five_mobile_restricted Experiment Report

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This is a summary of the data from the five_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.
## -5.033e-02 -1.449e-03  6.200e-07 -1.653e-04  1.027e-03  5.363e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -5.449e-02 -7.238e-04 -5.000e-08  1.002e-04  1.813e-03  4.610e-02
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 7.000e-08 1.833e-04 2.804e-03 8.059e-03 1.282e-02 5.706e-02
```

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

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -5.3840 -0.2988  0.0000  0.1197  0.9043  5.4050
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -4.102000 -0.267300 -0.000001 -0.100000  0.132100  3.892000
```

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

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.00000 0.06296 1.21200 1.47200 2.61500 5.41400
```
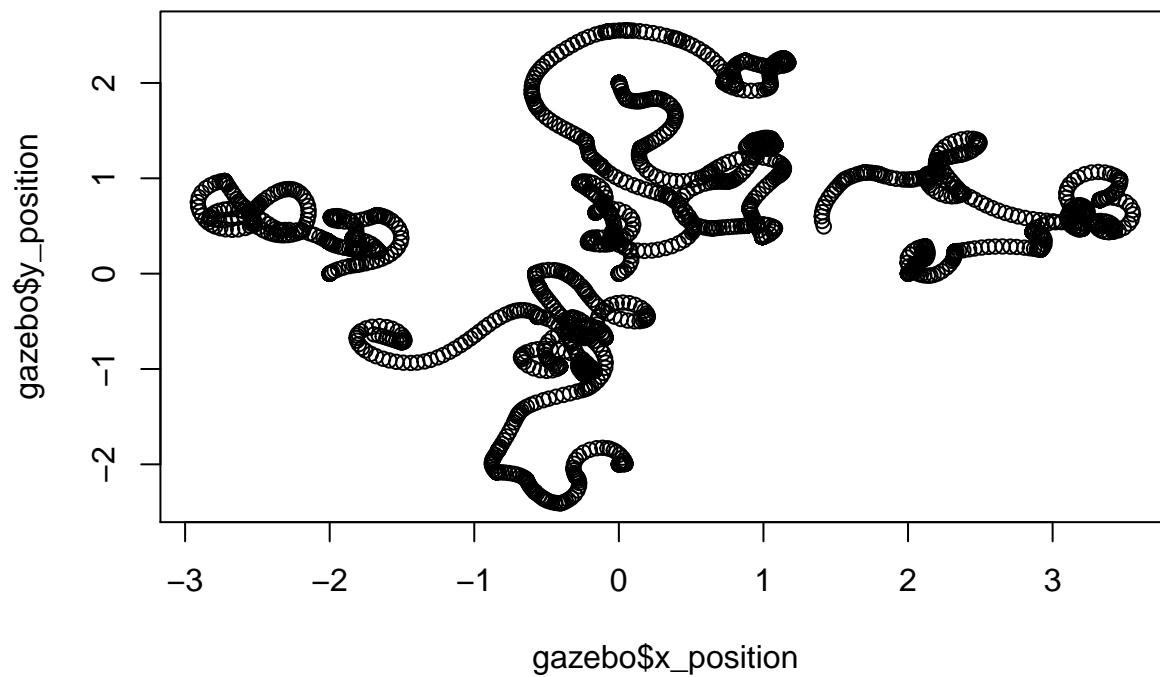
```
if (params$robot >= 2) {
    summary(external_data_averages)
}
```

