one_mobile Experiment Report

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This is a summary of the data from the one_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.
## -7.800e-07  1.431e-02  1.626e-02  1.593e-02  1.917e-02  3.191e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -0.0003903  0.0119400  0.0215800  0.0201900  0.0301800  0.0367400
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## 1.100e-07  2.198e-02  2.961e-02  2.637e-02  3.408e-02  4.529e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -7.790e-07  4.649e-03  7.695e-03  8.096e-03  1.080e-02  1.814e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -0.020760  -0.017500  -0.008840  -0.007754   0.001410   0.010030
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## 1.110e-07  1.101e-02  1.608e-02  1.476e-02  1.895e-02  2.248e-02
```

```
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 robot")
```

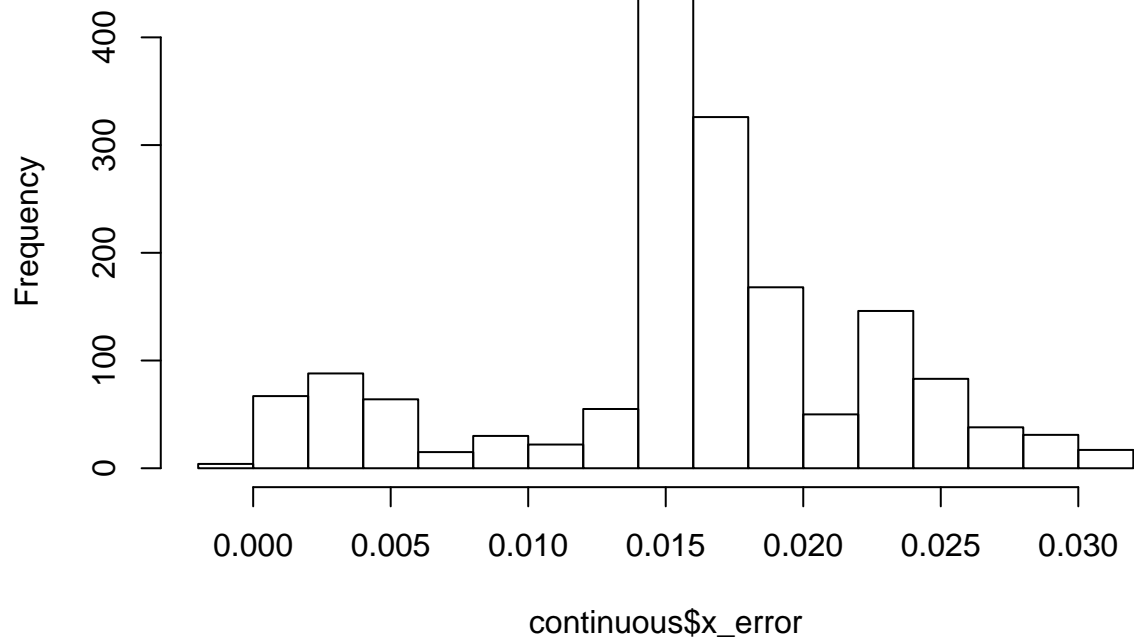## Ground truth visited locations of robot

gazebo$x_position

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

Distance from origin vs. time

gazebo$dist_from_origin

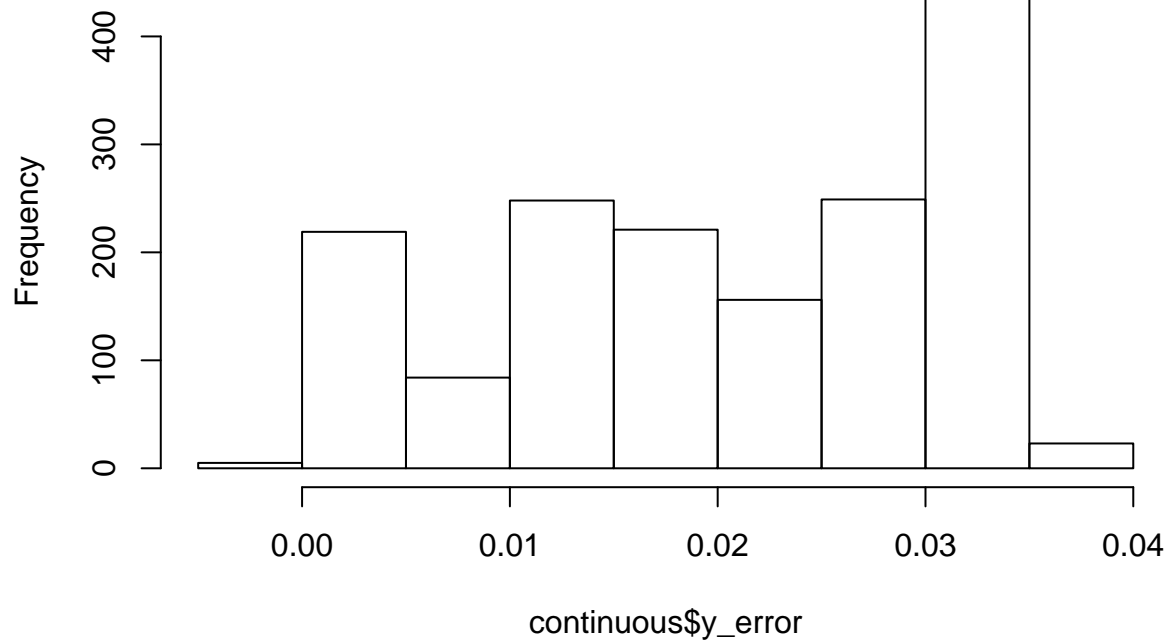```
hist(continuous$x_error,
     main = "Continuous x_error")
```

