

five_mobile_restricted Experiment Report

Matthew Swartwout

June 24, 2016

This is a summary of the data from the five_mobile_restricted experiment.

Shown below is the summary of the error of all robots combined 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.
## -0.094030 -0.018080  0.007784  0.026860  0.078530  0.150200

summary(continuous$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -0.095220 -0.033490  0.021380  0.007516  0.043700  0.101800

summary(continuous$dist_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 1.000e-08 3.596e-02 5.988e-02 6.943e-02 1.020e-01 1.535e-01

summary(discrete$x_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -0.08091  0.03179  0.07112  0.12750  0.18070  0.65370

summary(discrete$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -0.09739 -0.06477  0.15690  0.11600  0.28020  0.57620

summary(discrete$dist_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 0.0000  0.1563  0.1935  0.2500  0.2869  0.6885

summary(external_data_averages)

##      Length Class  Mode
## [1,]     1   -none- numeric
## [2,]     1   -none- numeric
## [3,]     1   -none- numeric
## [4,]     1   -none- numeric
## [5,]     1   -none- numeric
```

Shown below are plots representing the robot's motion and error over time.

```
message("ground truth")

## ground truth
plot(gazebo$x_position, gazebo$y_position)
title("Ground truth visited locations of robot")
```

Ground truth visited locations of robot



```
message("dist from origin")  
## dist from origin  
hist(gazebo$dist_from_origin)  
title("Distance from origin vs. time")
```

Histogram of gazebo\$dist_from_origin

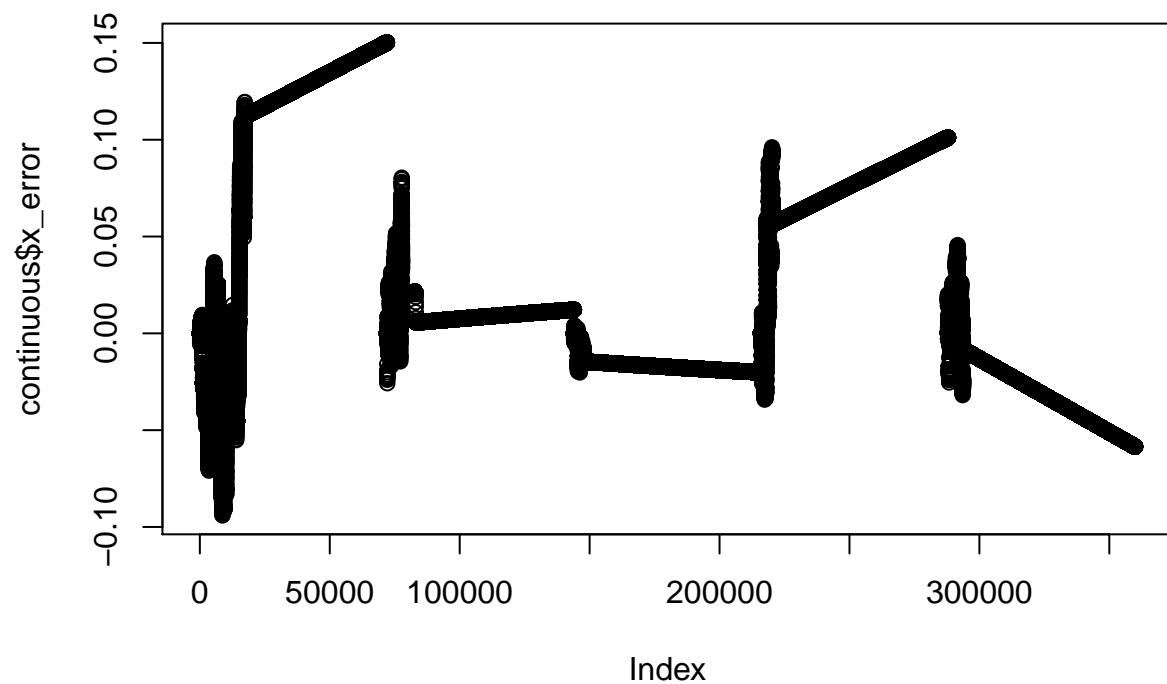


