

# two\_mobile Turtlebot 1 Report

*Matthew Swartwout*

*June 27, 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 1 hours, 59 minutes, and 58.7 seconds.

The total number of external pose measurements received by the robot during this time was 316370 which means poses were received at an average of 43.9482129 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. 
## -0.909900 -0.495100 -0.099610 -0.241000 -0.009936  0.190200
```

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

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max. 
## -0.487500 -0.158400 -0.007341 -0.011640  0.080130  0.526900
```

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

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max. 
## 0.0000094 0.1185000 0.2275000 0.3341000 0.5529000 0.9607000
```

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

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max. 
## -1.64400 -0.85840 -0.14190 -0.39460 -0.00673  0.47040
```

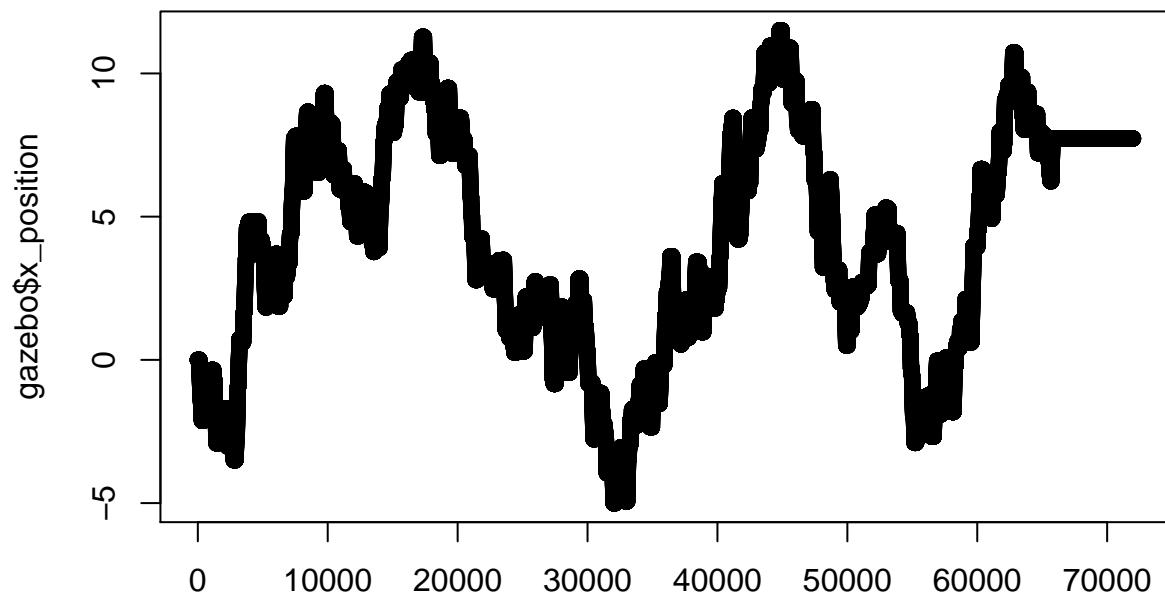
```
summary(discrete$y_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max. 
## -0.62500 -0.05521  0.07399  0.17540  0.36620  1.23300
```

