

two_mobile Experiment Report

Matthew Swartwout

June 24, 2016

This is a summary of the data from the two_mobile 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.
## -0.909900 -0.110800 -0.106200 -0.152300 -0.005527 0.190200

summary(continuous$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.      Max.
## -0.48750 -0.14060 -0.11450 -0.05005 0.02100 0.52690

summary(continuous$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.      Max.
## 0.00000 0.09176 0.16900 0.23430 0.22750 0.96070

summary(discrete$x_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.      Max.
## -1.64400 -0.24680 -0.24210 -0.28080 -0.01062 0.47040

summary(discrete$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.      Max.
## -0.62500 -0.39170 -0.06659 -0.05511 0.07974 1.23300

summary(discrete$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.      Max.
## 0.0000 0.1716 0.4569 0.4746 0.4788 1.8620

summary(external_data_averages)

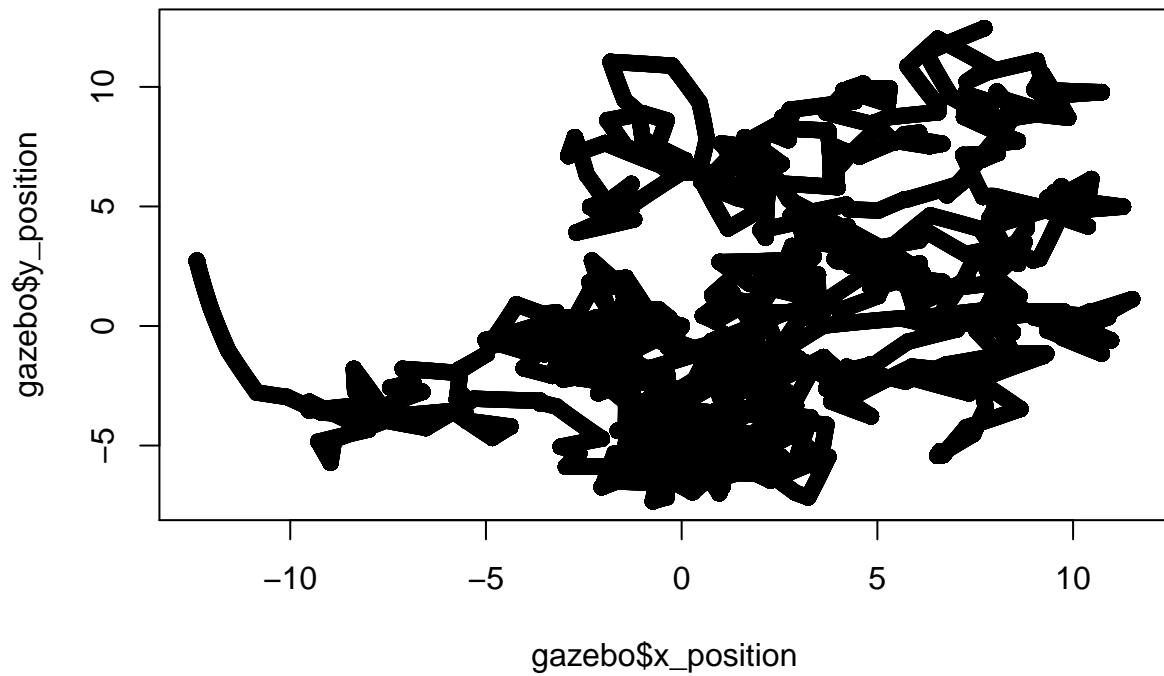
##      Length Class Mode
## [1,] 1     -none- numeric
## [2,] 1     -none- numeric
```

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

```
message("ground truth")

