

# two\_mobile\_restricted Experiment Report

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This is a summary of the data from the two\_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.
## -0.01552 0.01219 0.01893 0.01995 0.02554 0.04445

summary(continuous$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.02076 0.01133 0.02304 0.02354 0.03487 0.05417

summary(continuous$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## 2.700e-07 1.679e-02 3.112e-02 3.138e-02 4.578e-02 6.068e-02

summary(discrete$x_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.02305 0.01405 0.02080 0.02097 0.02739 0.04342

summary(discrete$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -0.019580 0.009212 0.020810 0.021320 0.032600 0.051690

summary(discrete$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## 2.700e-07 1.659e-02 3.004e-02 3.057e-02 4.445e-02 5.964e-02

summary(external_data_averages)

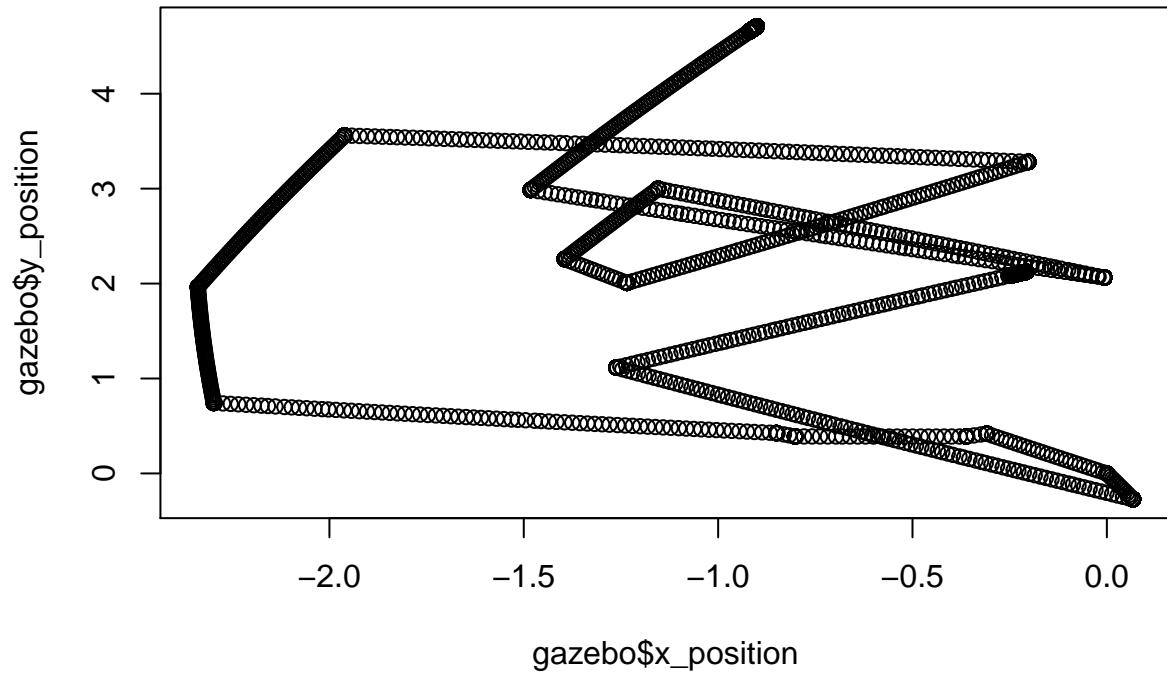
##      Length Class Mode
## [1,] 1     -none- numeric
## [2,] 1     -none- numeric
```

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

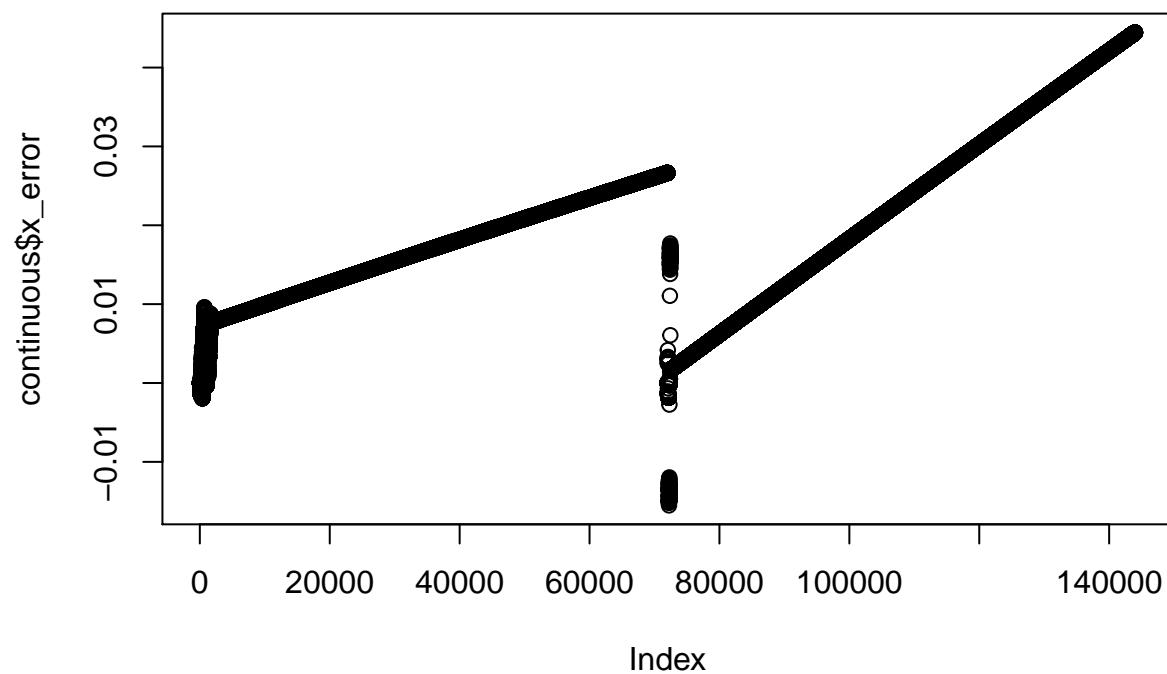