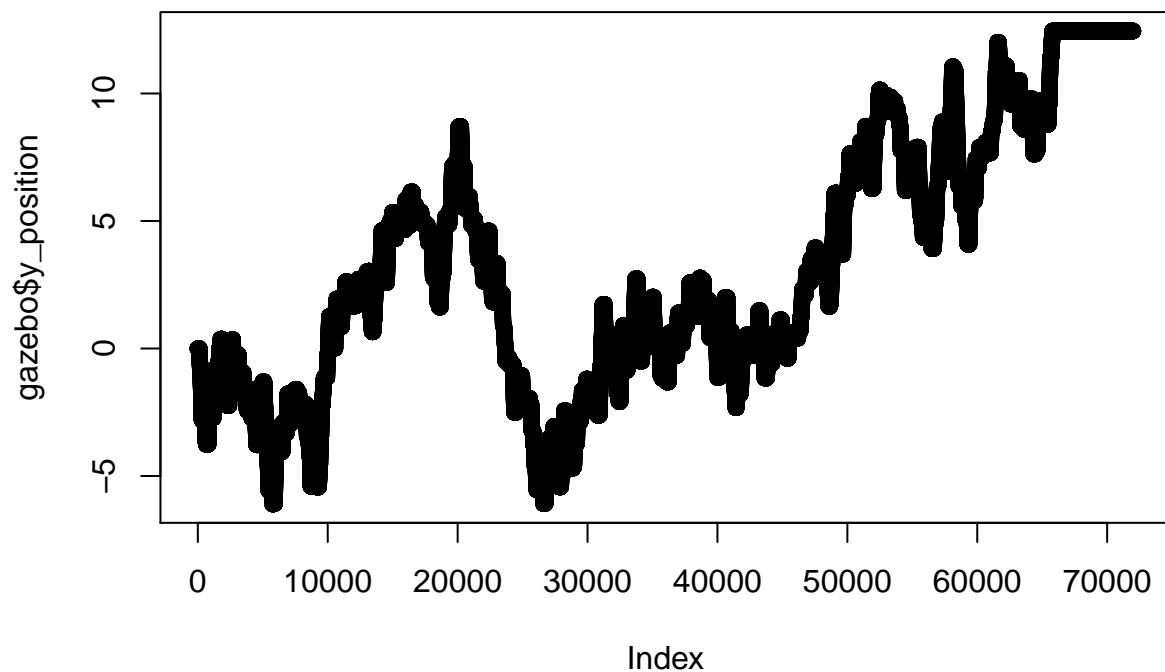
```
summary(discrete$dist_error)
```

```
##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max. 
## 0.0000094 0.1721000 0.3690000 0.6025000 0.8749000 1.8620000
```

