

one_mobile Experiment Report

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This is a summary of the data from the one_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.
## -0.02821 -0.02522 -0.02235 -0.01912 -0.01970  0.05186

summary(continuous$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.159700 -0.145300 -0.130800 -0.125900 -0.116800  0.001599

summary(continuous$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## 0.0000001 0.1196000 0.1328000 0.1282000 0.1467000 0.1607000

summary(discrete$x_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.03929 -0.03630 -0.03344 -0.02938 -0.03080  0.06892

summary(discrete$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.09106 -0.07409 -0.05960 -0.05674 -0.04510  0.02884

summary(discrete$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## 0.0000001 0.0587600 0.0689400 0.0669600 0.0805900 0.0949800
```

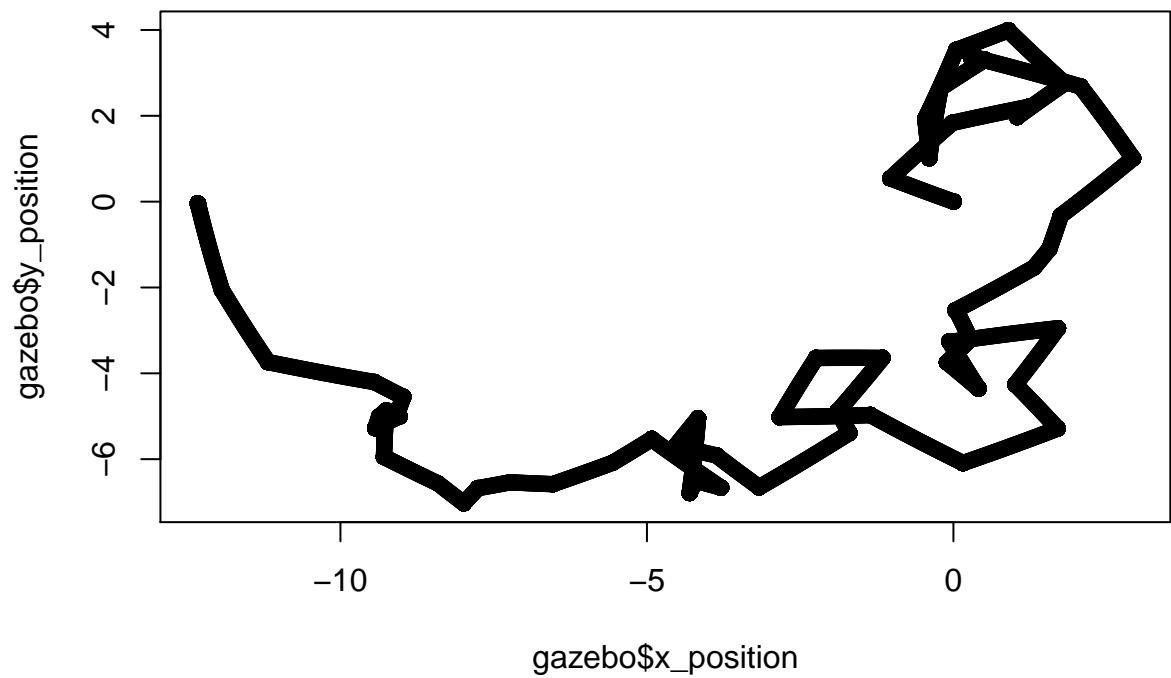
Shown below are plots representing the robot's motion and error over time.

