

two_mobile Experiment Report

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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.
## -4.205e-02 -2.281e-03  3.050e-06  6.555e-04  1.919e-03  5.341e-02
```

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

```
##      Min.    1st Qu.      Median        Mean     3rd Qu.       Max.
## -5.618e-02 -2.537e-03 -9.940e-06  3.832e-04  1.857e-03  7.308e-02
```

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

```
##      Min.    1st Qu.      Median        Mean     3rd Qu.       Max.
## 2.800e-07 5.586e-04 4.890e-03 8.065e-03 1.157e-02 7.312e-02
```

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

```
##      Min.    1st Qu.      Median        Mean     3rd Qu.       Max.
## -0.3076000 -0.0162400  0.0000033  0.0006270  0.0088380  0.4689000
```

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

```
##      Min.    1st Qu.      Median        Mean     3rd Qu.       Max.
## -0.2849000 -0.0137600 -0.0000022  0.0055010  0.0115400  0.3728000
```

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

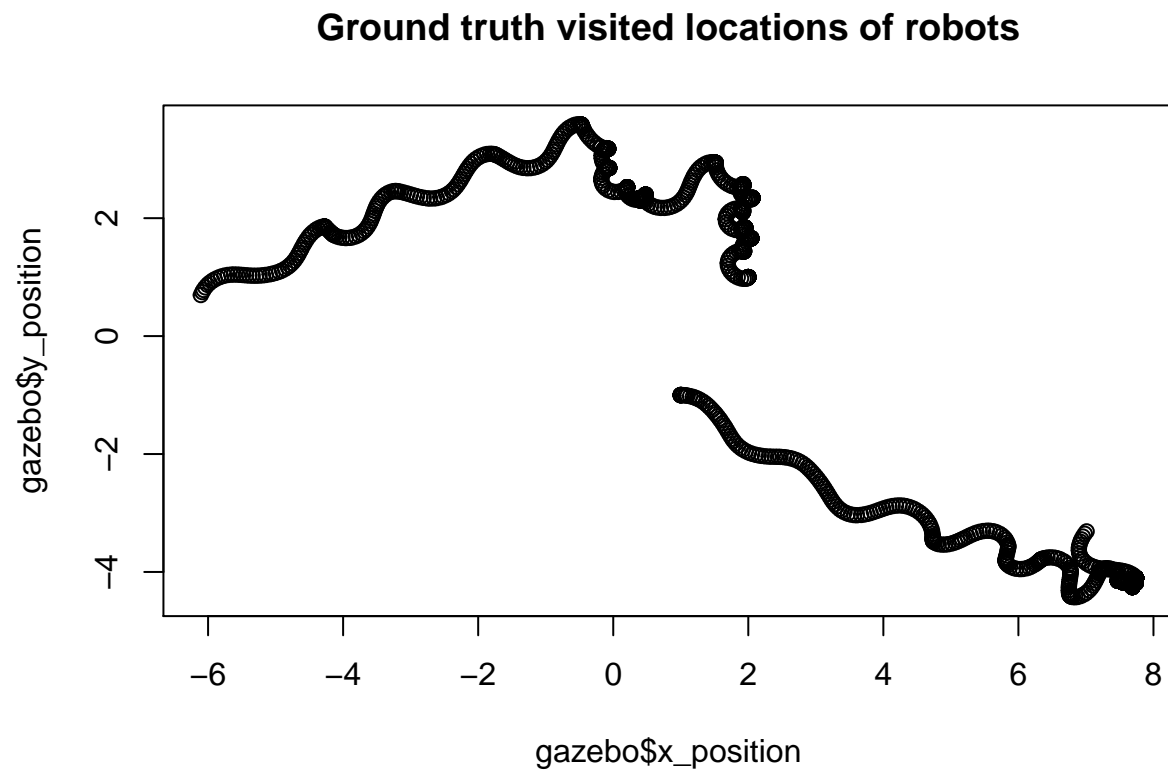
```
##      Min.    1st Qu.      Median        Mean     3rd Qu.       Max.
## 0.0000002 0.0026340 0.0366100 0.0503500 0.0592100 0.4706000
```

```
if (params$robot >= 2) {
  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.

```
plot(gazebo$x_position, gazebo$y_position,  
     main = "Ground truth visited locations of robots")
```



