

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.
## -0.0622200 -0.0197500 -0.0019600 -0.0090640  0.0005464  0.0473000
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -5.596e-02 -1.741e-02 -1.427e-05 -4.792e-03  4.313e-03  6.711e-02
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## 2.180e-06 2.633e-03 2.088e-02 2.242e-02 4.172e-02 6.762e-02
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -0.282000 -0.021140 -0.002006 -0.010030  0.003622  0.311700
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## -0.3816000 -0.0108000 -0.0000121  0.0080950  0.0086860  0.3319000
```

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

```
##      Min.      1st Qu.      Median      Mean      3rd Qu.      Max.
## 0.0000002 0.0052420 0.0244900 0.0413200 0.0468200 0.3848000
```

```
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.

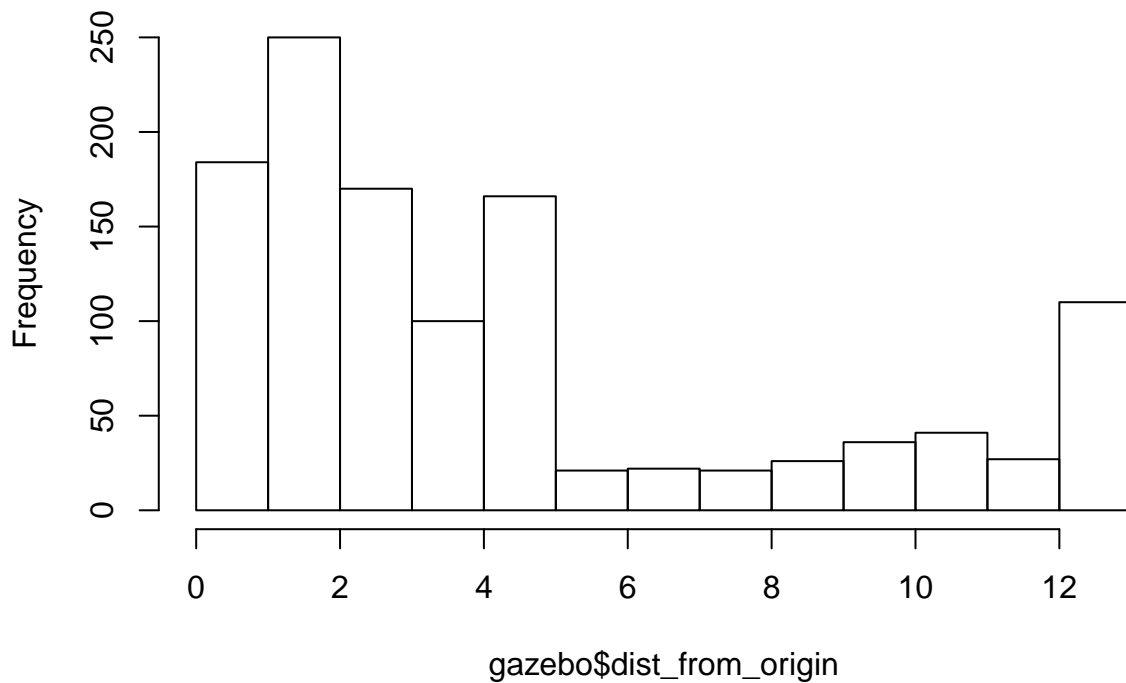
```
plot(gazebo$x_position, gazebo$y_position,
     main = "Ground truth visited locations of robots")
```

