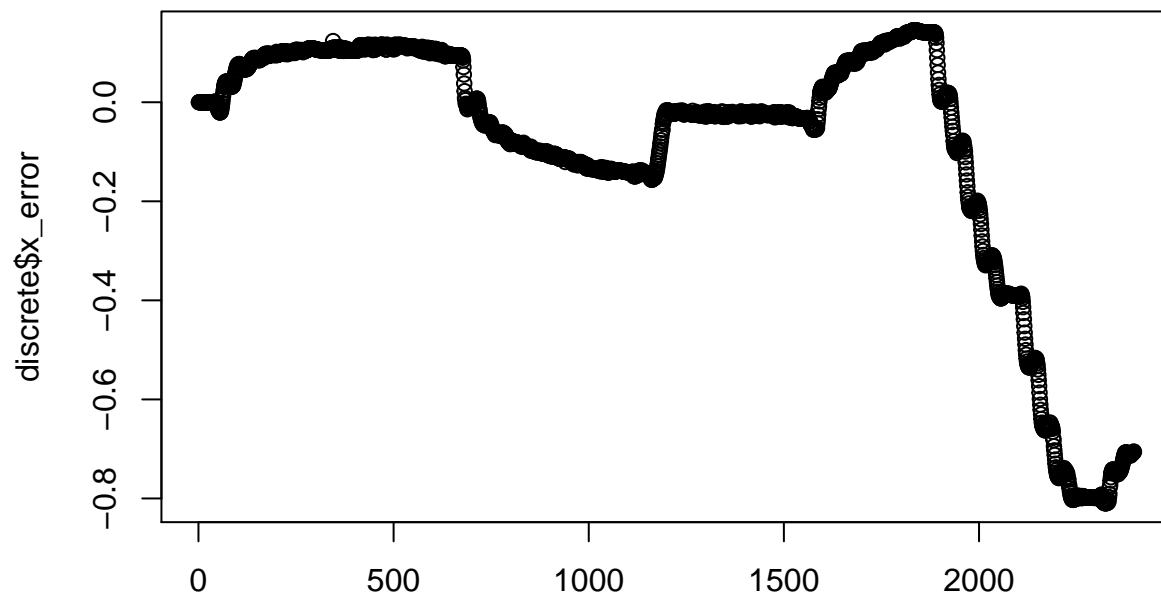
Distance from origin vs. time



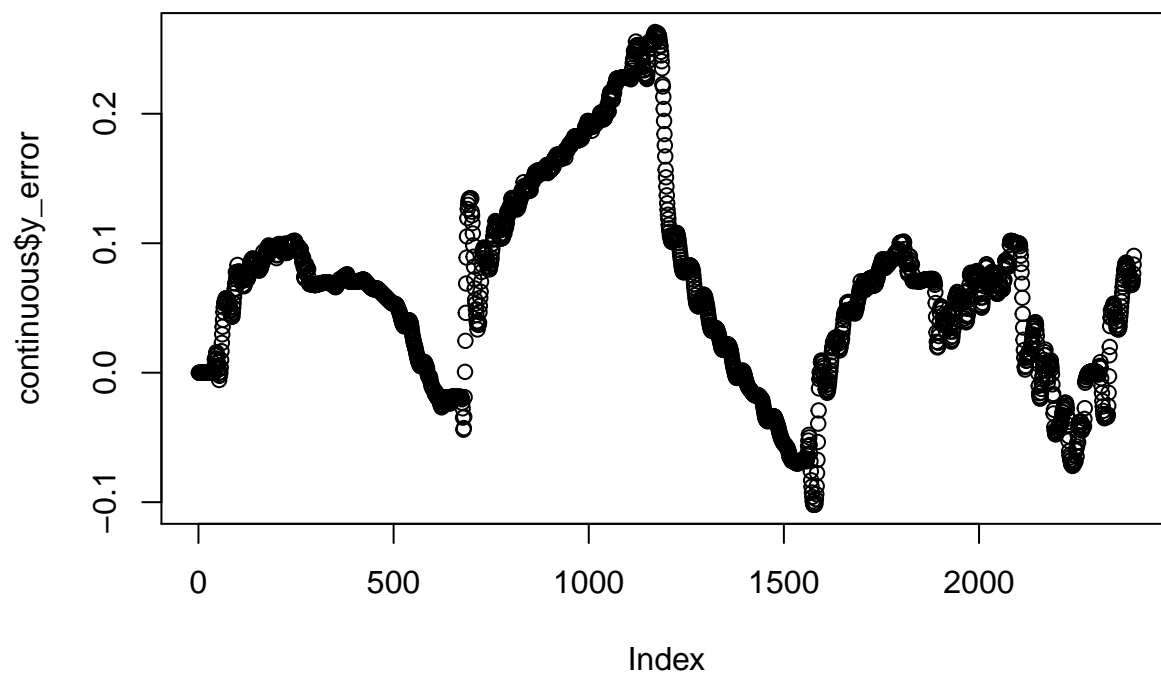
Continuous x_error over time



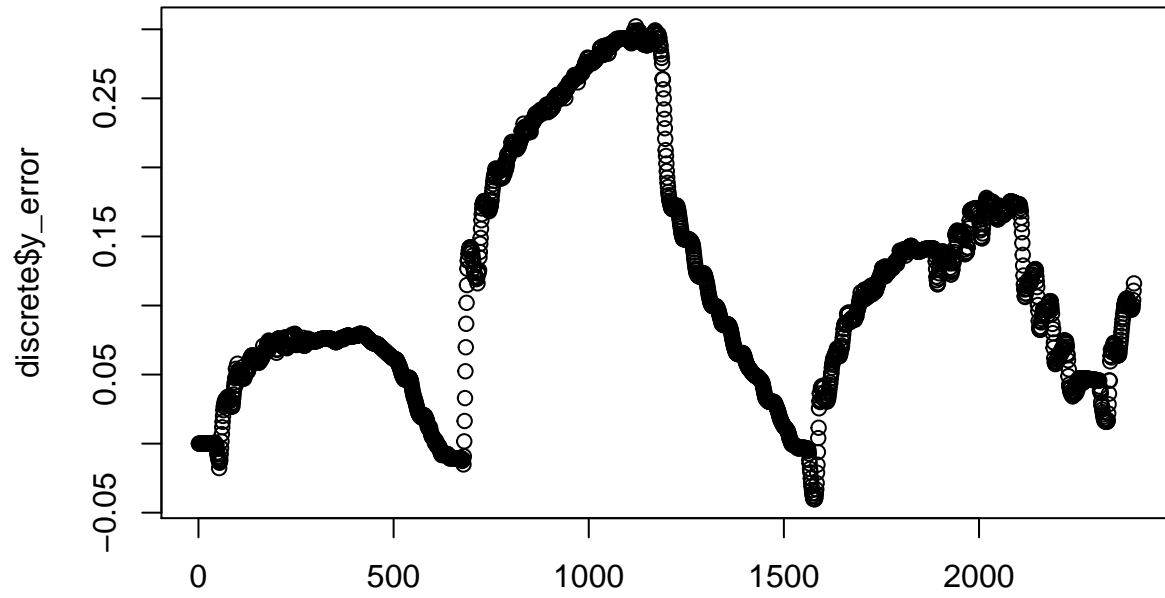