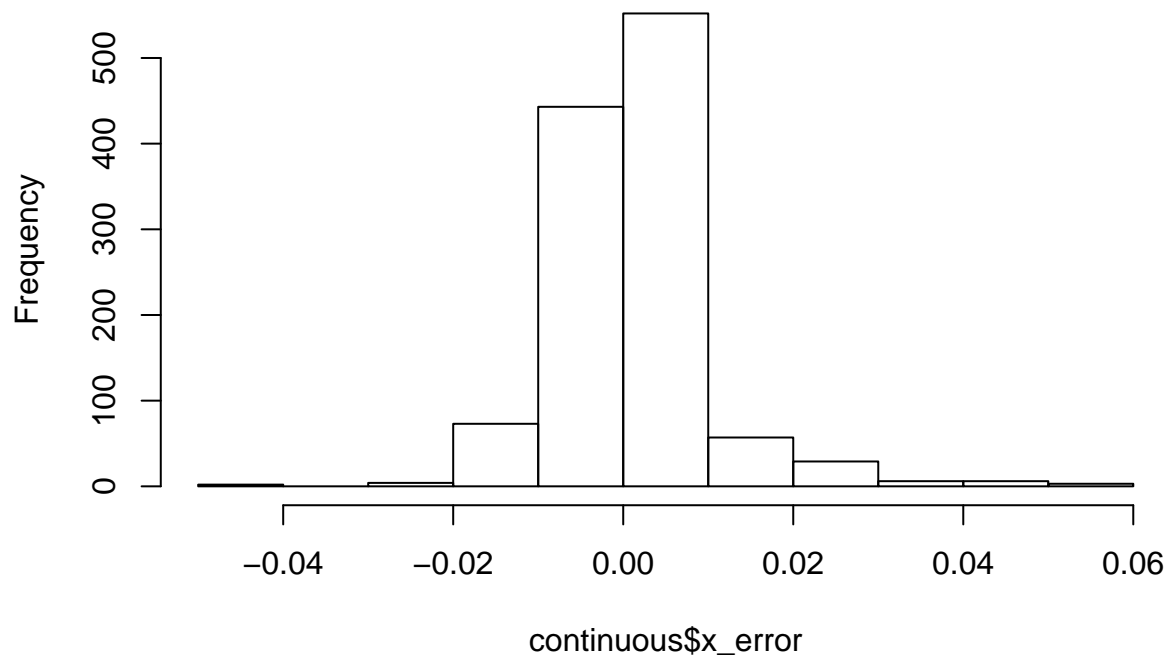
```
hist(gazebo$dist_from_origin,  
     main = "Distance from origin vs. time")
```

Distance from origin vs. time

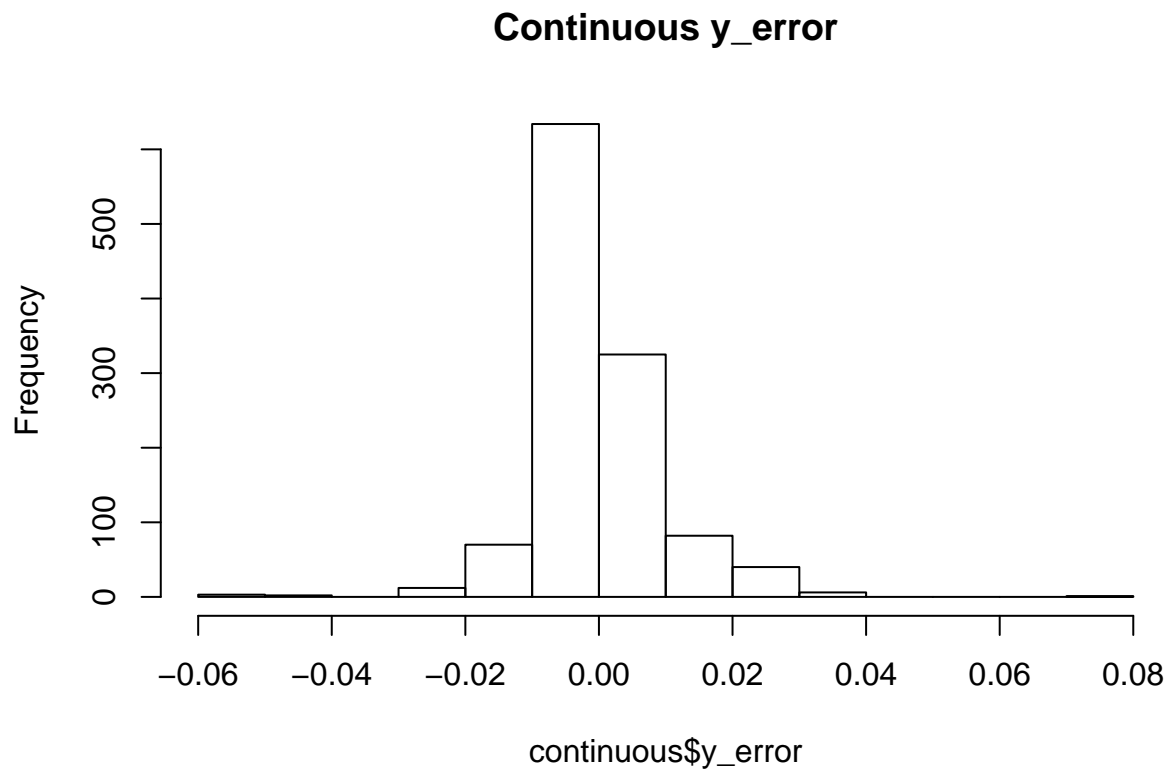


```
hist(continuous$x_error,  
     main = "Continuous x_error")
```