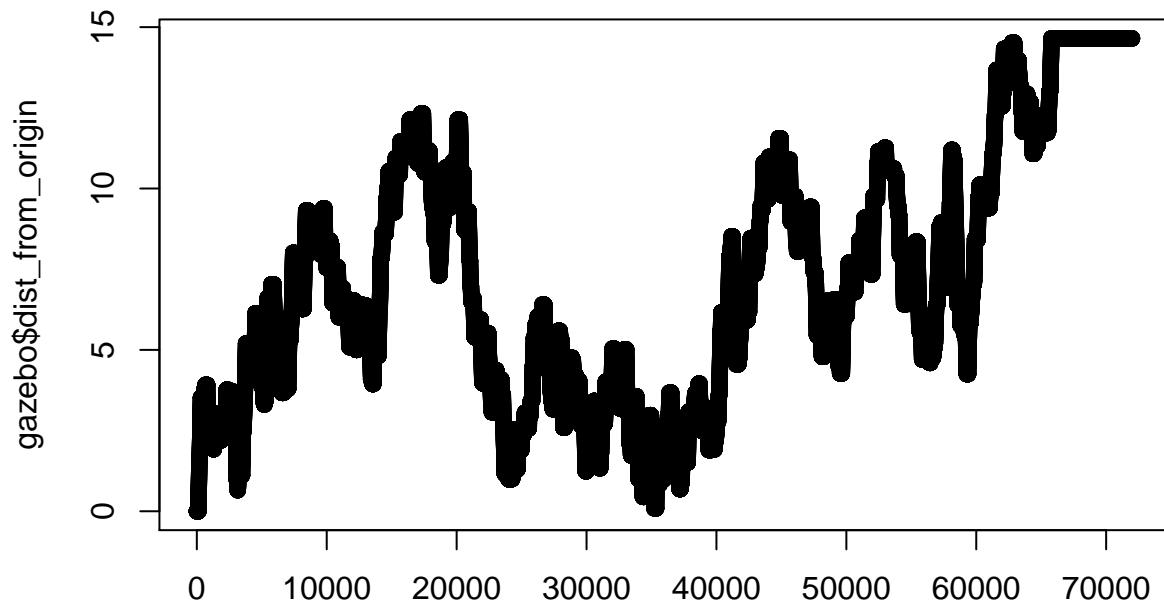
**X coordinate of robot over time**



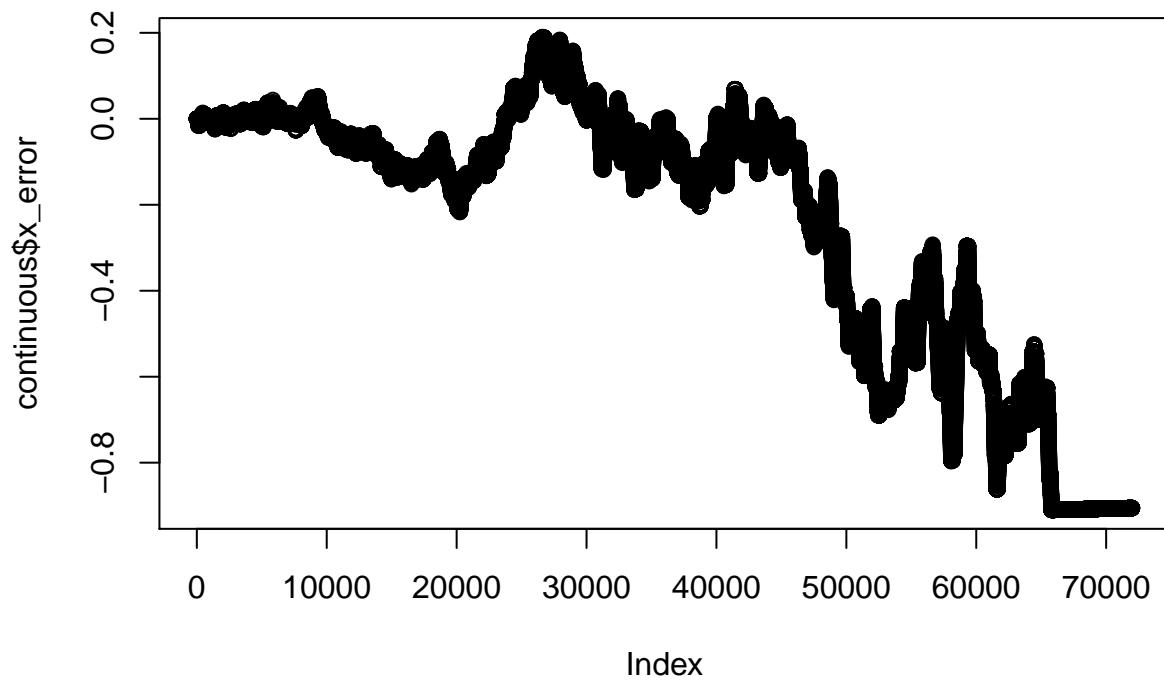
**Y coordinate of robot over time**