```
message("continuous x")
```

```
## continuous x
```

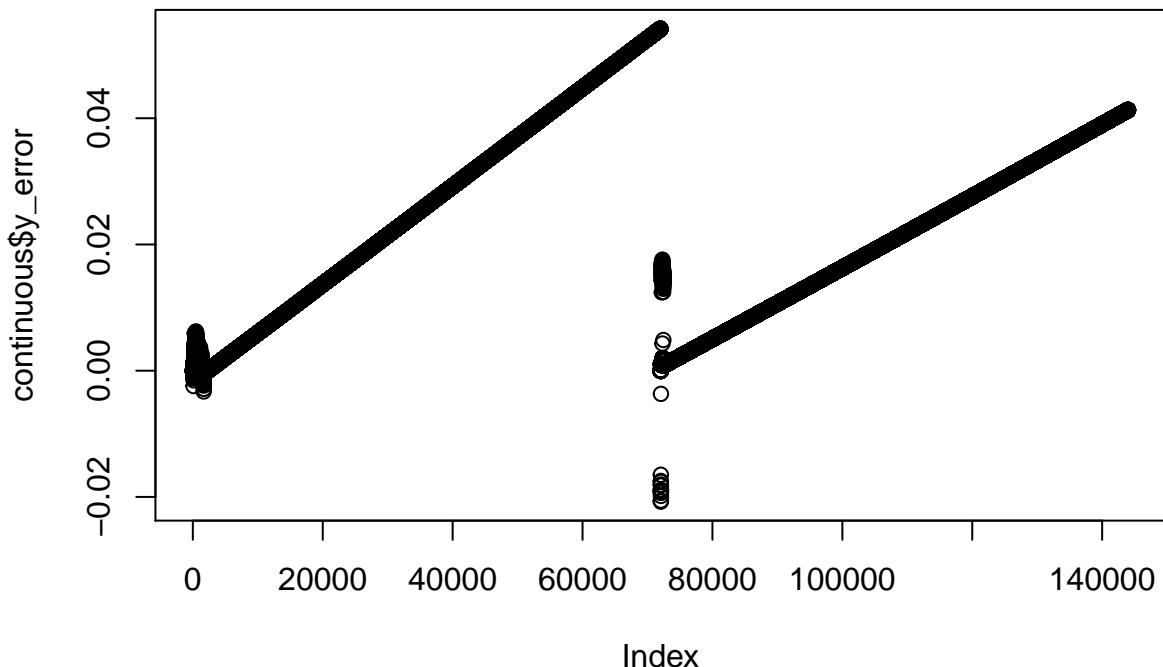
```
plot(continuous$x_error)
title("Continuous x_error over time")
```

**Continuous x\_error over time**



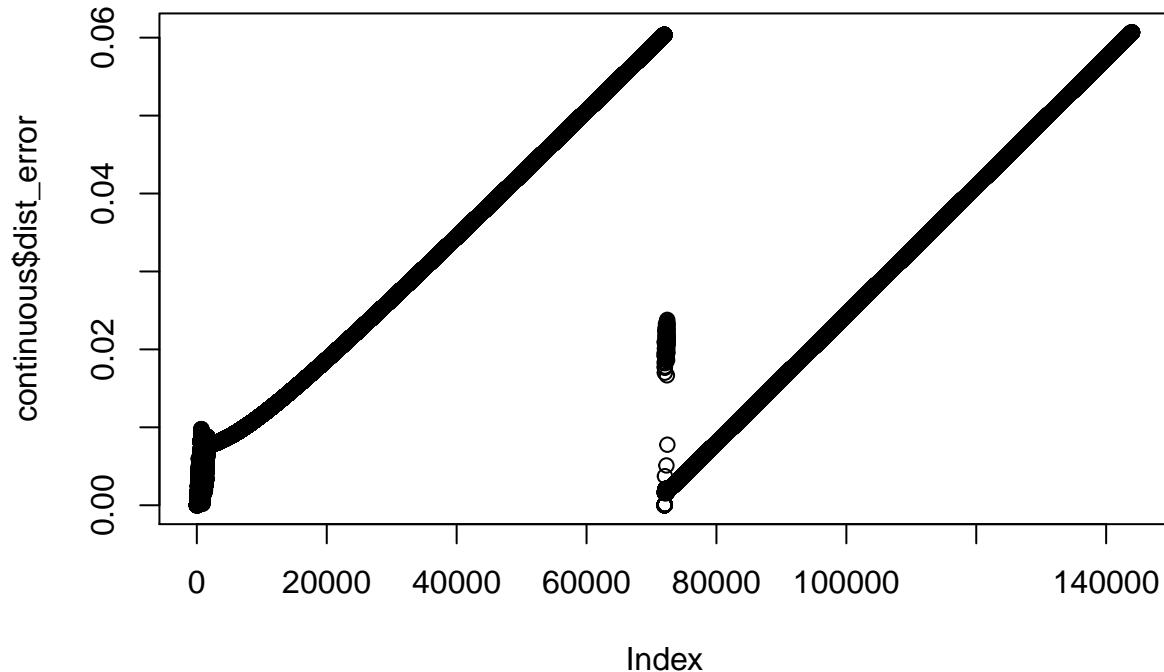
```
message("continuous y")  
  