Ground truth visited locations of robots



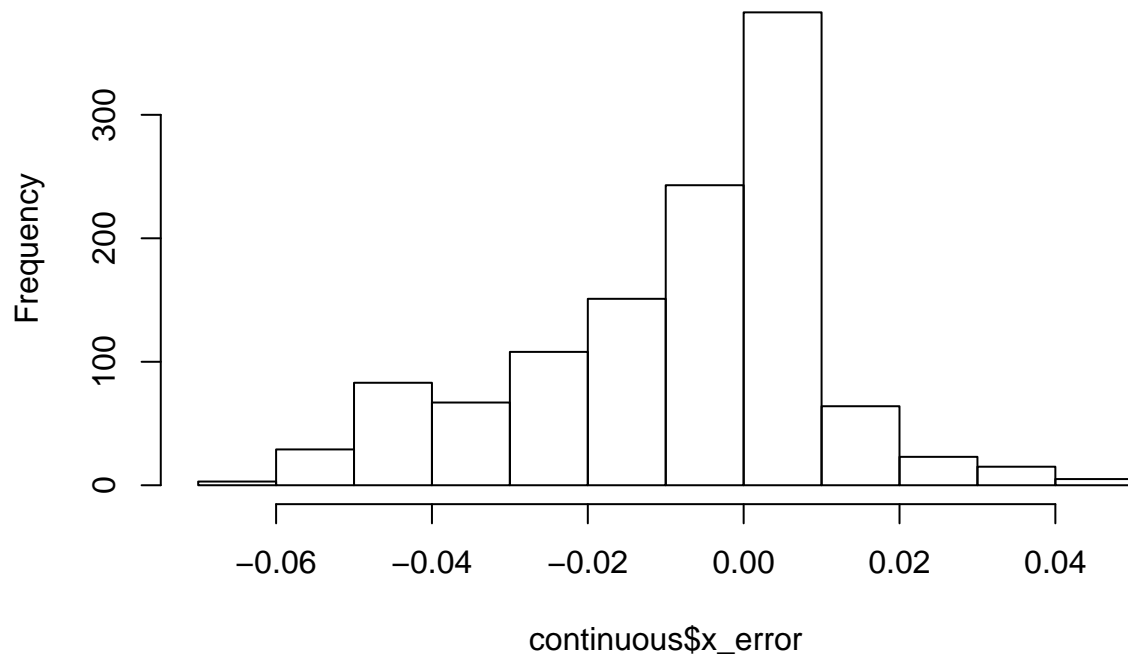
```
hist(gazebo$dist_from_origin,  
     main = "Distance from origin vs. time")
```

Distance from origin vs. time



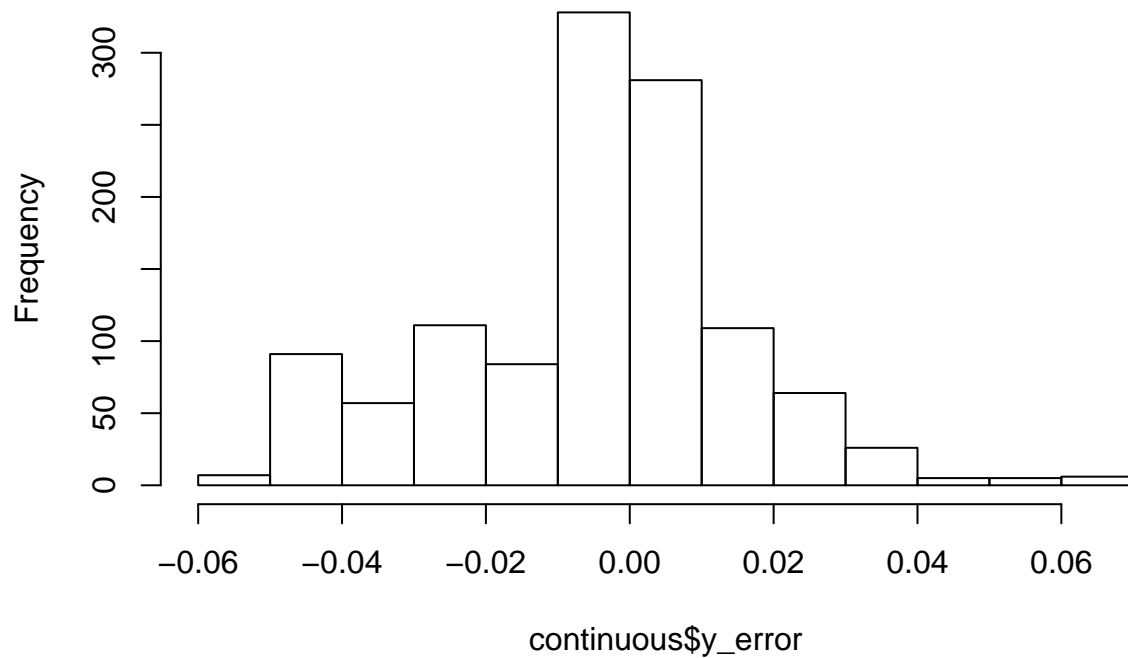
```
hist(continuous$x_error,  
     main = "Continuous x_error")
```

