one_stationary_noiseless Experiment Report

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This is a summary of the data from the one_stationary_noiseless 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.
## -1.761e-07 -2.481e-09  1.910e-09  1.995e-07  9.844e-08  2.186e-06
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -1.531e-10 -8.890e-12  7.027e-12  1.049e-09  1.795e-10  1.136e-08
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## 2.800e-12  2.205e-09  5.193e-09  2.032e-07  1.020e-07  2.186e-06
```

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

```
##      Min.  1st Qu.   Median      Mean  3rd Qu.      Max.
## -3.20000 -0.53450 -0.01748 -0.02757  0.63170  3.45800
```

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

```
##      Min.  1st Qu.   Median      Mean  3rd Qu.      Max.
## -4.43400 -0.33000  0.06292  0.18060  0.78430  4.14200
```
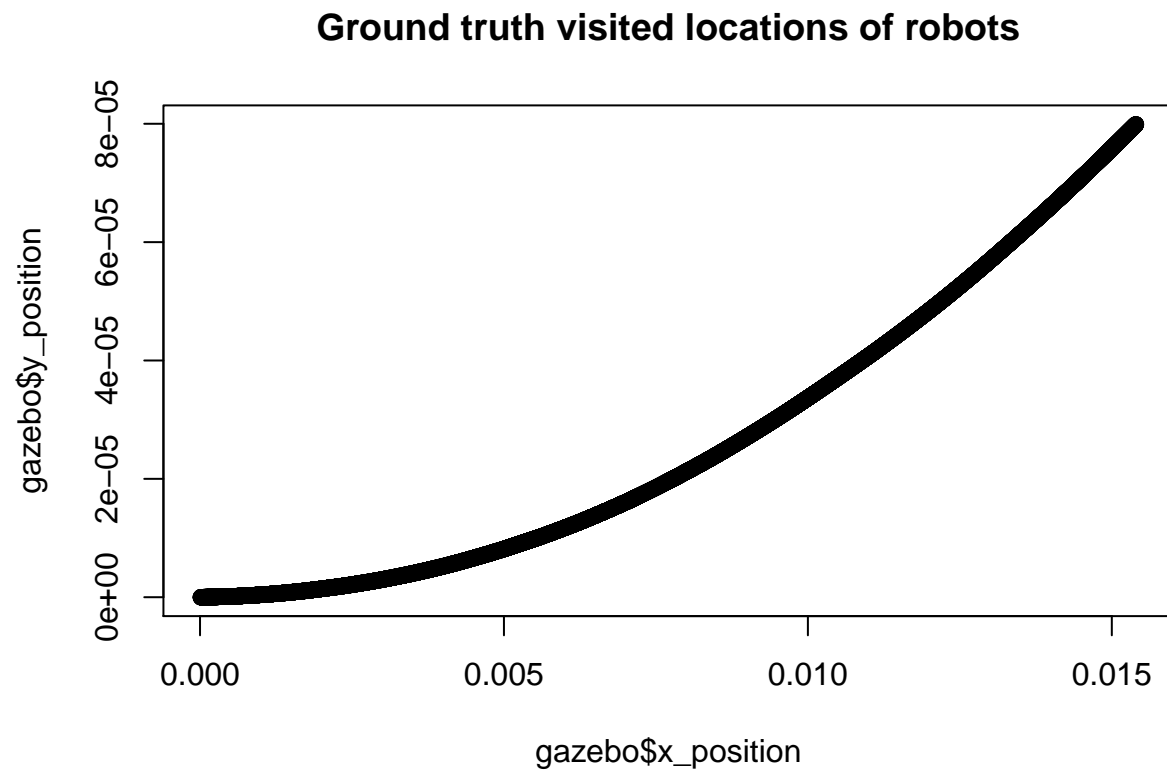
```
summary(discrete$dist_error)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.0000  0.3949  1.0320  1.3160  2.0380  4.4980
```

```
if (params$robot >= 2) {
    summary(external_data_averages)
}
```
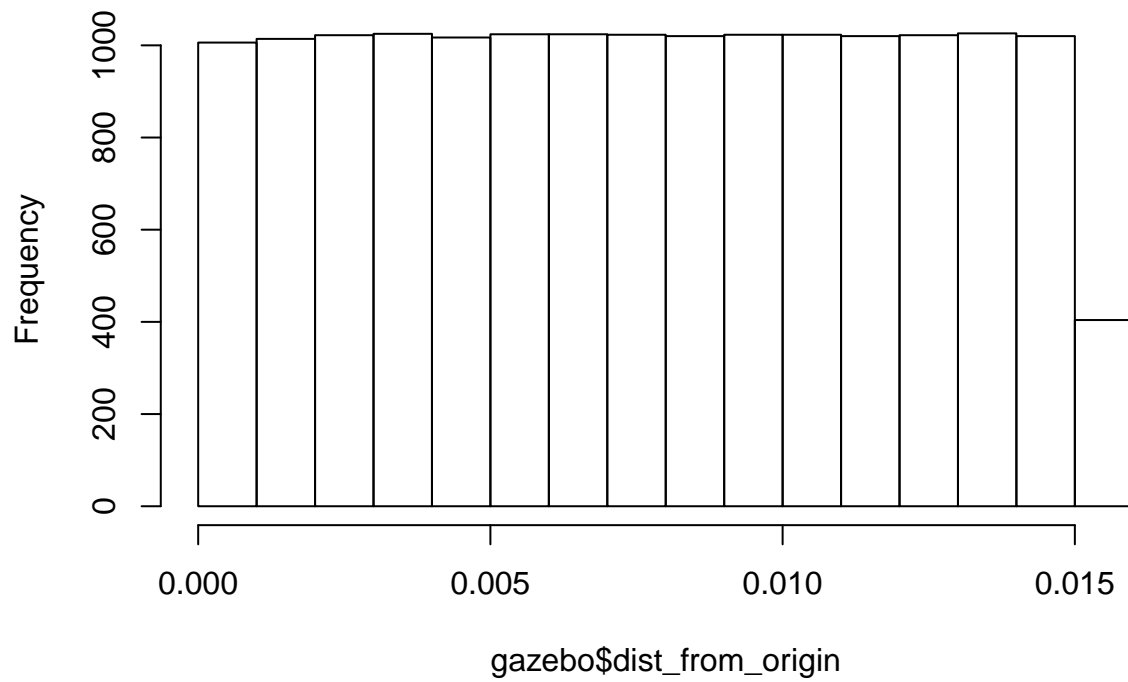
Shown below are plots representing the robot's motion and error over time.