```
message("continuous x")
```

```
## continuous x
```

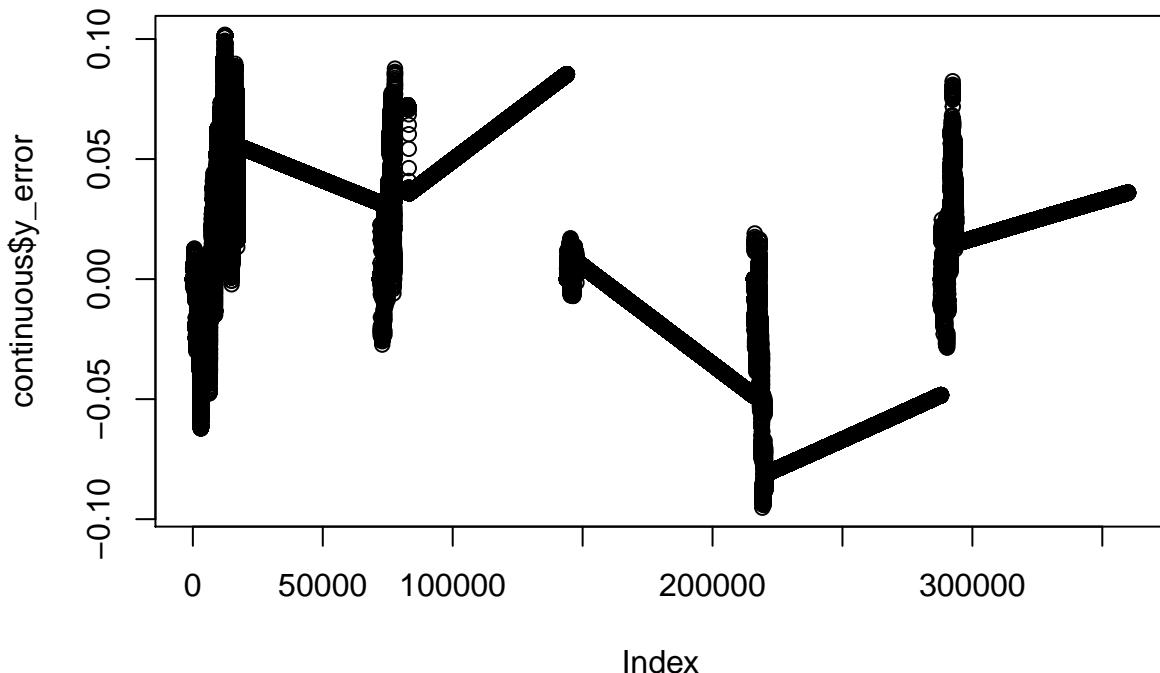
```
plot(continuous$x_error)
title("Continuous x_error over time")
```

Continuous x_error over time



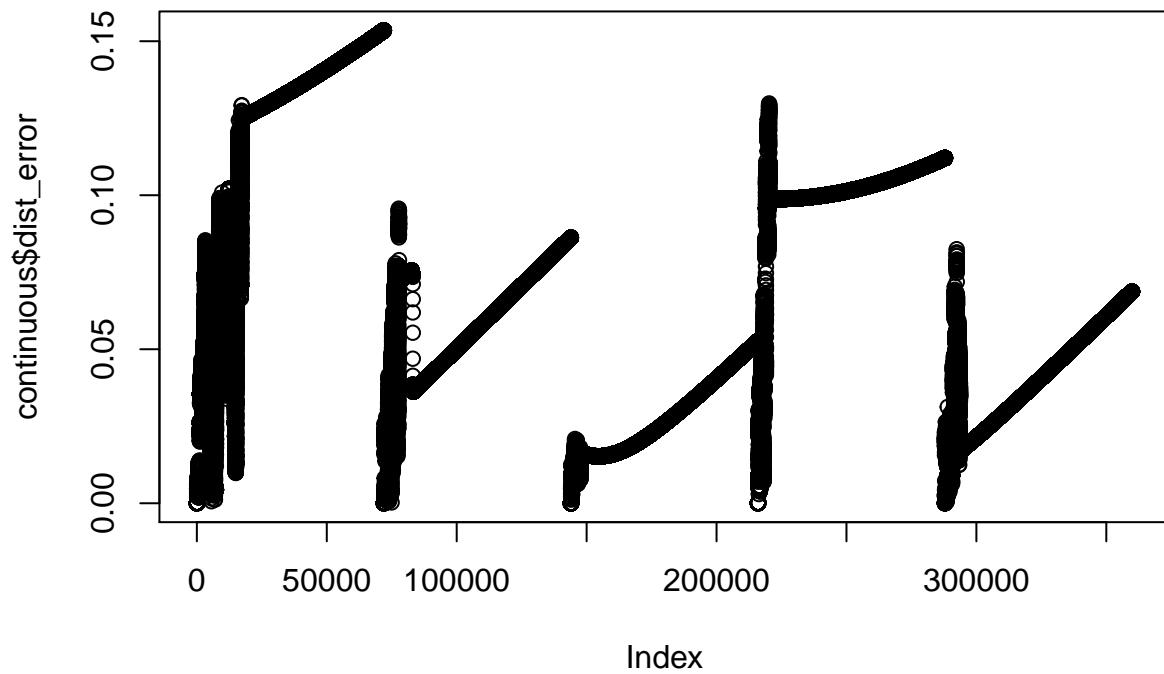
```
message("continuous y")  
  
## continous y  
plot(continuous$y_error)  
title("Continuous y_error over time")
```

Continuous y_error over time



```
message("continuous dist")  
  