```
message("ground truth")

## ground truth

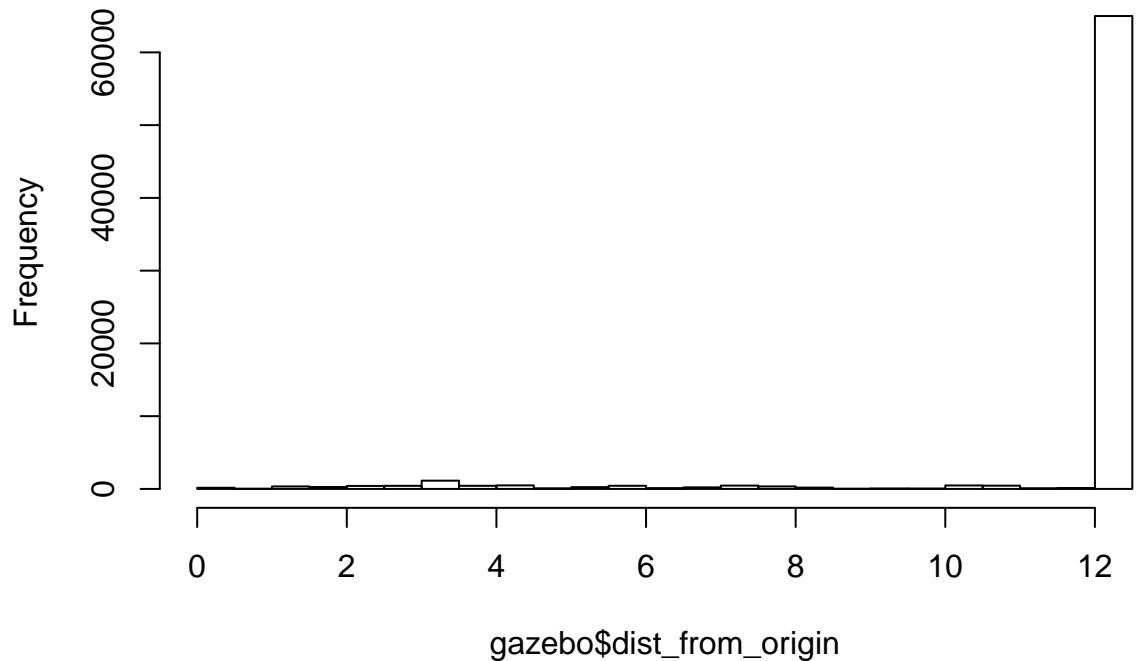
plot(gazebo$x_position, gazebo$y_position)
title("Ground truth visited locations of robot")
```

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

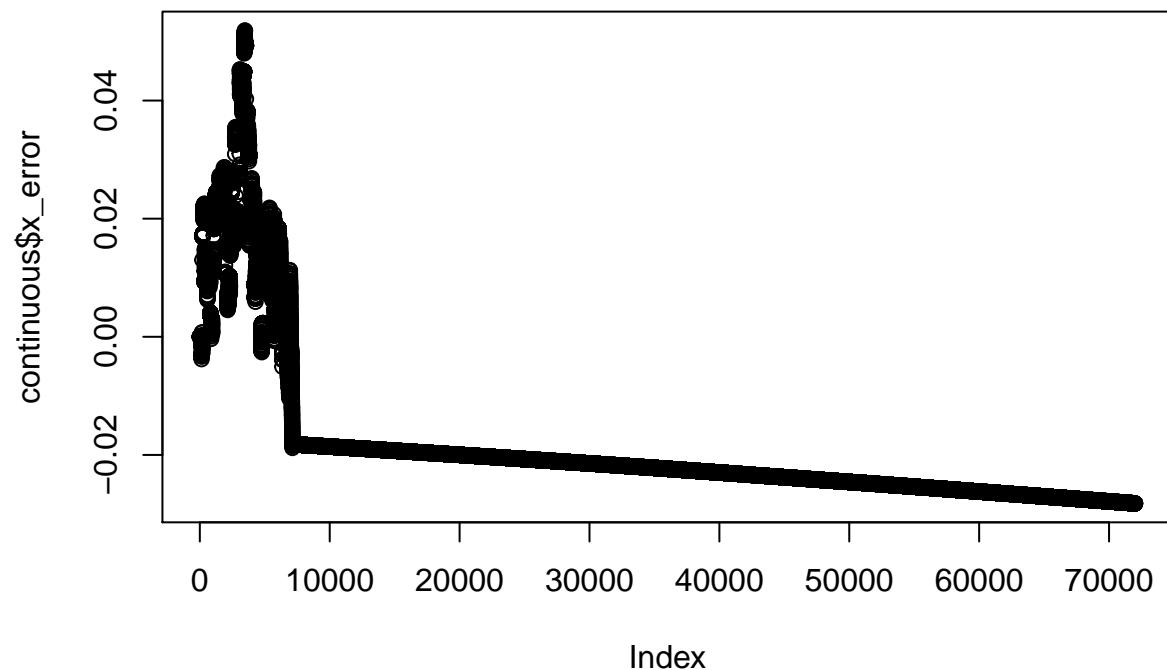