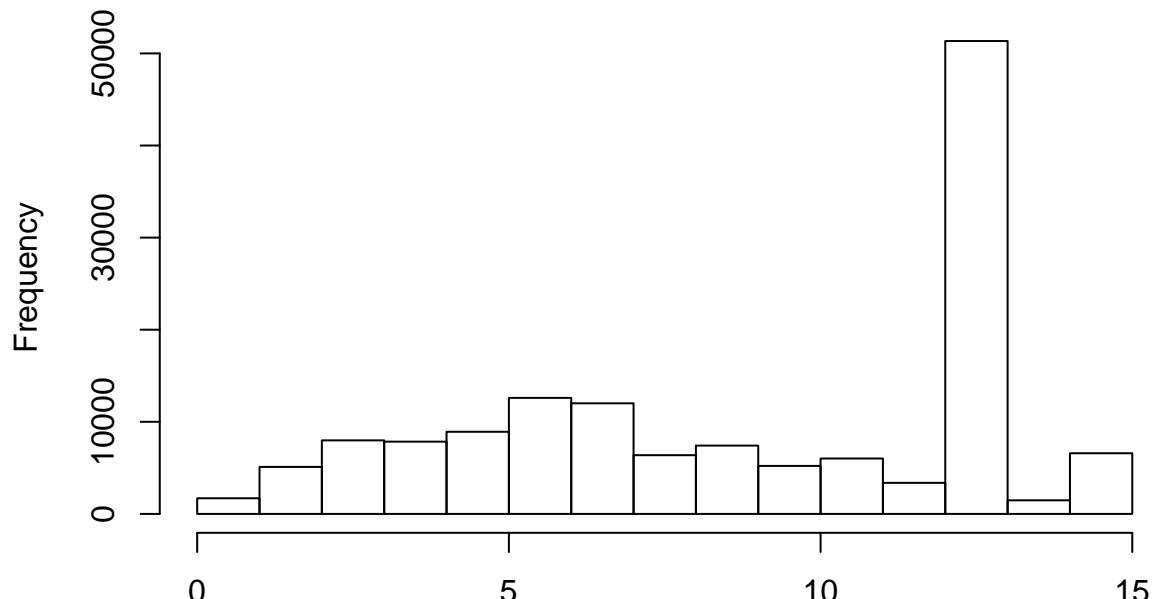
## ground truth
plot(gazebo$x_position, gazebo$y_position)
title("Ground truth visited locations of robot")
```

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



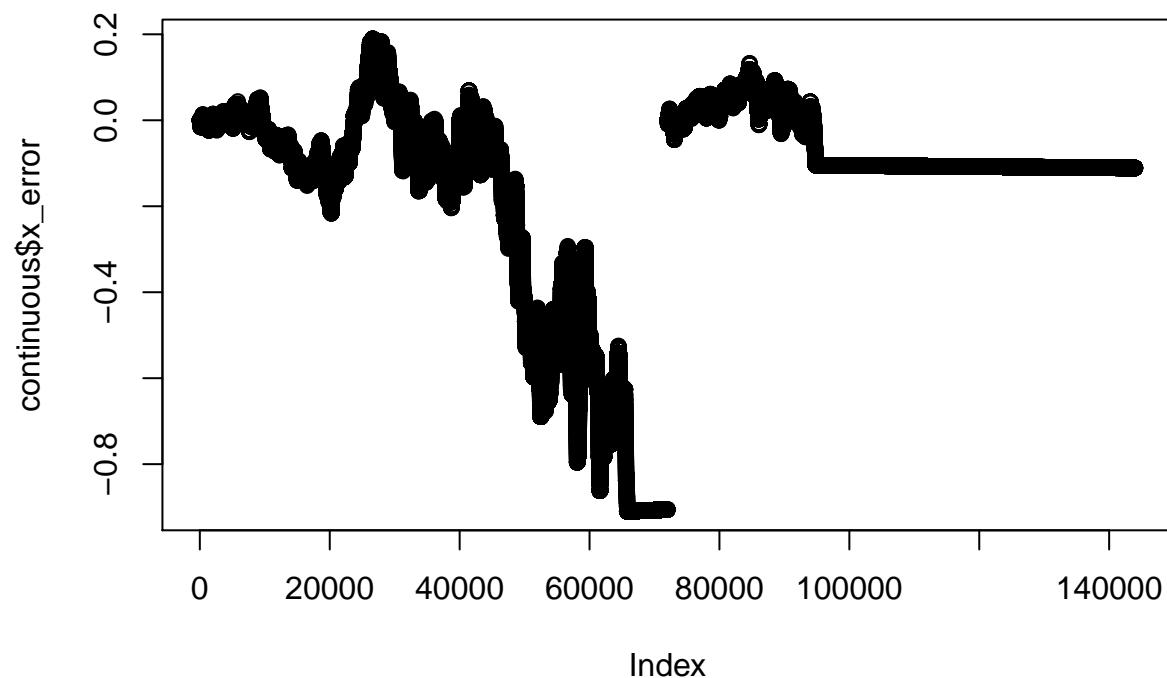
```
gazebo$dist_from_origin
```

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