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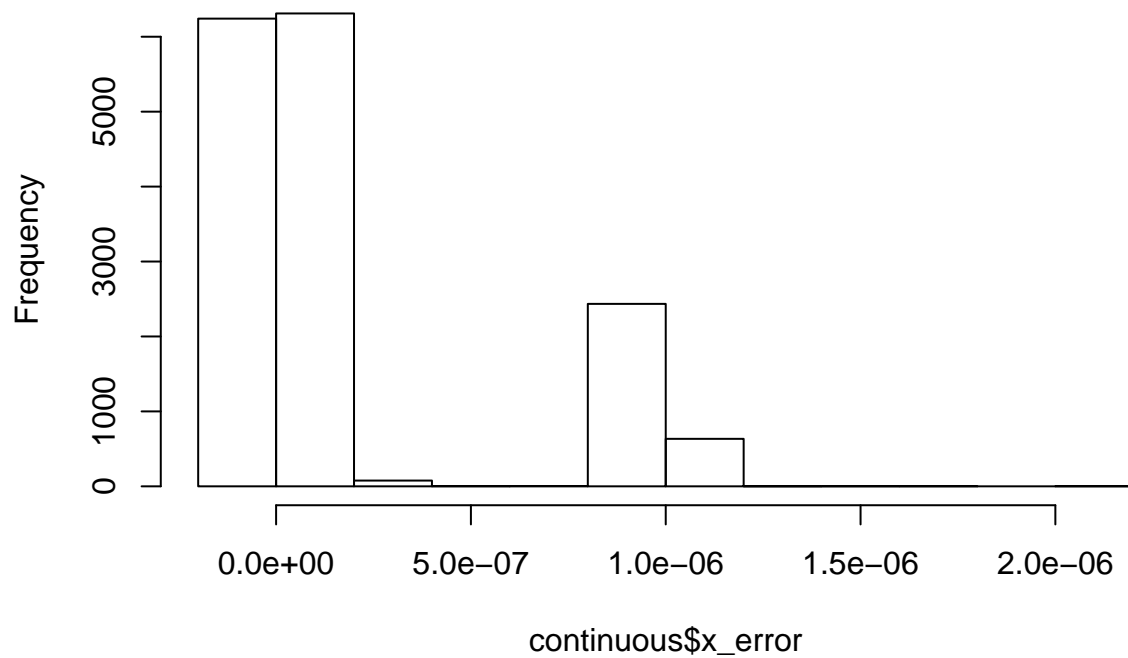
Ground truth visited locations of robots


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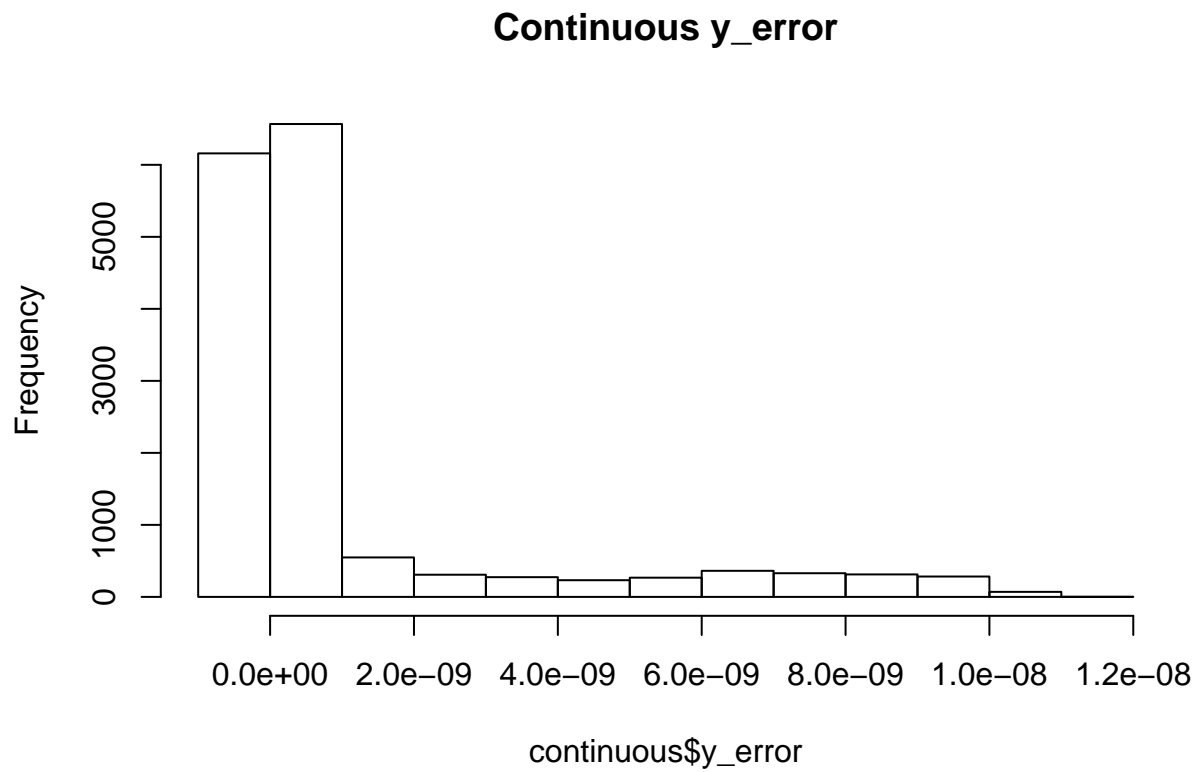
Distance from origin vs. time

Frequency

gazebo$dist_from_origin

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

Continuous x_error

Frequency

continuous$x_error