## continuous dist  
plot(continuous$dist_error)  
title("Continuous total distance error over time")
```

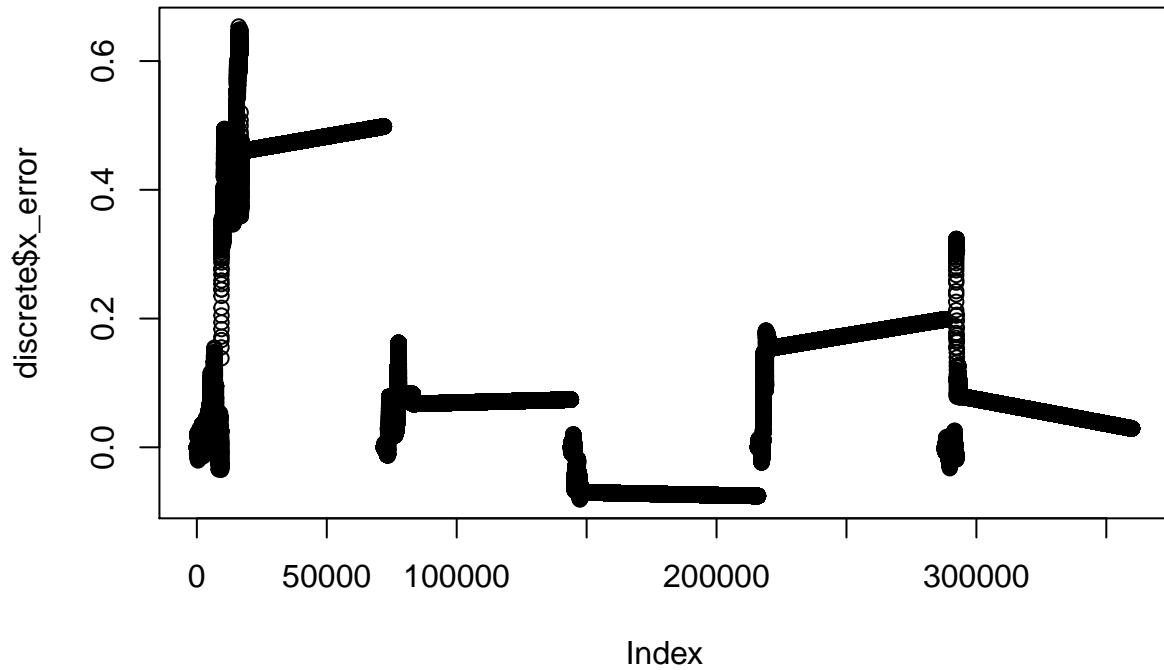
Continuous total distance error over time



```
message("discrete x")
```

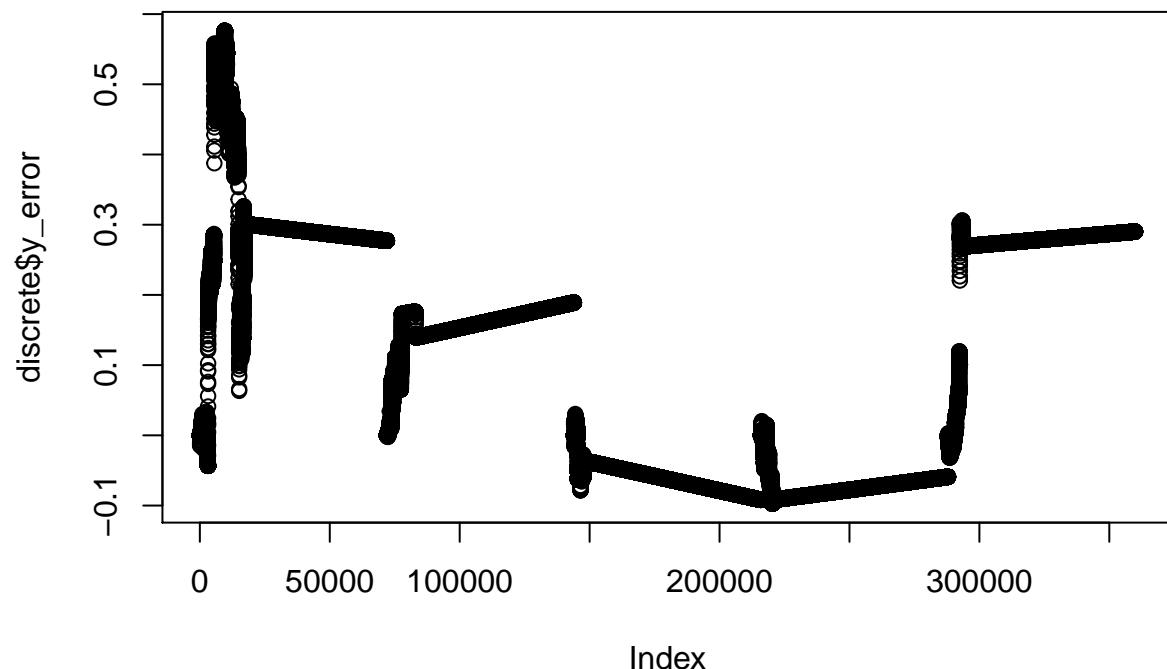
```
## discrete x
plot(discrete$x_error)
title("Discrete x_error over time")
```

Discrete x_error over time



```
message("discrete y")  
  
## discrete y  
plot(discrete$y_error)  
title("Discrete y_error over time")
```

Discrete y_error over time



```
message("discrete dist")  
  
## discrete dist  
plot (discrete$dist_error)  
title("Discrete total distance error over time")
```

Discrete total distance error over time