```
message("continuous x")
```

```
## continuous x
```

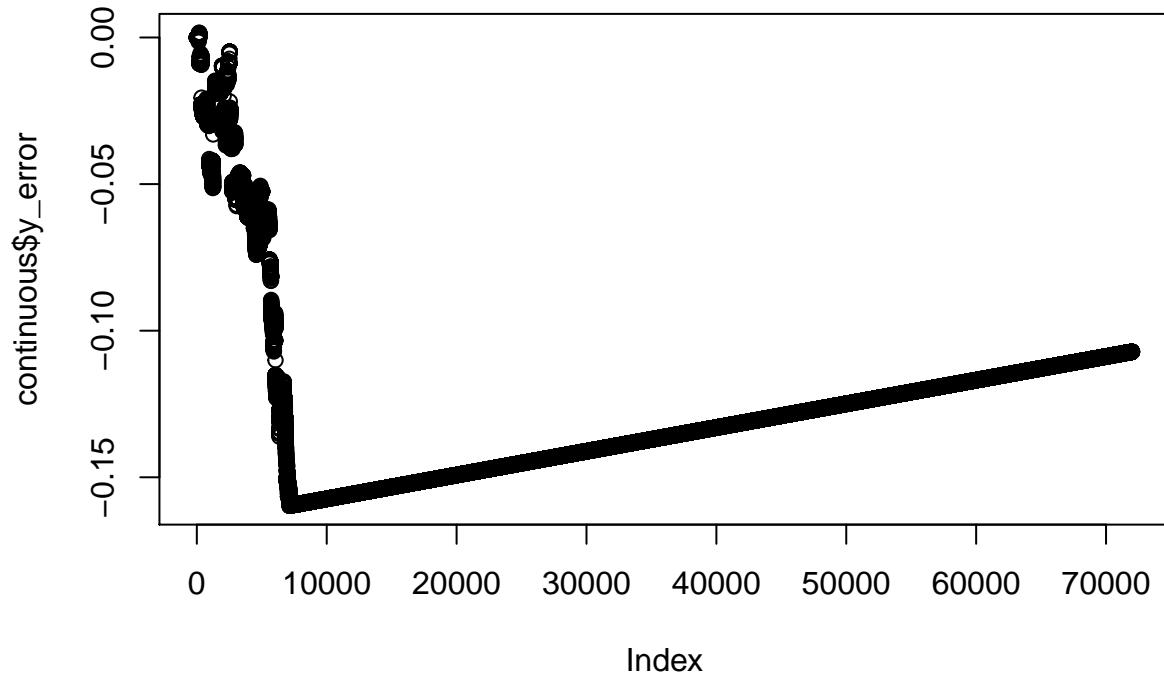
```
plot(continuous$x_error)
title("Continuous x_error over time")
```

Continuous x_error over time



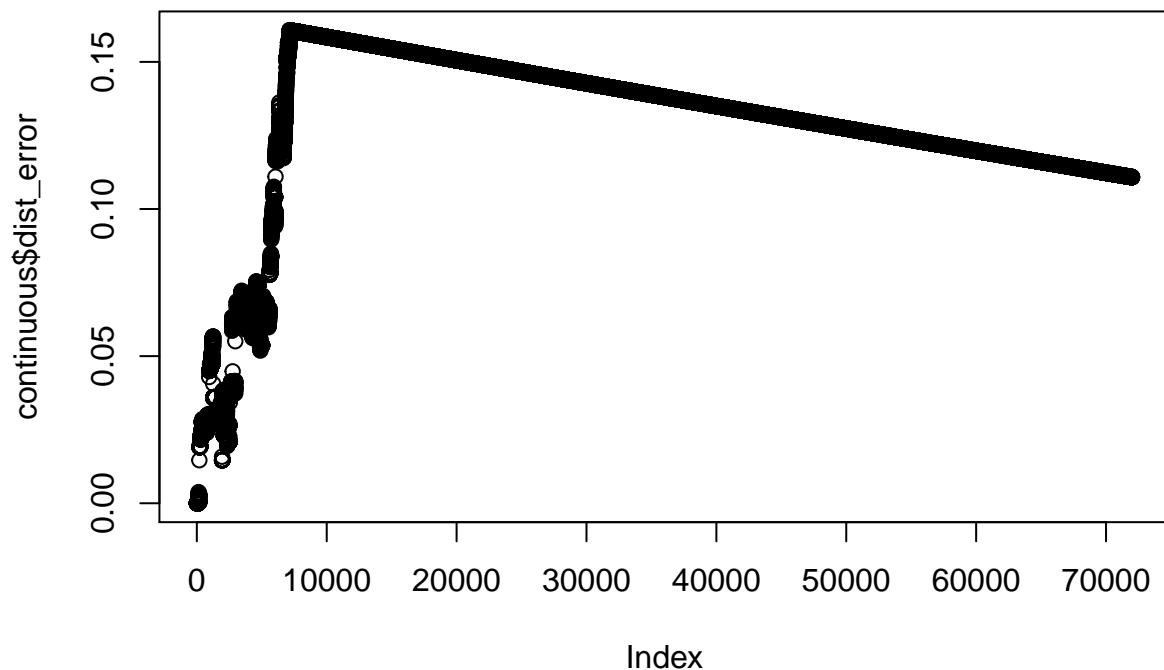
```
message("continuous y")
