

one_mobile_noisy_true Experiment Report

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This is a summary of the data from the one_mobile_noisy_true 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.
## -6.955e-02 -8.225e-03 -3.921e-05  3.127e-04  8.747e-03  6.261e-02
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -0.0624100 -0.0092530 -0.0001994 -0.0003033  0.0082320  0.0634300
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## 1.599e-05  6.670e-03  1.935e-02  2.130e-02  3.514e-02  7.053e-02
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -0.4167000 -0.0029860  0.0000005  0.0017600  0.0028650  0.3879000
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -0.3878000 -0.0035010  0.0000011 -0.0010120  0.0026590  0.4416000
```

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

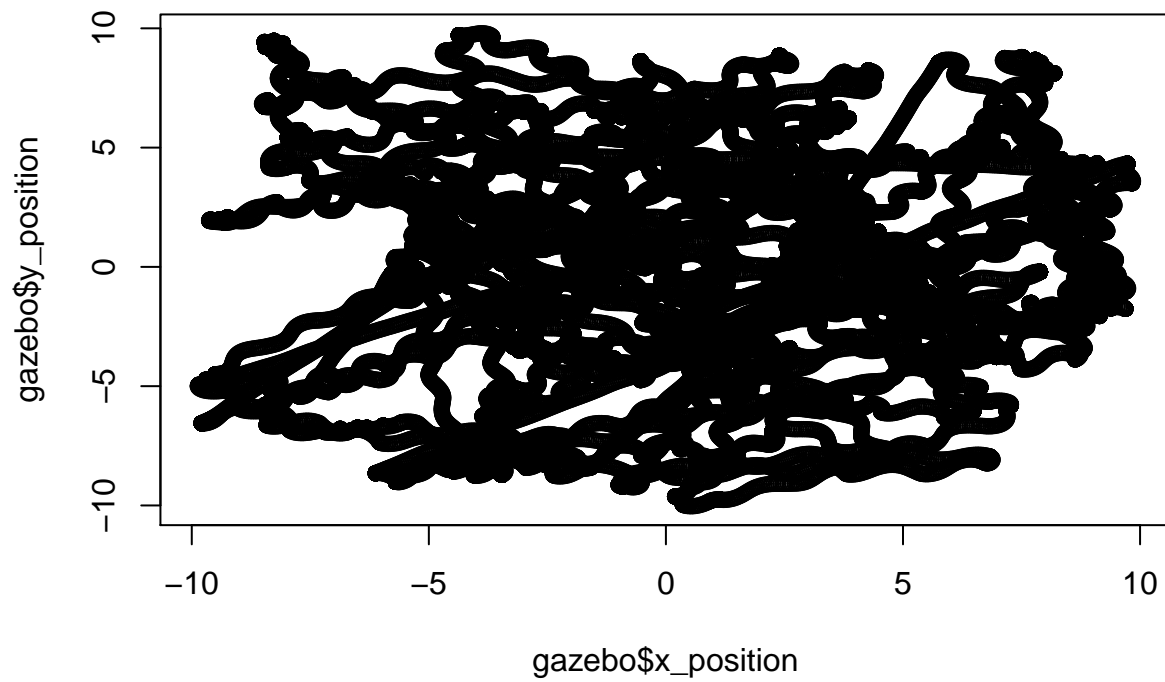
```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## 0.0000000  0.0008857  0.0060000  0.0260100  0.0222400  0.4668000
```

```
if (params$robot >= 2) {
  summary(external_data_averages)
}
```

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")
```