Continuous x_error



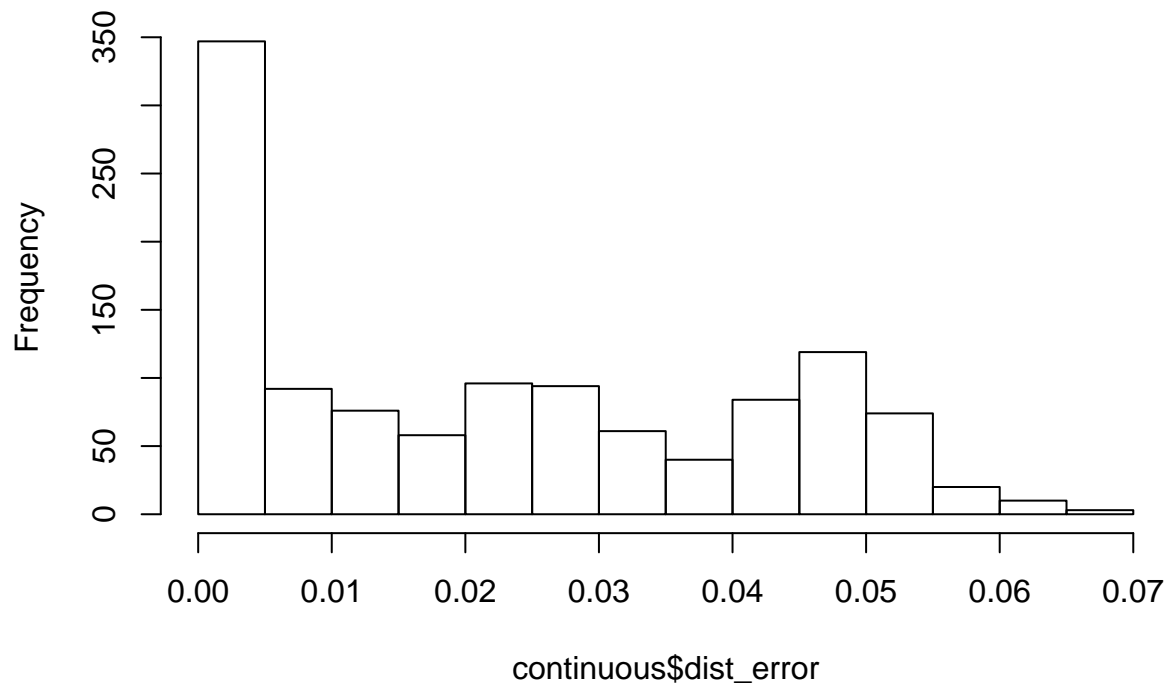
```
hist(continuous$y_error,  
     main = "Continuous y_error")
```