```
## continuous x
```

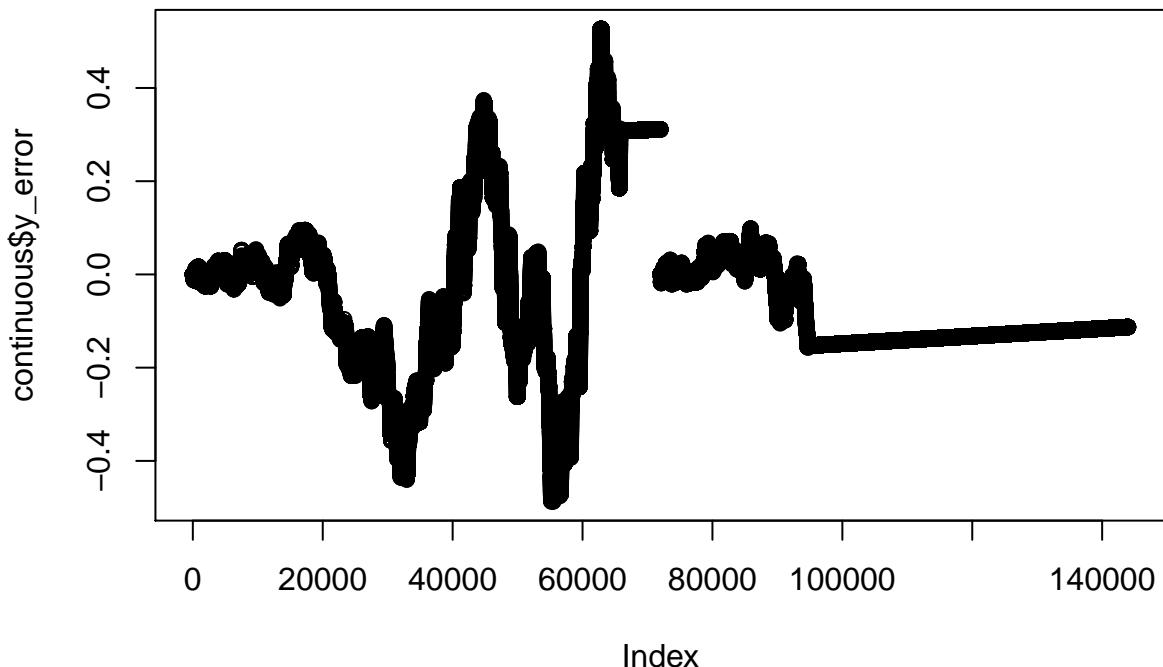
```
plot(continuous$x_error)
title("Continuous x_error over time")
```

Continuous x_error over time



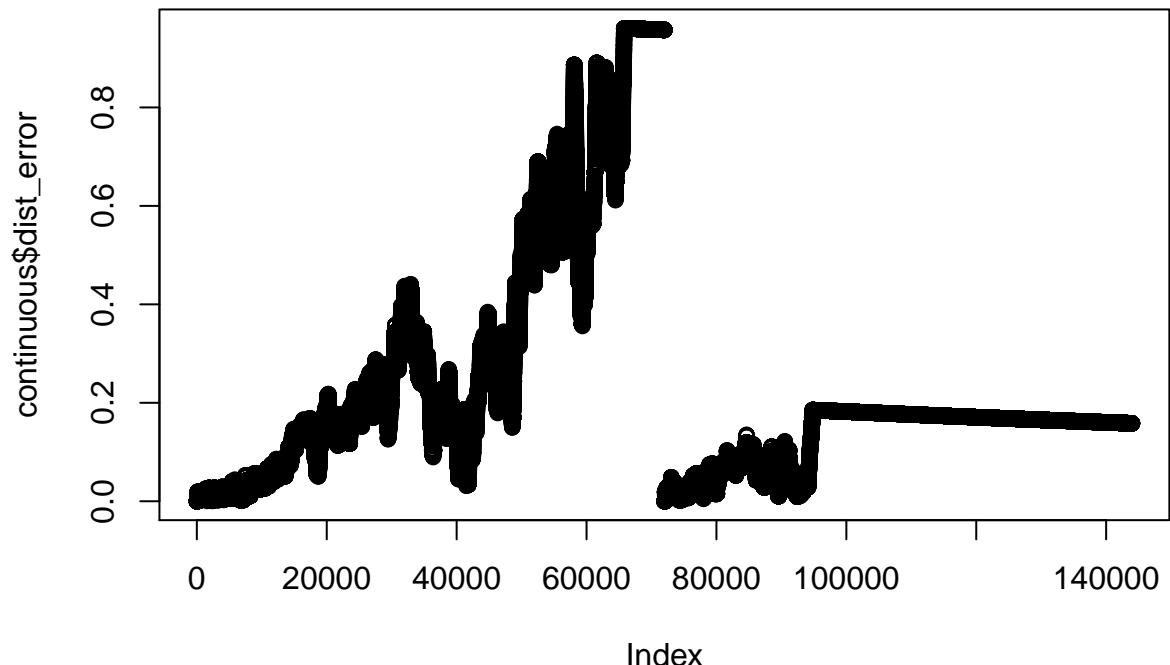
```
message("continuous y")