## continous y
plot(continuous$y_error)
title("Continuous y_error over time")
```

Continuous y_error over time



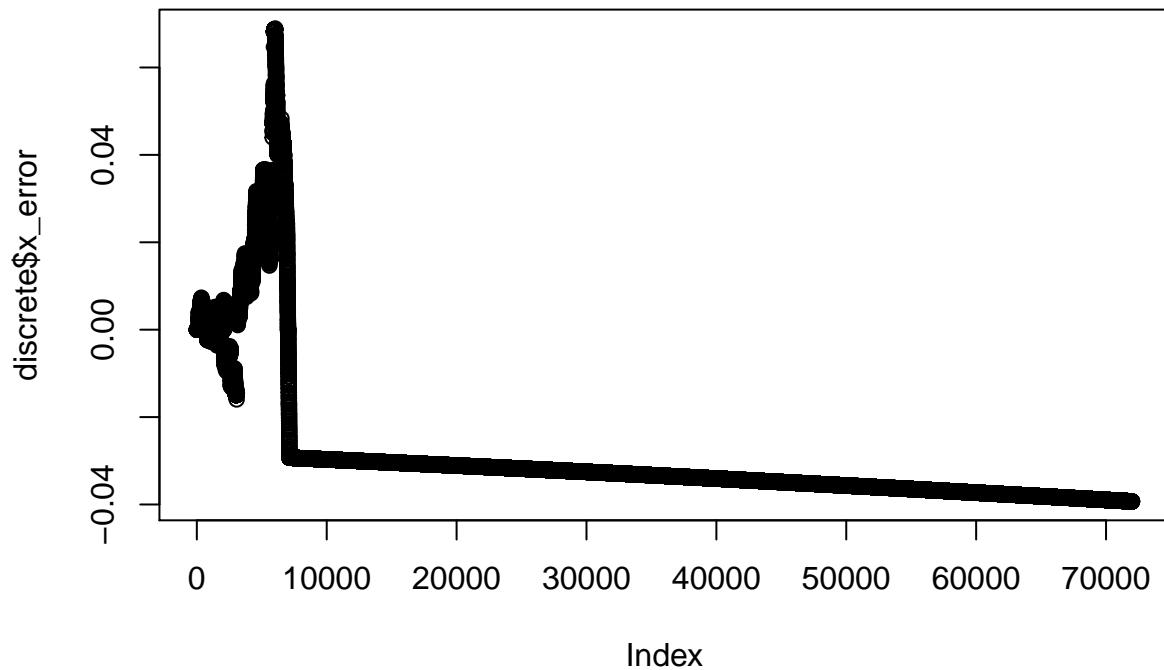
```
message("continuous dist")
## continuous dist
plot(continuous$dist_error)
title("Continuous total distance error over time")