Ground truth visited locations of robots



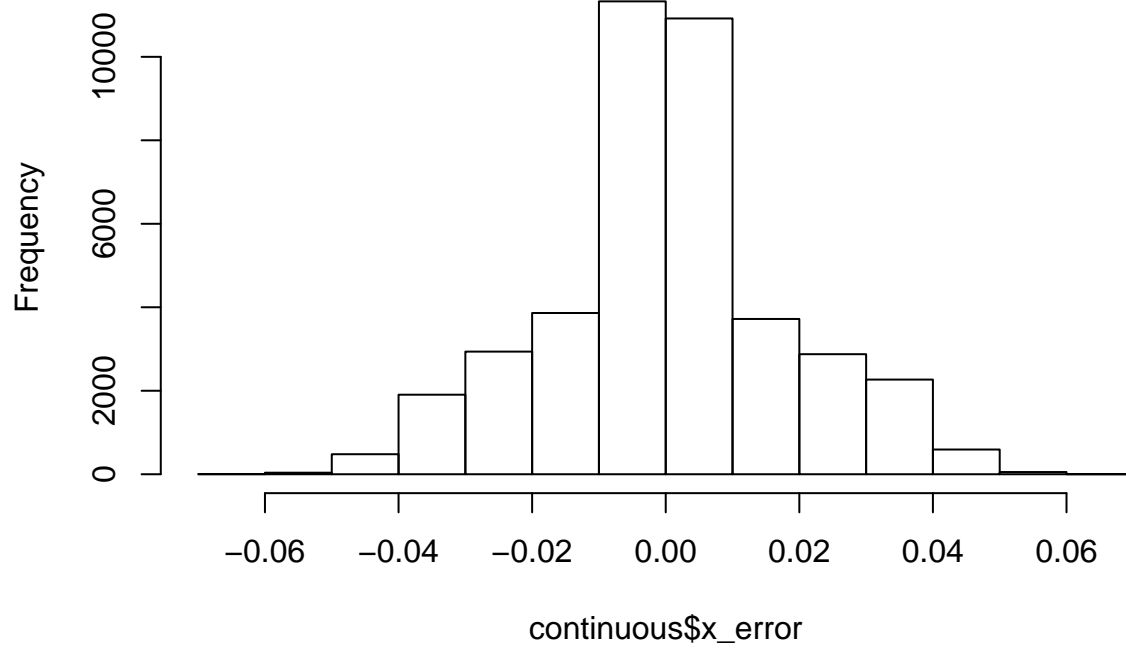
```
hist(gazebo$dist_from_origin,  
     main = "Distance from origin vs. time")
```

Distance from origin vs. time



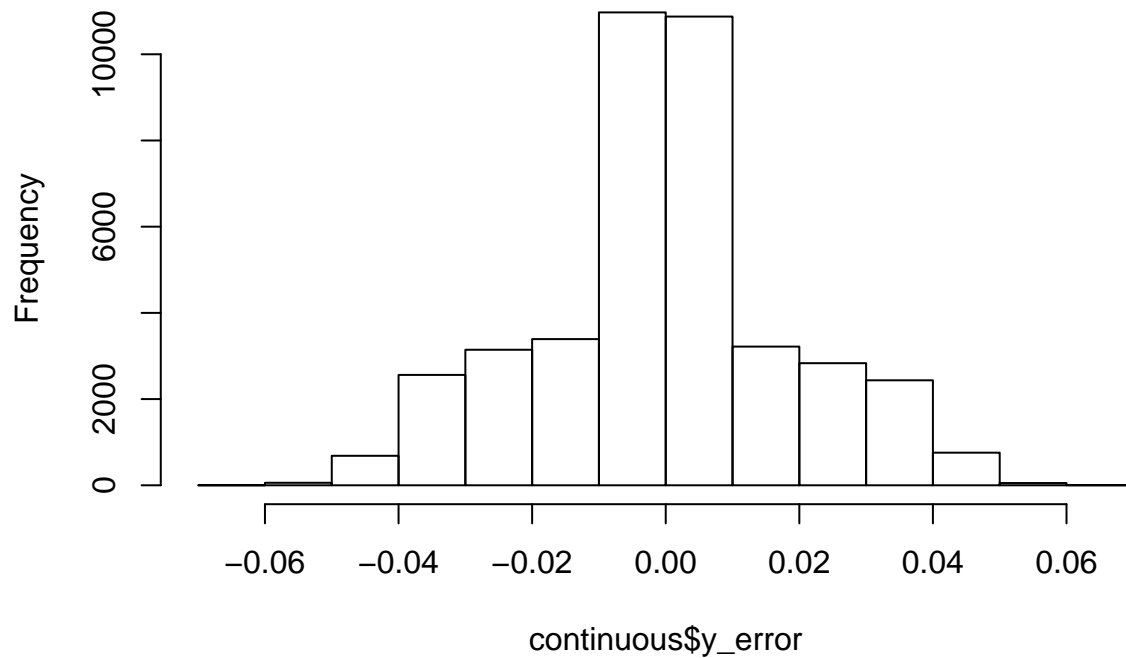
```
hist(continuous$x_error,  
     main = "Continuous x_error")
```