## Continuous x_error
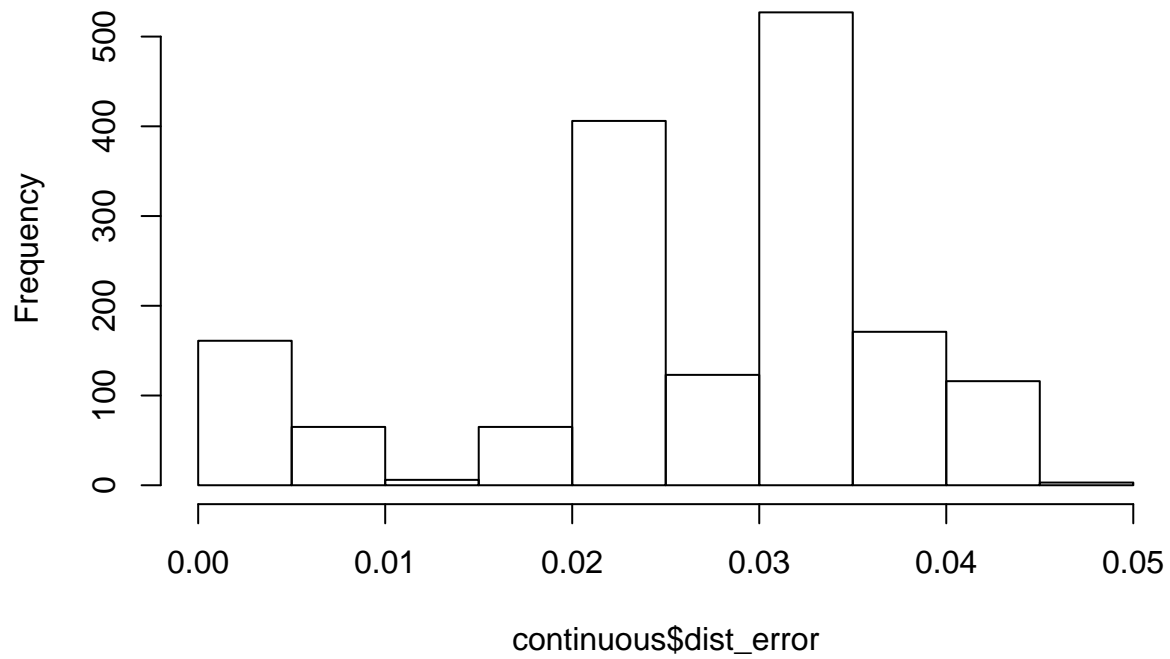


```r
hist(continuous$y_error,
     main = "Continuous y_error")
```