```

Continuous total distance error over time



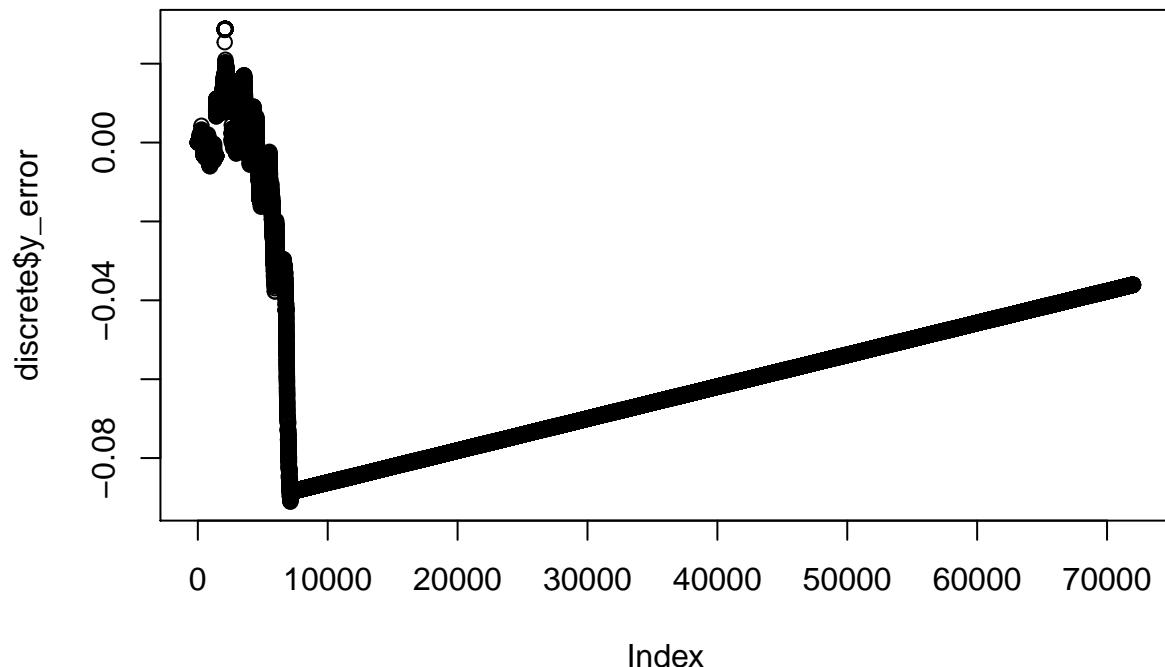
```
message("discrete x")
## discrete x
plot(discrete$x_error)
title("Discrete x_error over time")
```

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