Continuous x_error



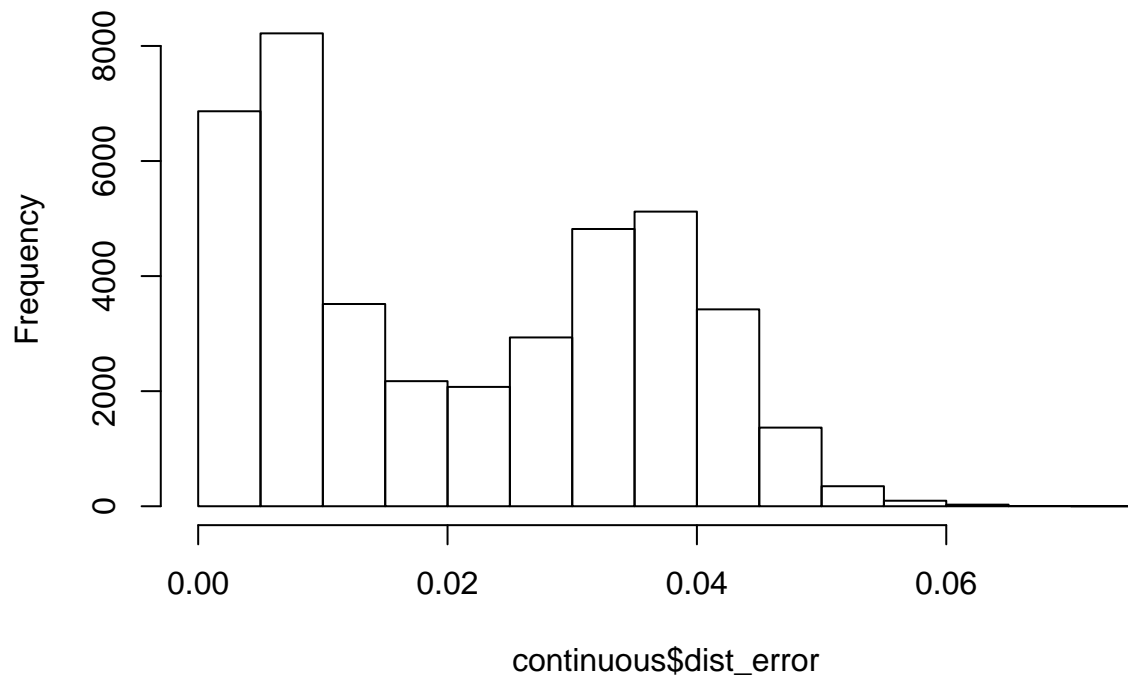
```
hist(continuous$y_error,  
     main = "Continuous y_error")
```

Continuous y_error



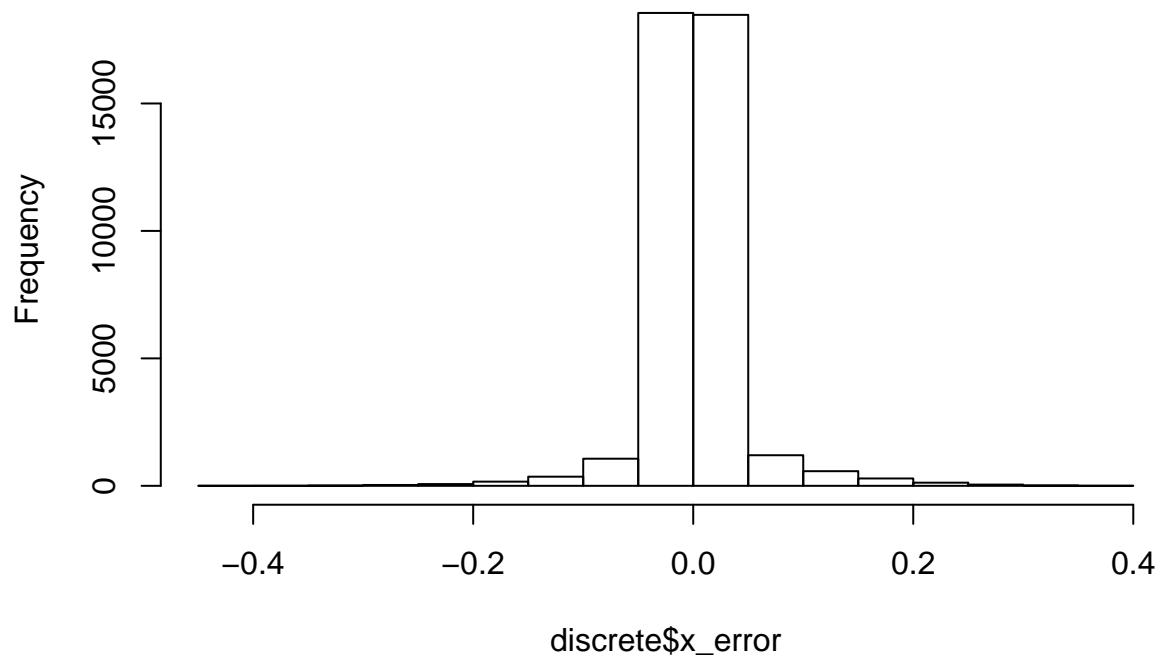
```
hist(continuous$dist_error,  
     main = "Continuous total distance error")
```