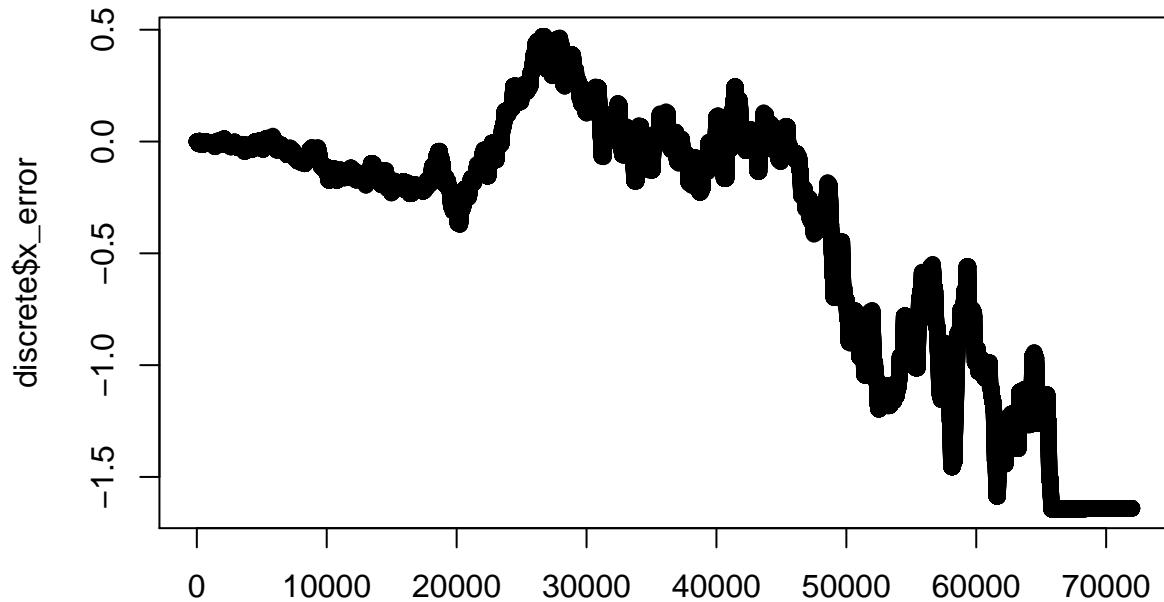
**Distance from origin vs. time**



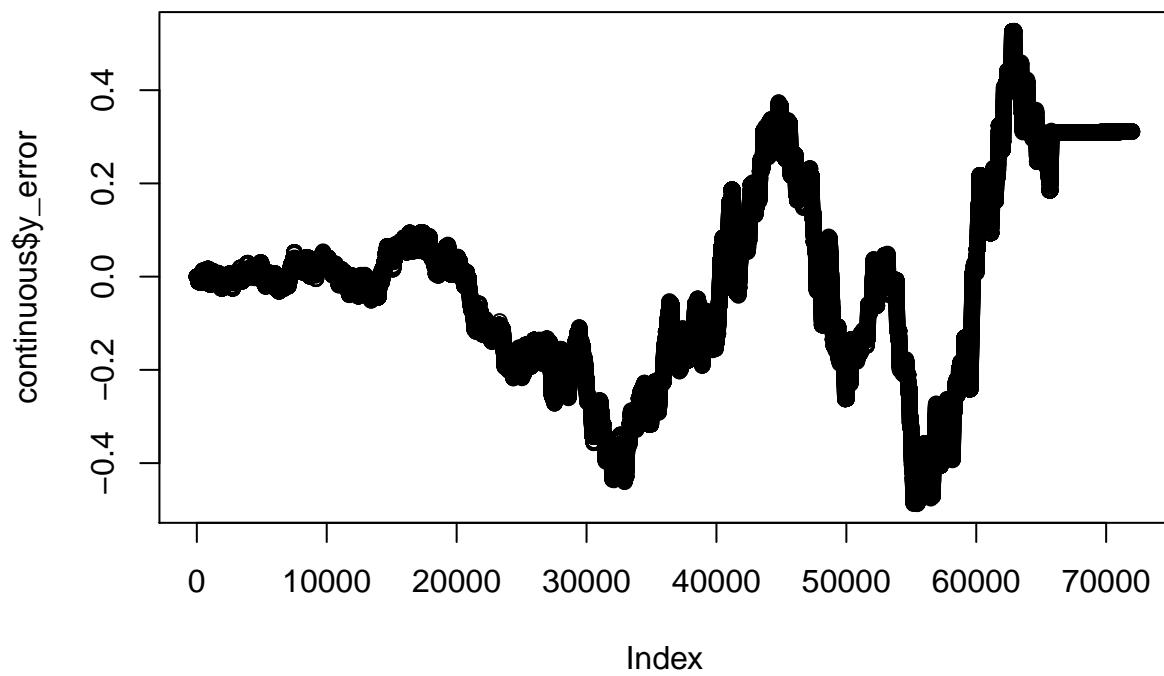
**Continuous x\_error over time<sup>Index</sup>**