## continous y
plot(continuous$y_error)
title("Continuous y_error over time")
```

Continuous y_error over time



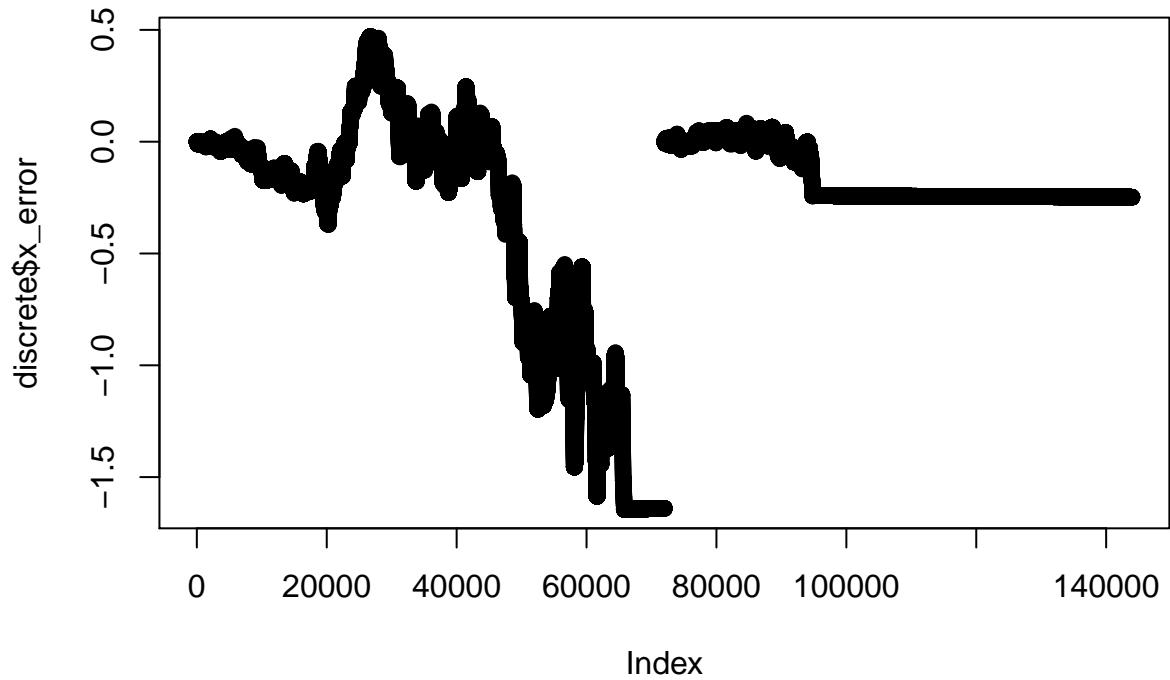
```
message("continuous dist")
## continuous dist
plot(continuous$dist_error)
title("Continuous total distance error over time")