Continuous total distance error

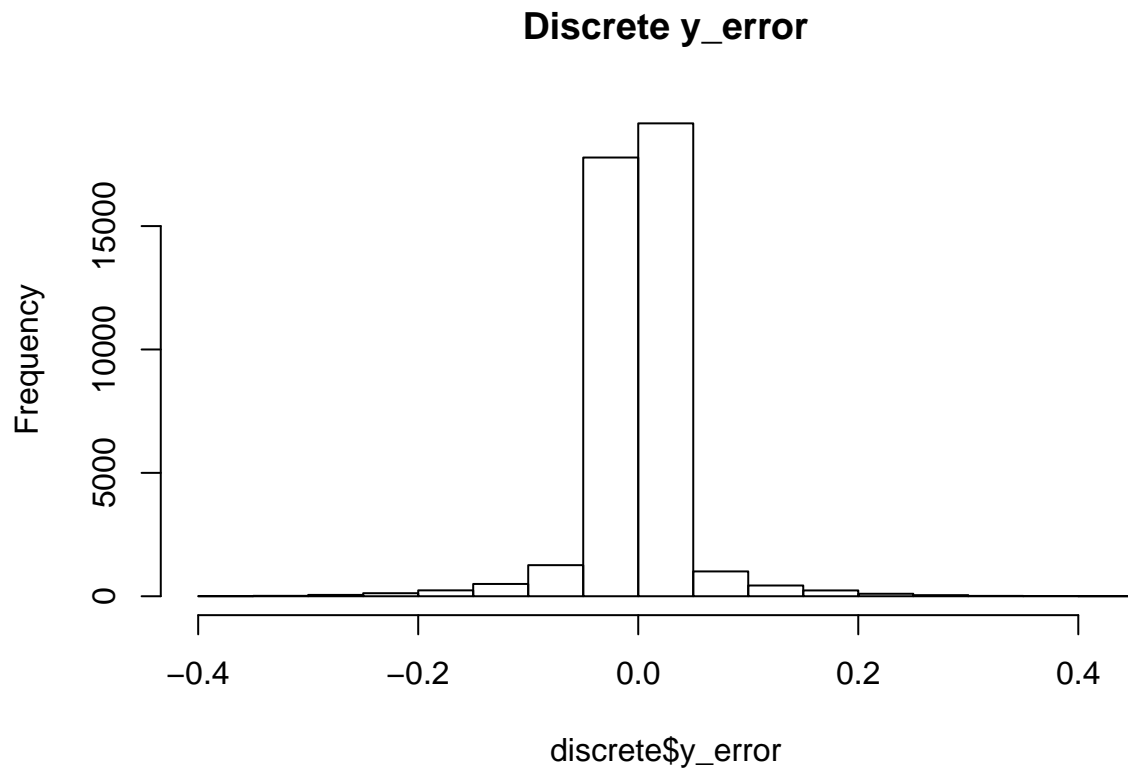


```
hist(discrete$x_error,  
      main = "Discrete x_error")
```

Discrete x_error



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



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