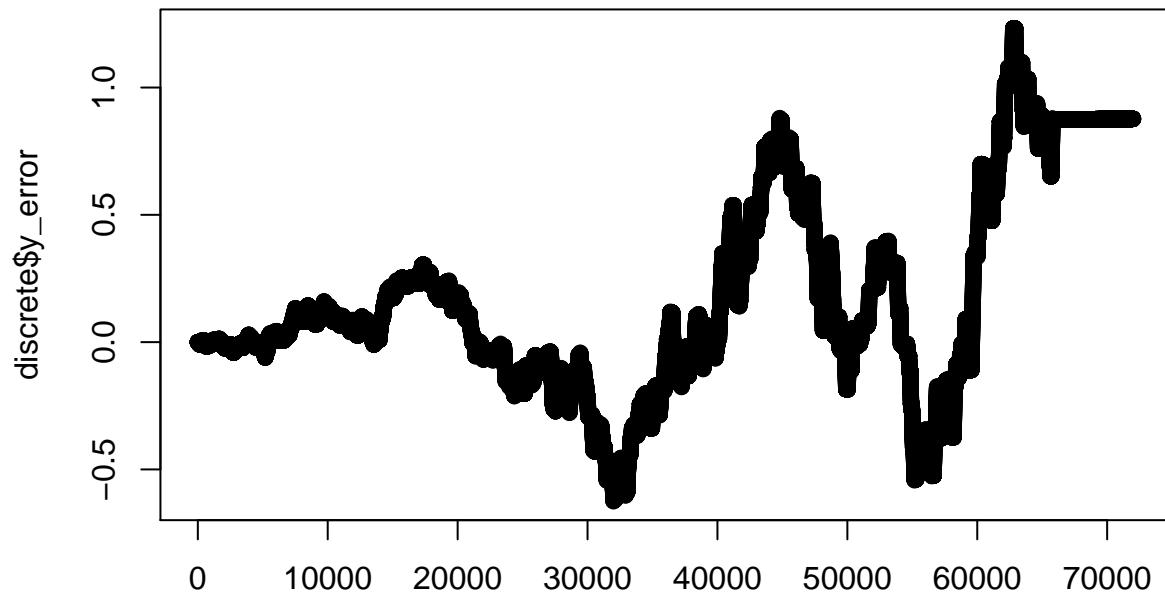
**Discrete x\_error over time**



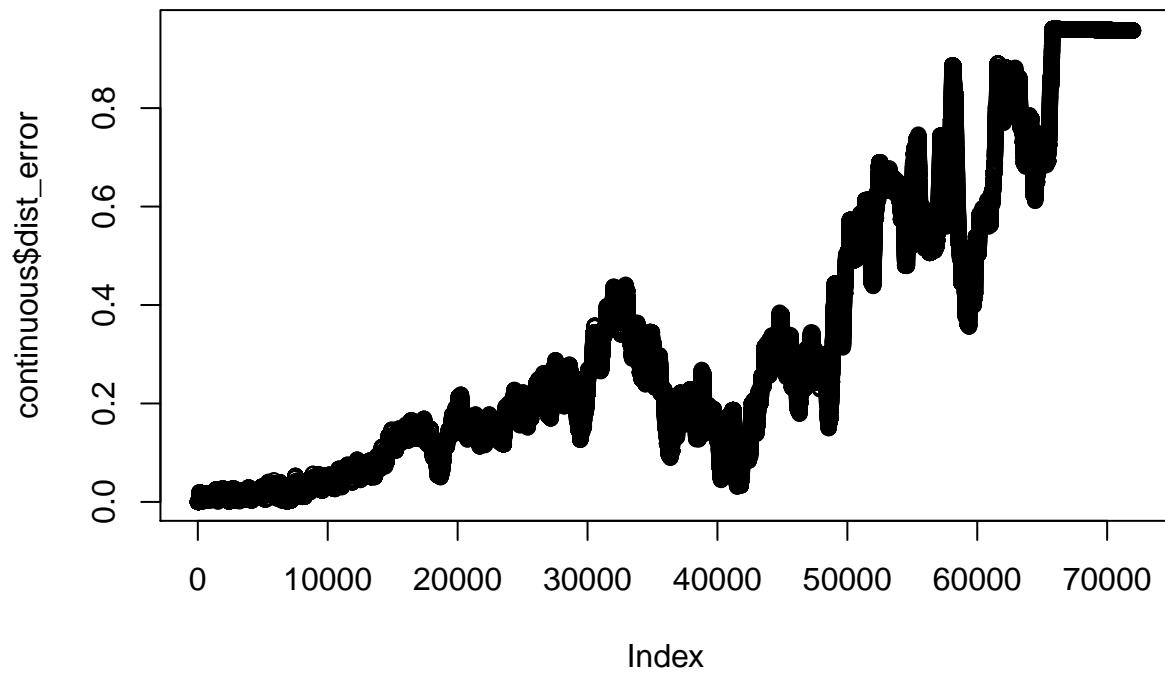
**Continuous y\_error over time**



**Discrete y\_error over time**



**Continuous total distance error over time<sup>Index</sup>**



### Discrete total distance error over time