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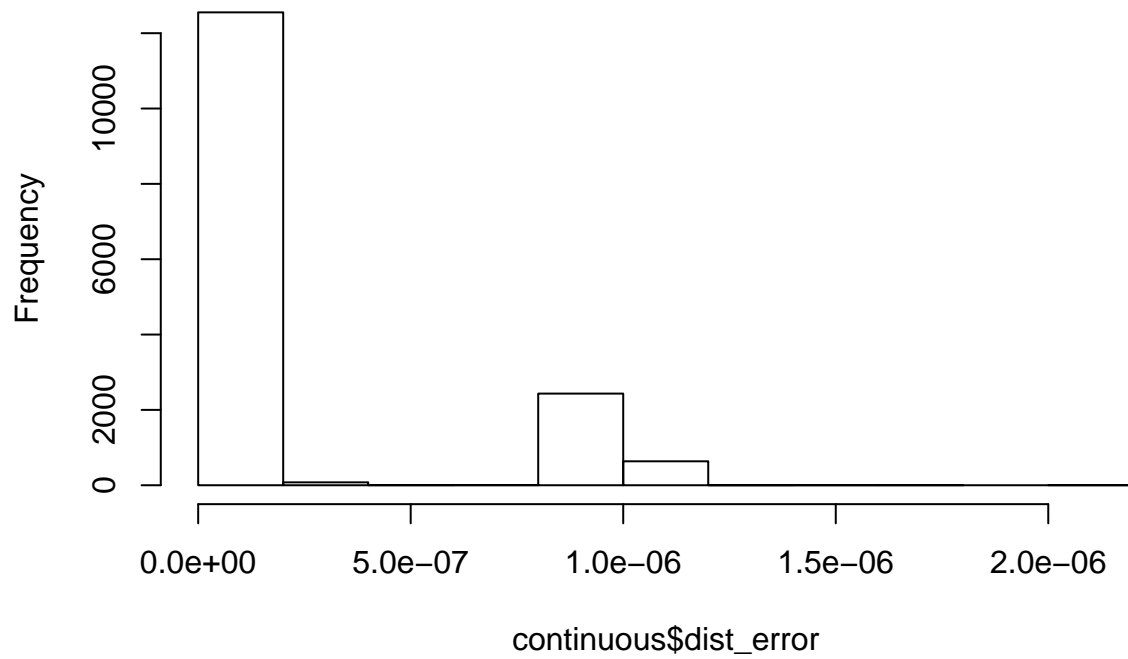
Continuous y_error

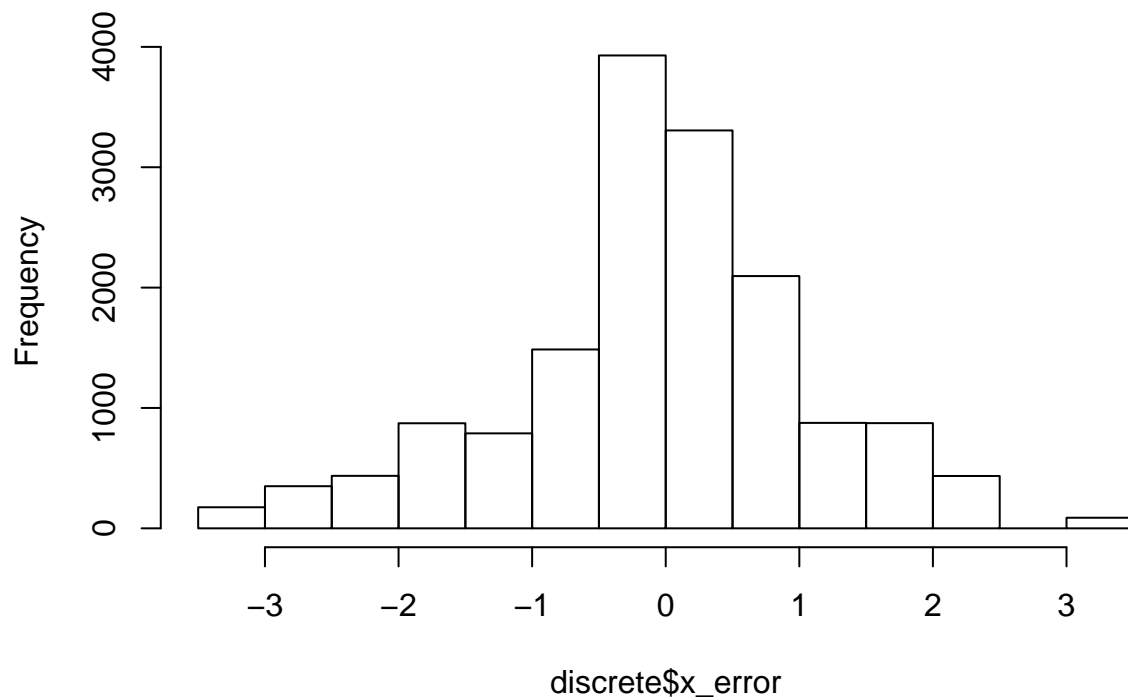```r
hist(continuous$dist_error,
     main = "Continuous total distance error")
```
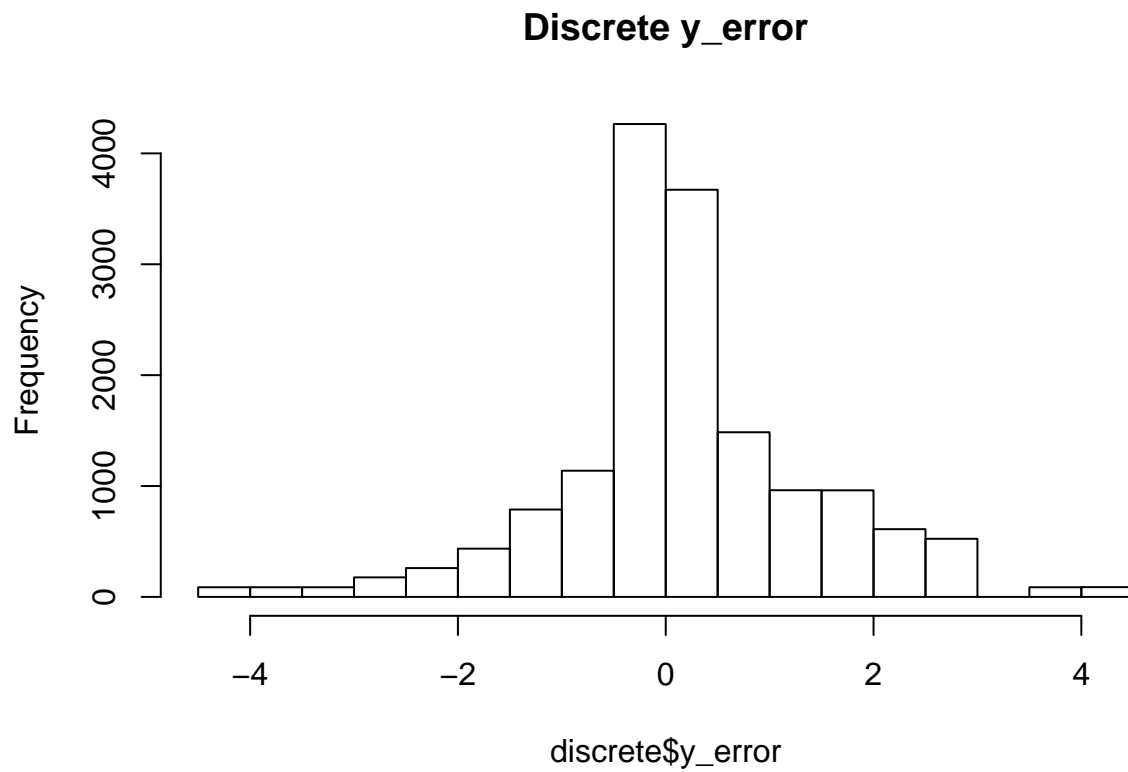
## Continuous total distance error



continuous$dist_error

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

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