```
##      Length Class  Mode
## [1,] 1      -none- numeric
## [2,] 1      -none- numeric
## [3,] 1      -none- numeric
## [4,] 1      -none- numeric
## [5,] 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")
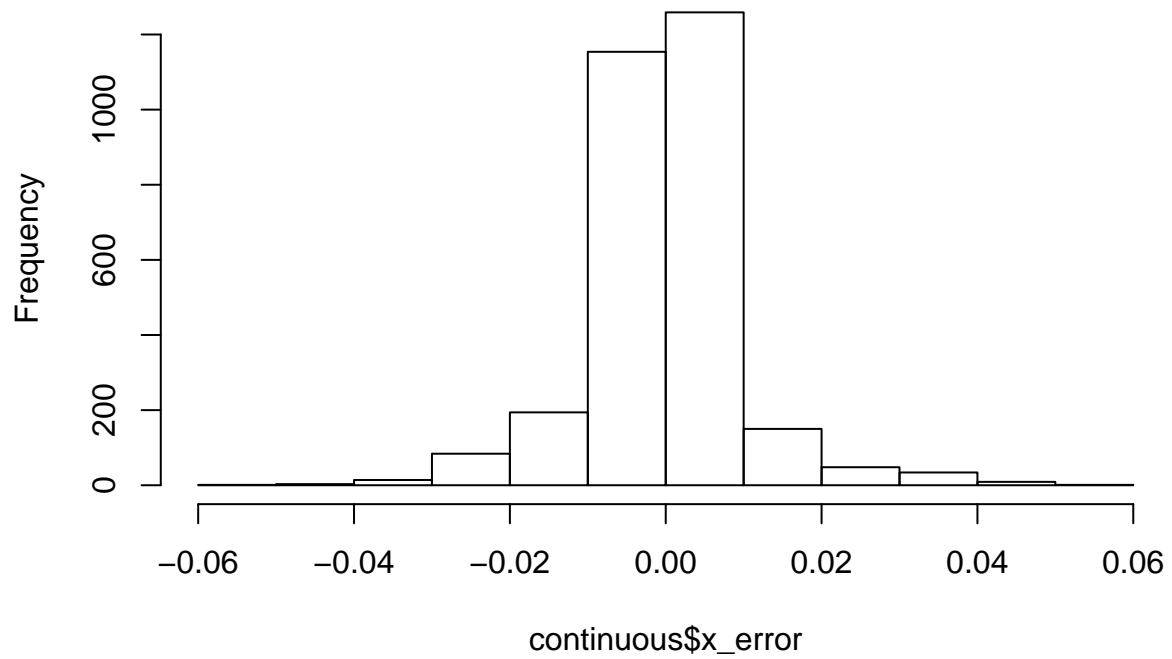```

## Ground truth visited locations of robots



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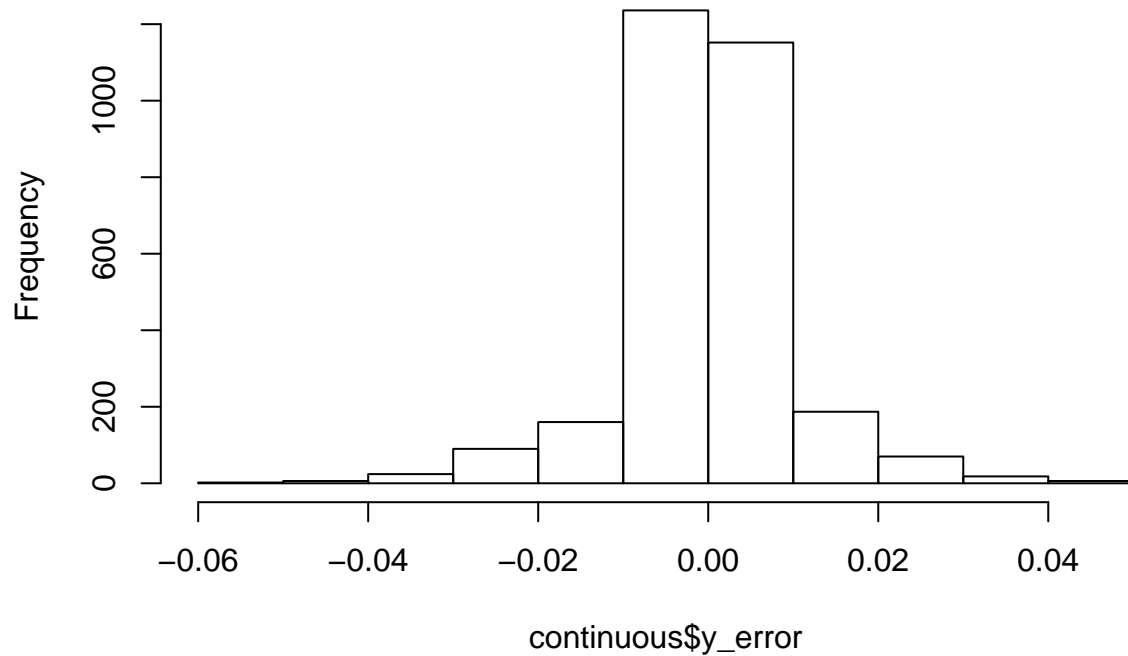
Distance from origin vs. time


