

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.
## -20.930 -4.008  4.347   5.623 15.420  37.710
```

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

```
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -11.300 -4.492  1.003   2.499  7.003  28.110
```

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

```
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
##    0.000  9.794 14.650 14.470 18.270  37.780
```

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

```
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -5.870000 -0.711500  0.007462 -0.021960  0.662500  6.402000
```

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

```
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## -6.220000 -0.663200 -0.007291  0.009790  0.673900  5.820000
```

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

```
##      Min. 1st Qu. Median     Mean 3rd Qu.     Max.
## 0.000014 0.633800 1.266000 1.530000 2.191000 7.408000
```

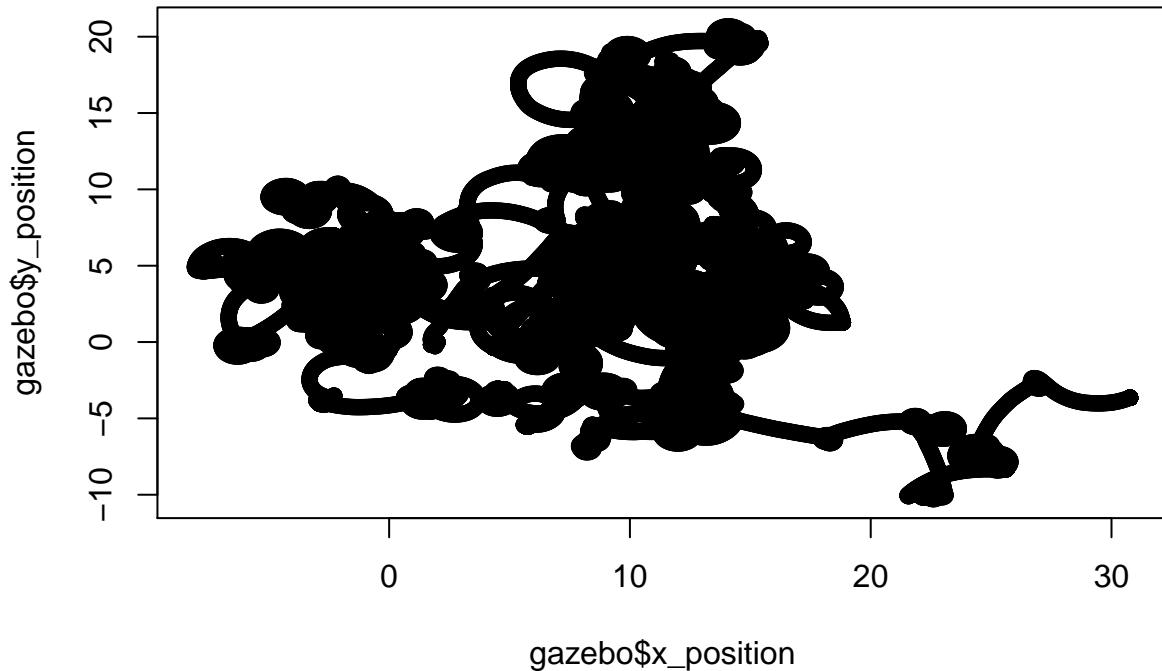
```
if (params$robot >= 2) {
  summary(external_data_averages)
}
```