Discrete x_{error} over time



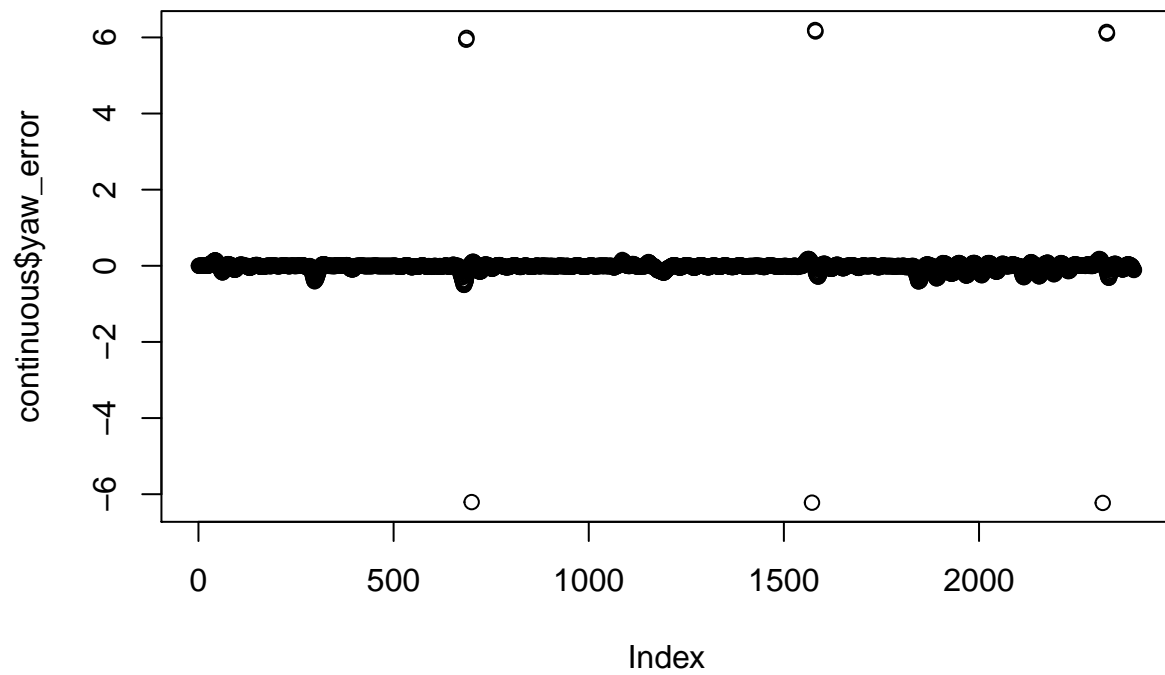
Continuous y_{error} over time



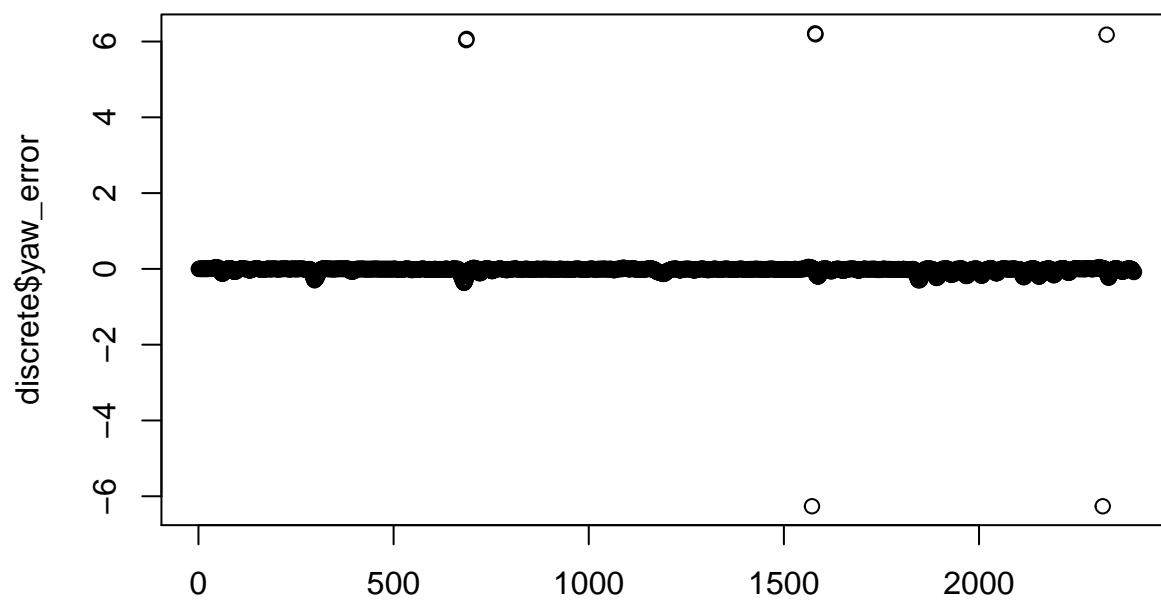
Discrete y_error over time