Continuous x_error

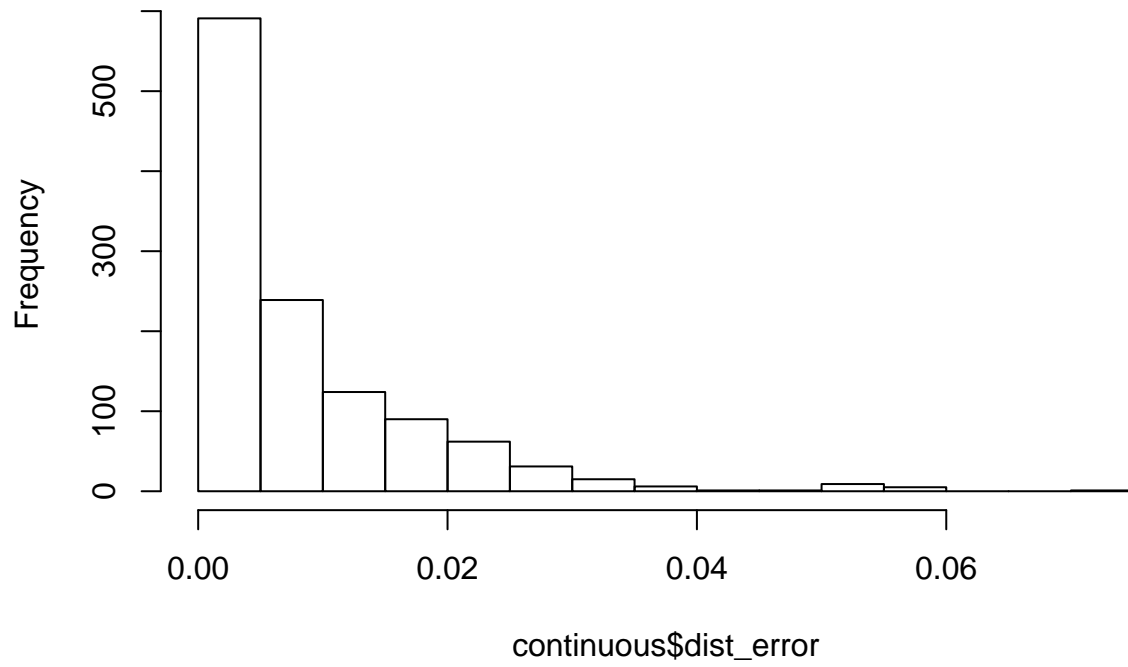


```
hist(continuous$y_error,  
     main = "Continuous y_error")
```