```
##      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



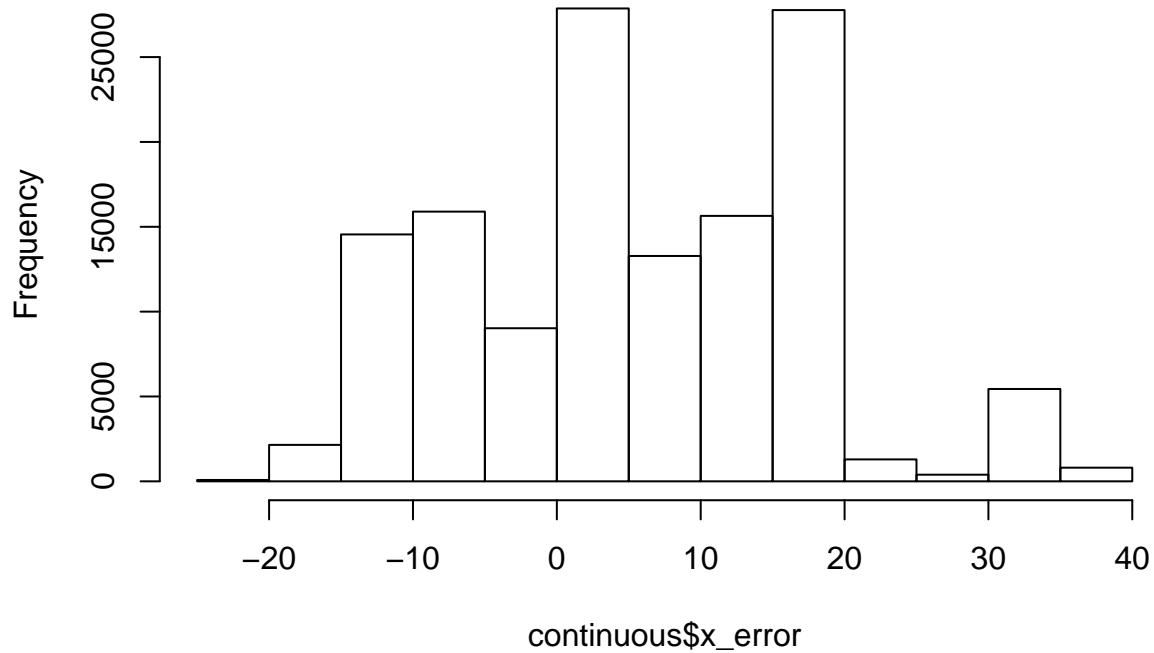
```
hist(gazebo$dist_from_origin,
      main = "Distance from origin vs. time")
```

Distance from origin vs. time



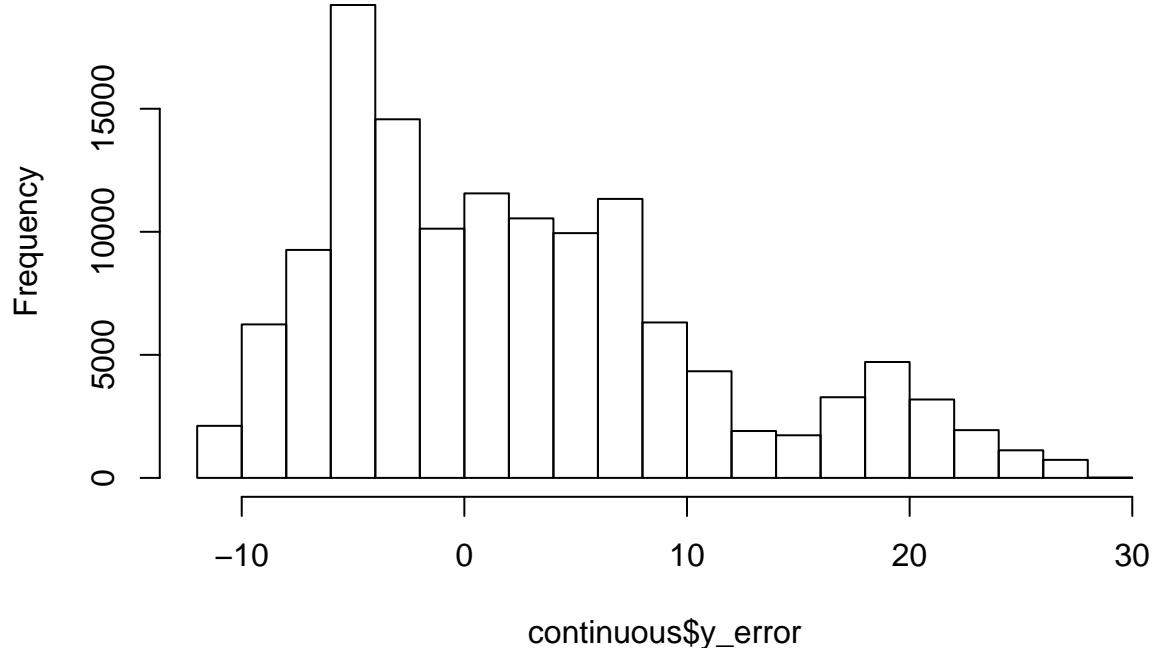
```
hist(continuous$x_error,  
     main = "Continuous x_error")
```