Continuous y_error



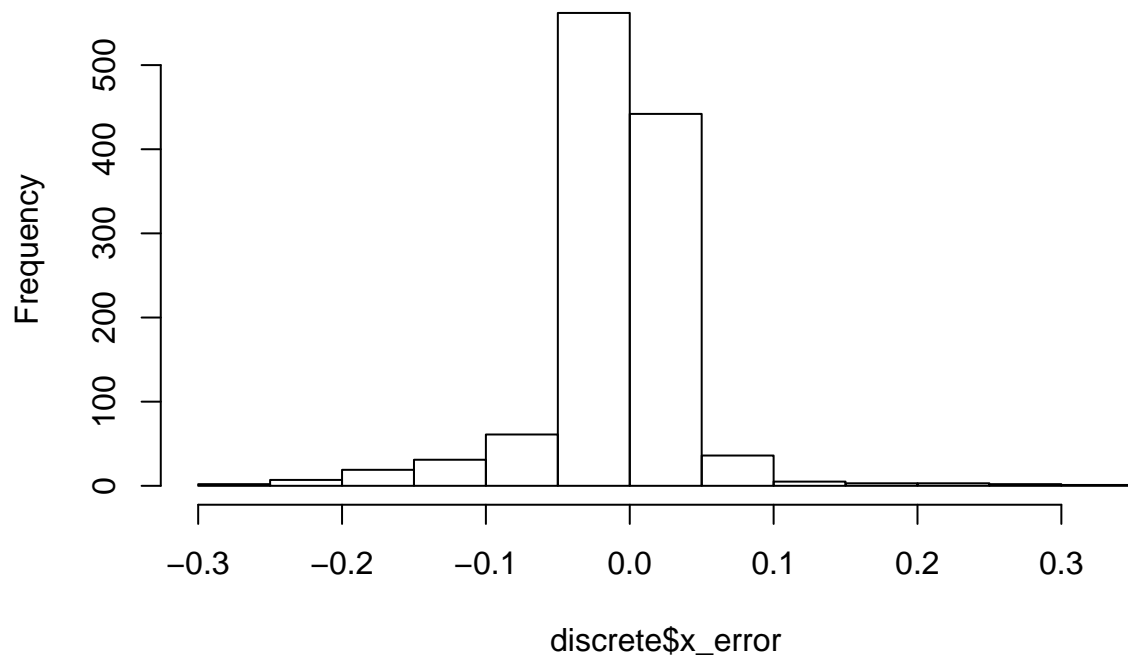
```
hist(continuous$dist_error,  
     main = "Continuous total distance error")
```

Continuous total distance error



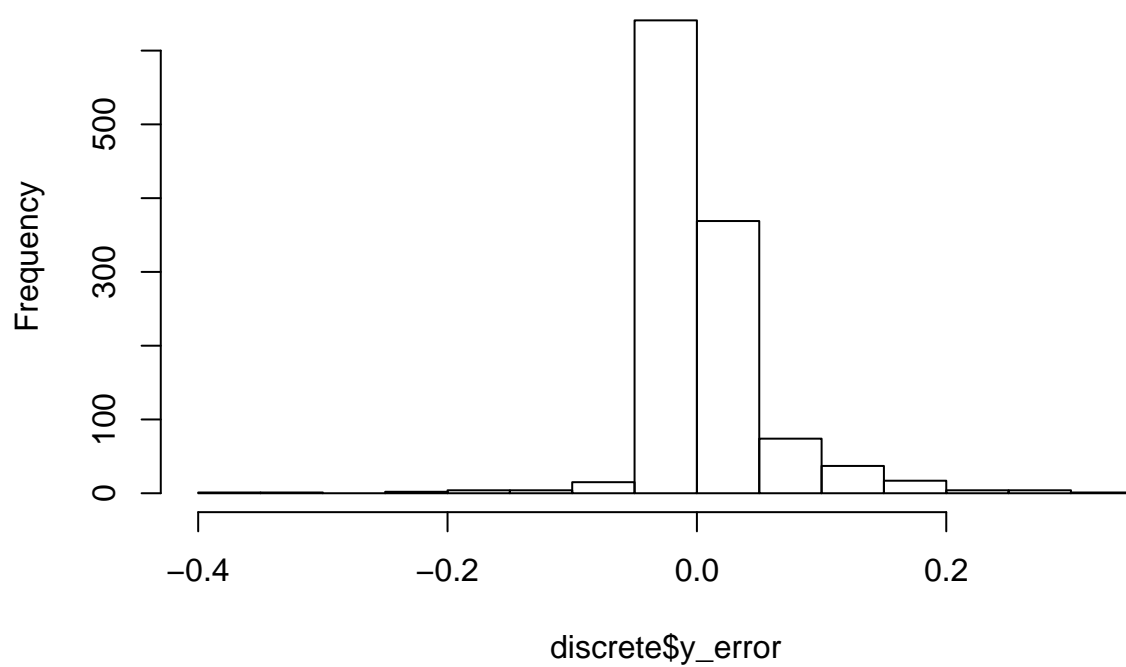
```
hist(discrete$x_error,  
     main = "Discrete x_error")
```

Discrete x_error



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

Discrete y_error



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

Discrete total distance error