```

Continuous total distance error over time



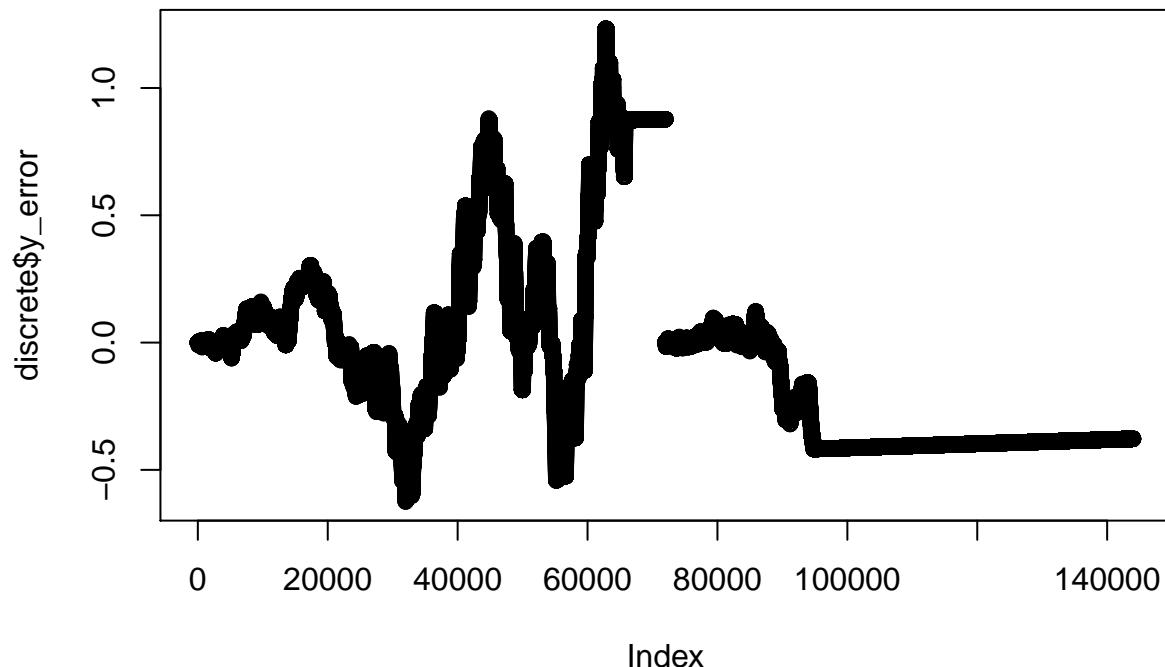
```
message("discrete x")
## discrete x
plot(discrete$x_error)
title("Discrete x_error over time")
```

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