Continuous x_error



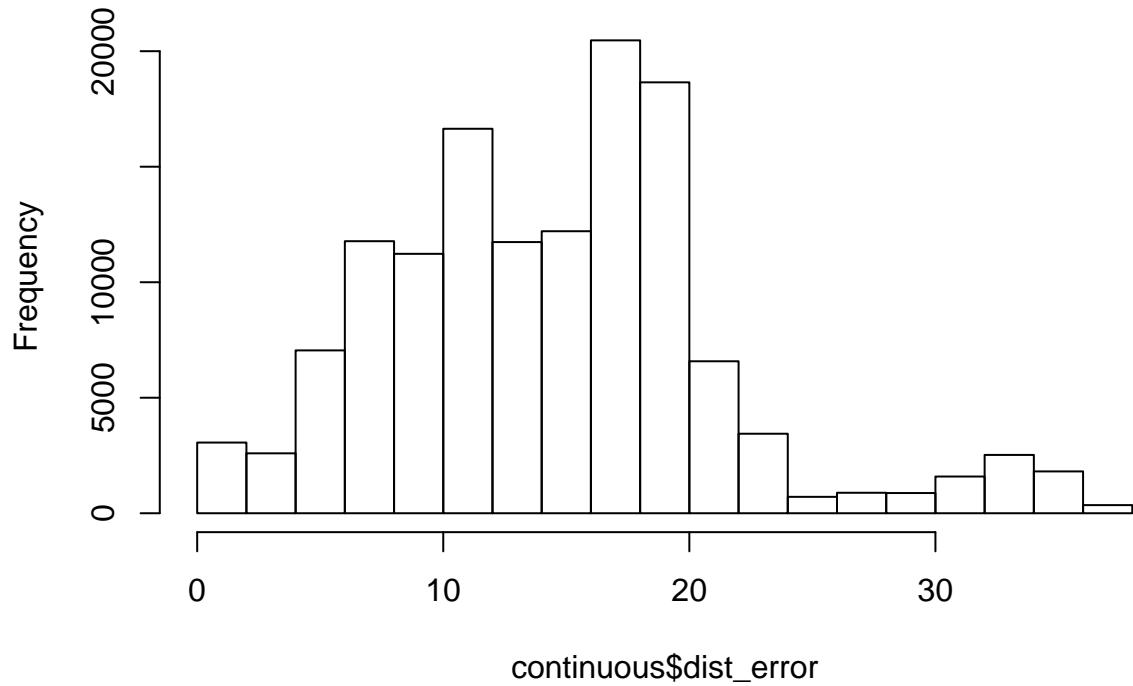
```
hist(continuous$y_error,  
     main = "Continuous y_error")
```

Continuous y_error



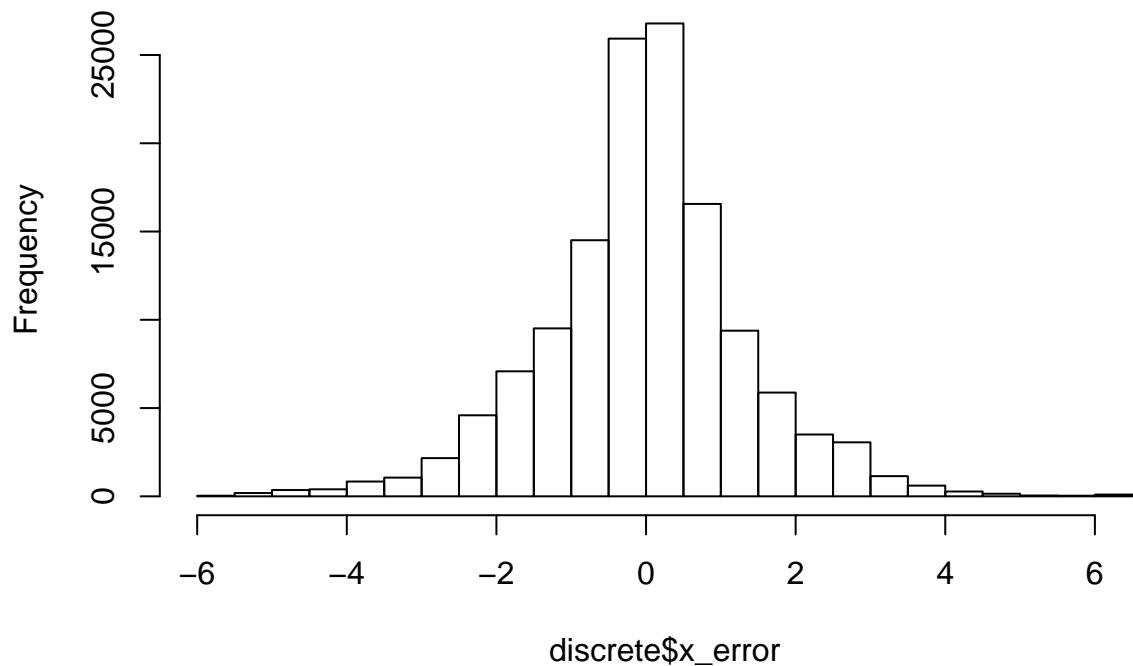
```
hist(continuous$dist_error,  
     main = "Continuous total distance error")
```