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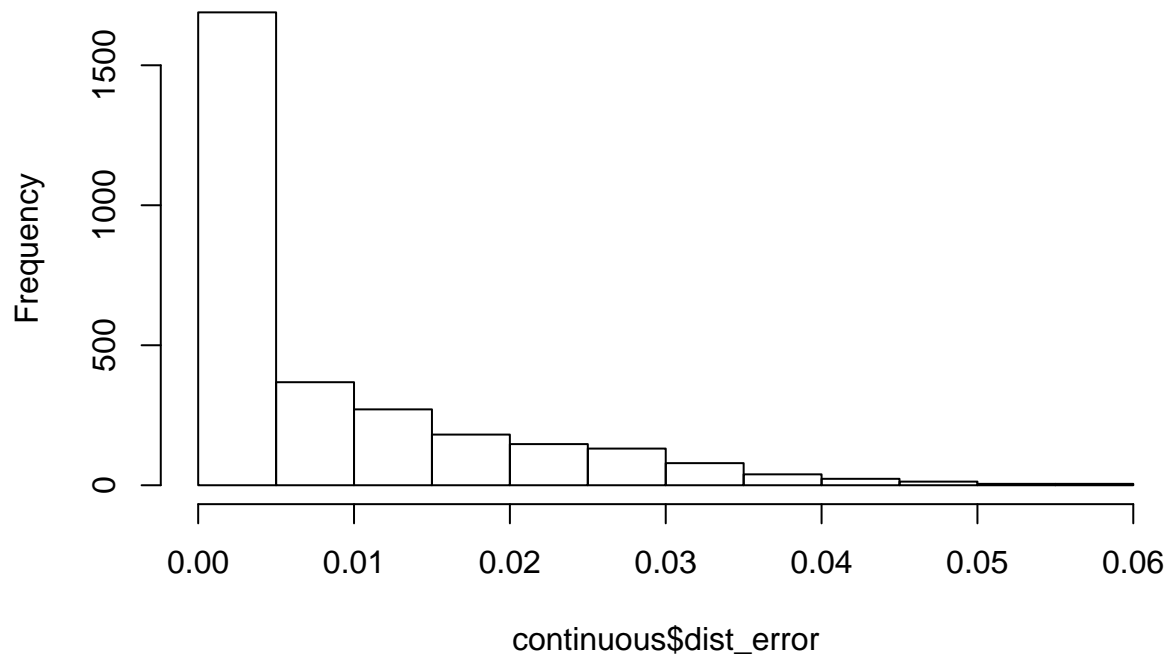
Continuous x_error


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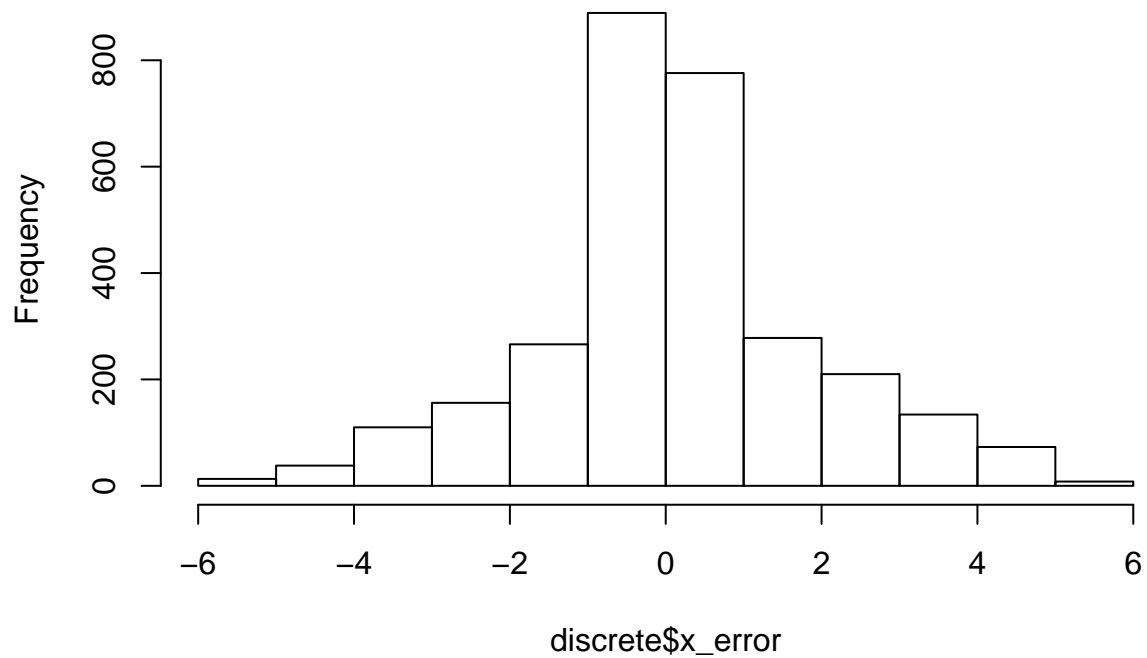
Continuous y_error