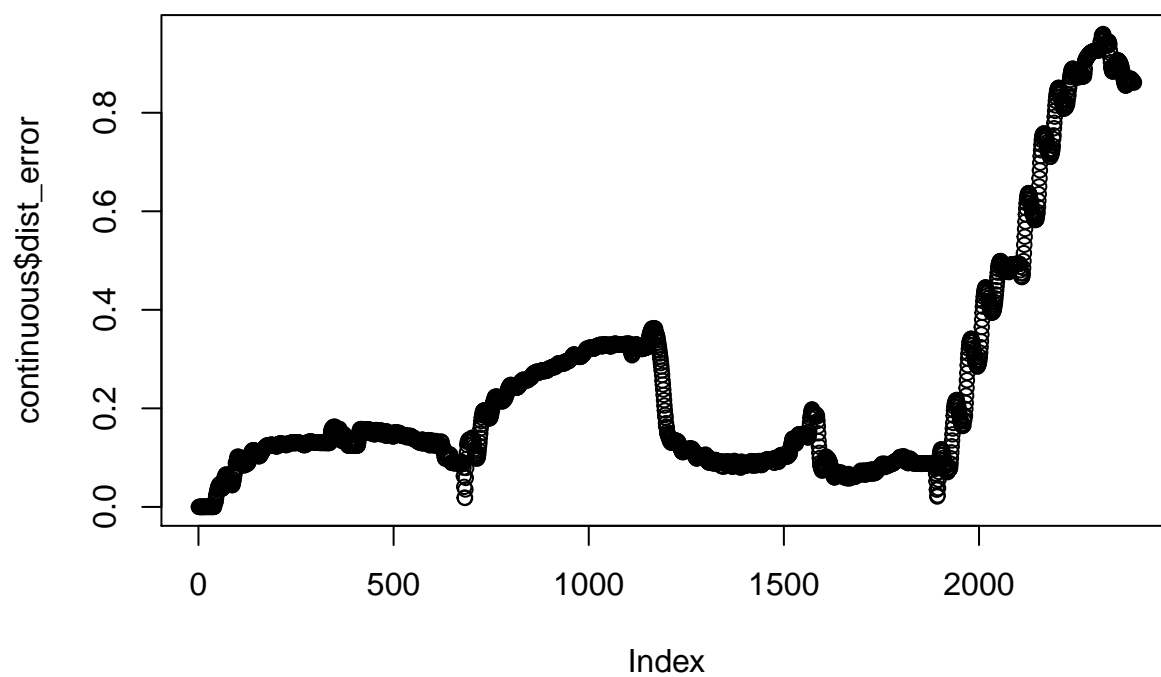
Continuous yaw error over time



Discrete yaw error over time



Continuous total distance error over time



Discrete total distance error over time