Continuous total distance error

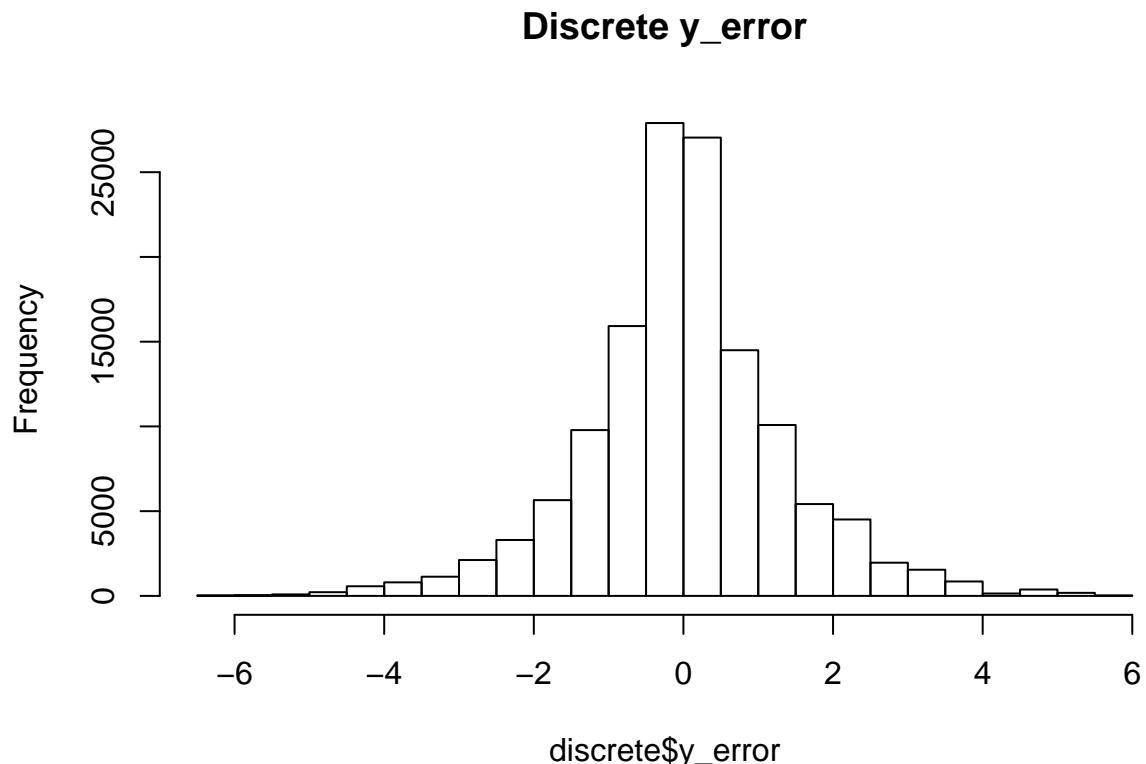


```
hist(discrete$x_error,  
     main = "Discrete x_error")
```

Discrete x_error



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



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

Discrete total distance error