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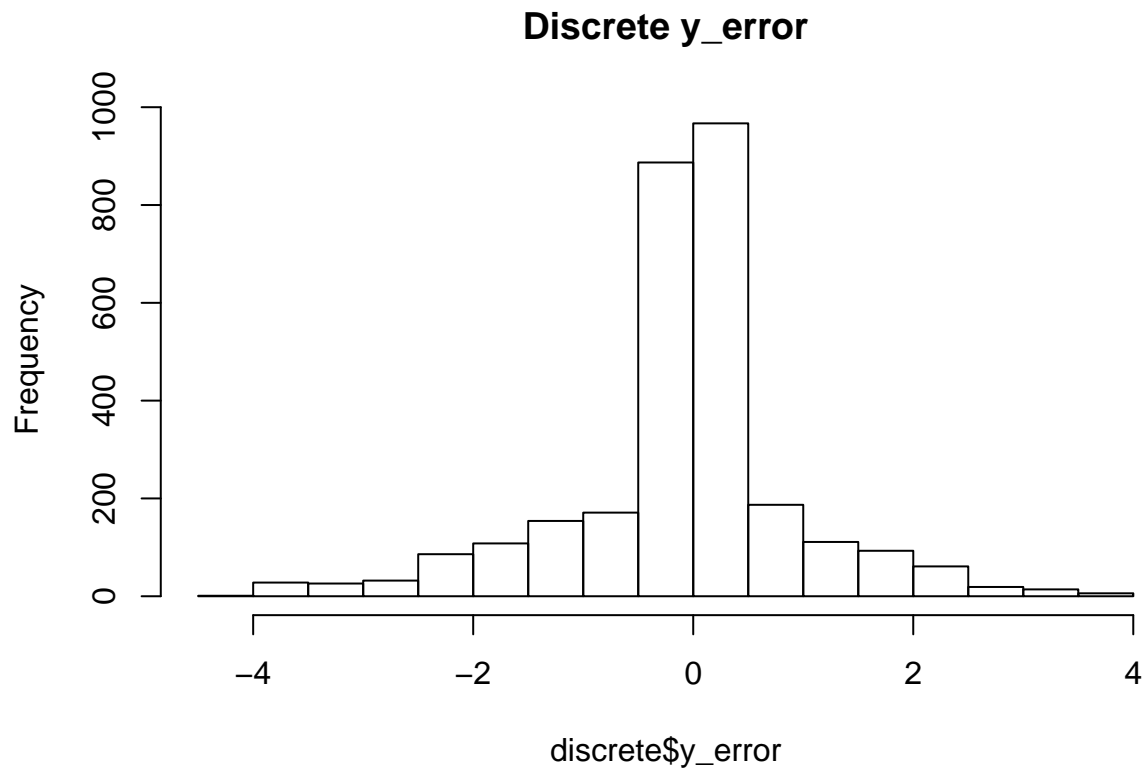
Continuous total distance error


```
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