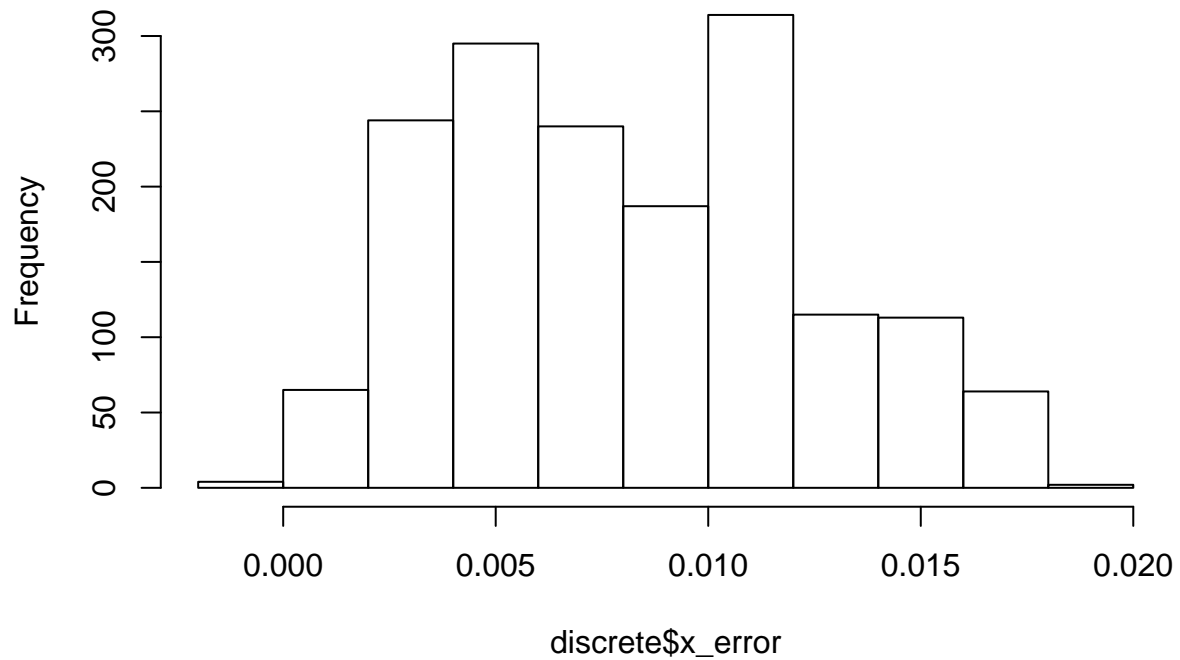## Continuous y_error


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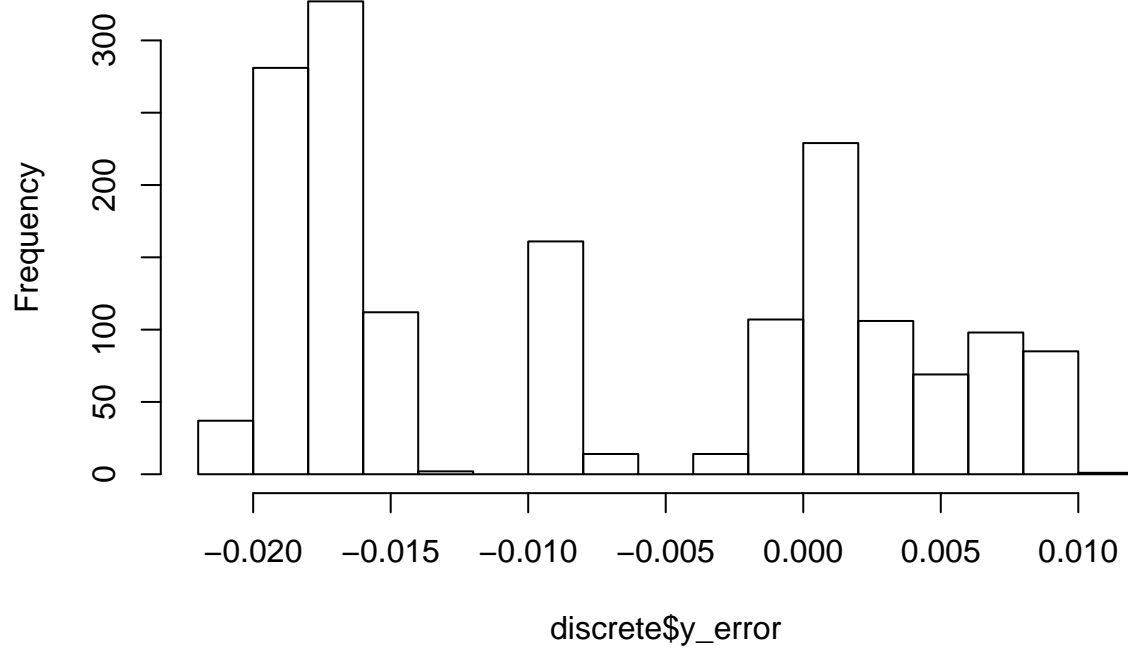
Continuous total distance error


```
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