## continous y  
plot(continuous$y_error)  
title("Continuous y_error over time")
```

**Continuous y\_error over time**



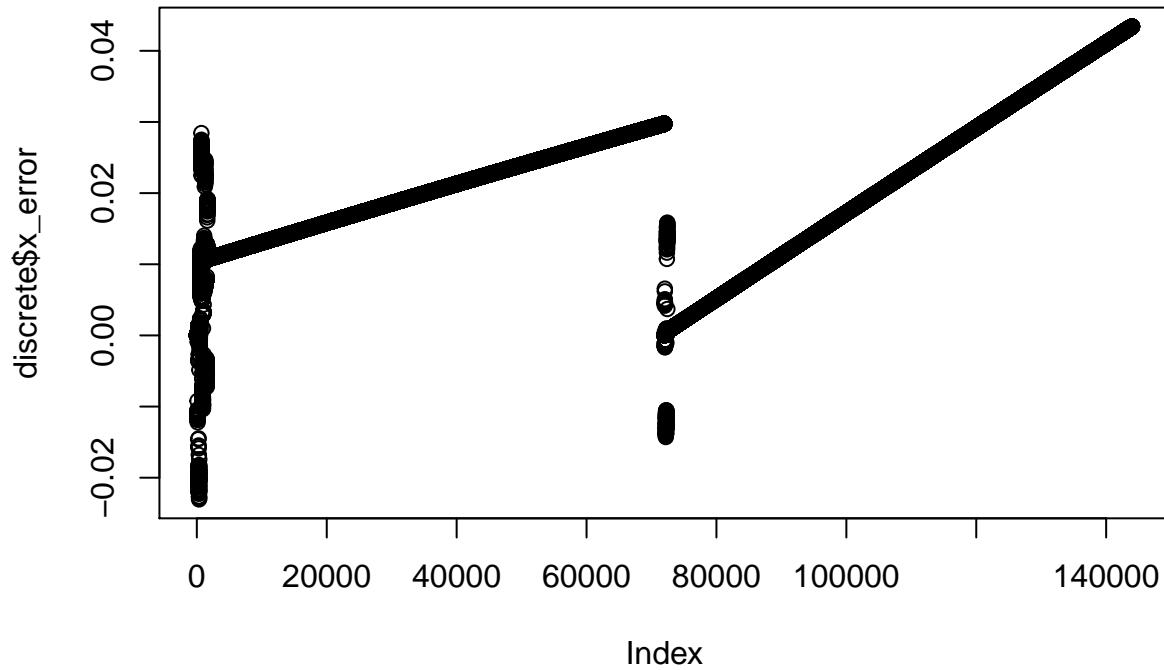
```
message("continuous dist")  
  
## continuous dist  
plot(continuous$dist_error)  
title("Continuous total distance error over time")
```

### Continuous total distance error over time



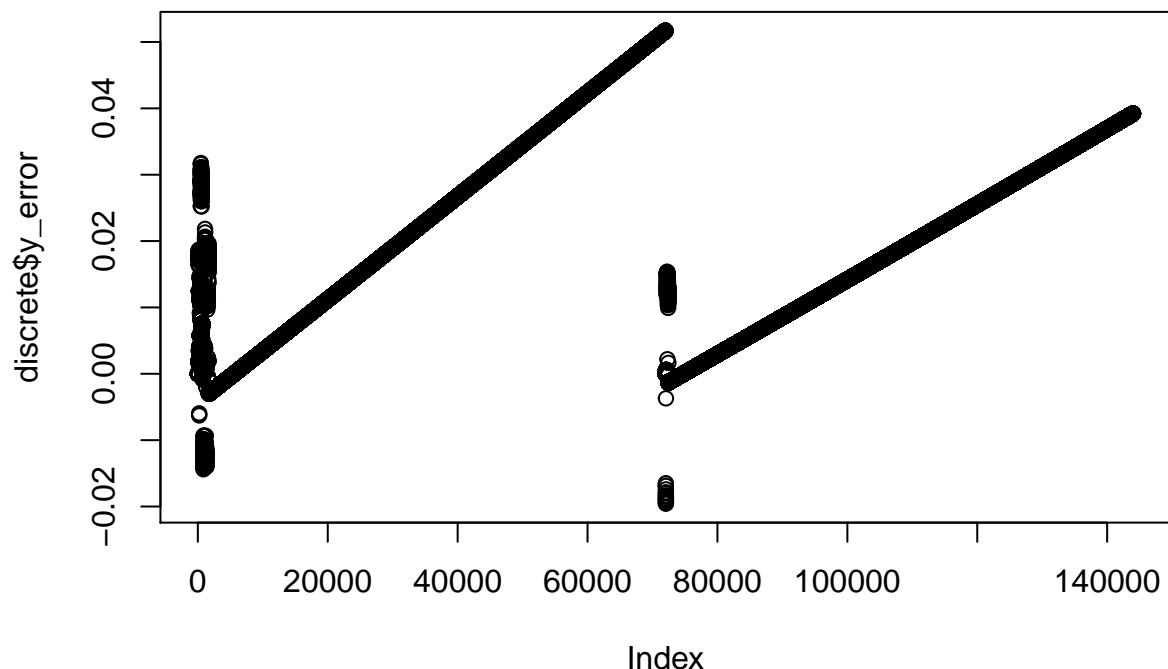
```
message("discrete x")
## discrete x
plot(discrete$x_error)
title("Discrete x_error over time")
```

### 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