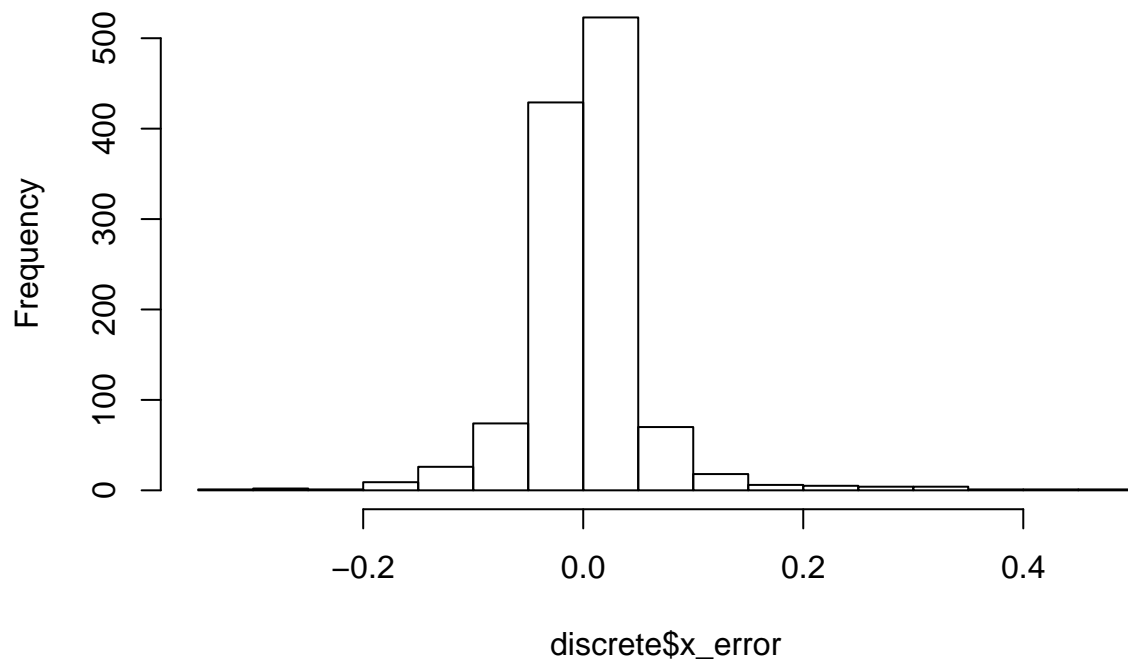
```
hist(continuous$dist_error,  
     main = "Continuous total distance error")
```

Continuous total distance error

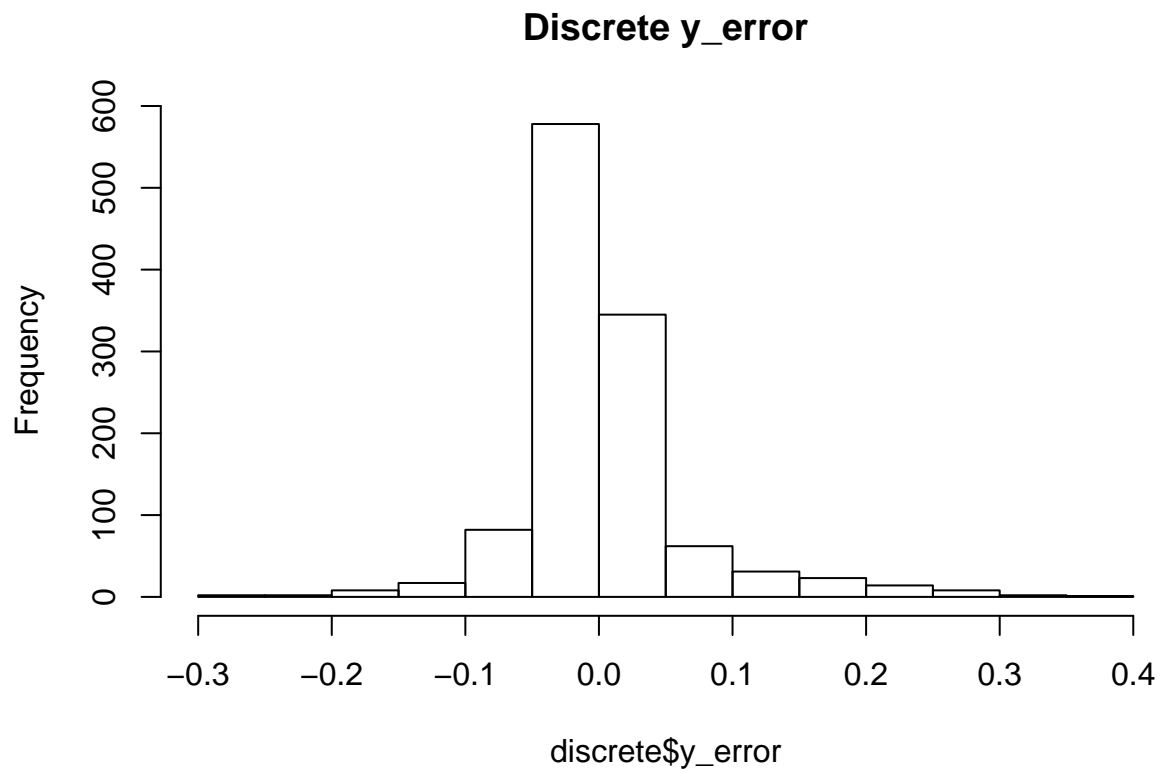


```
hist(discrete$x_error,  
     main = "Discrete x_error")
```

Discrete x_error



```
hist(discrete$y_error,  
     main = "Discrete y_error")
```



```
hist (discrete$dist_error,  
      main = "Discrete total distance error")
```

