

# five\_mobile\_restricted\_noisy\_true Experiment Report

Matthew Swartwout

July 13, 2016

This is a summary of the data from the five\_mobile\_restricted\_noisy\_true 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.
## -7.901e-02 -4.617e-03  1.320e-06 -7.824e-05  4.562e-03  7.793e-02

summary(continuous$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -8.102e-02 -4.552e-03  4.880e-05  8.481e-05  4.596e-03  7.991e-02

summary(continuous$dist_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 9.340e-06 4.472e-03  7.571e-03  1.362e-02  1.659e-02  8.772e-02

summary(discrete$x_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -24.9800 -0.2667    0.0000   0.3968   0.3351   34.9400

summary(discrete$y_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## -19.6100 -0.16480   0.00004  0.81730  0.46240  41.33000

summary(discrete$dist_error)

##      Min.    1st Qu.     Median      Mean    3rd Qu.      Max.
## 0.00000  0.02366  0.54790  4.32000  5.04400  48.21000

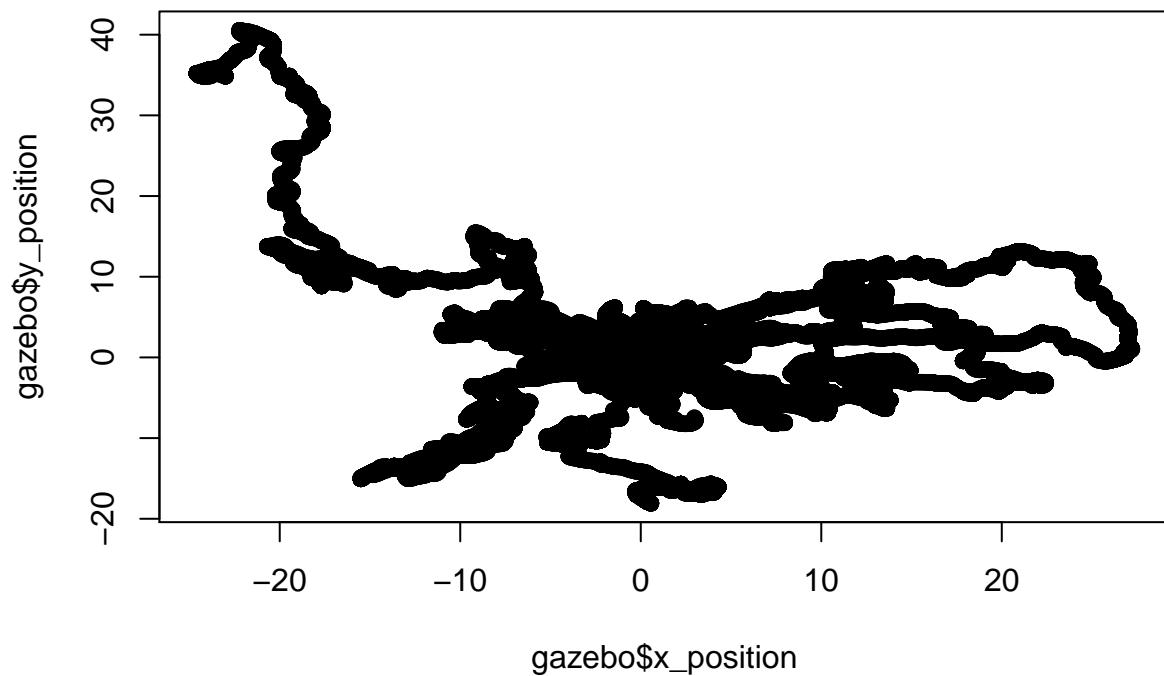
if (params$robot >= 2) {
  summary(external_data_averages)
}

##      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.

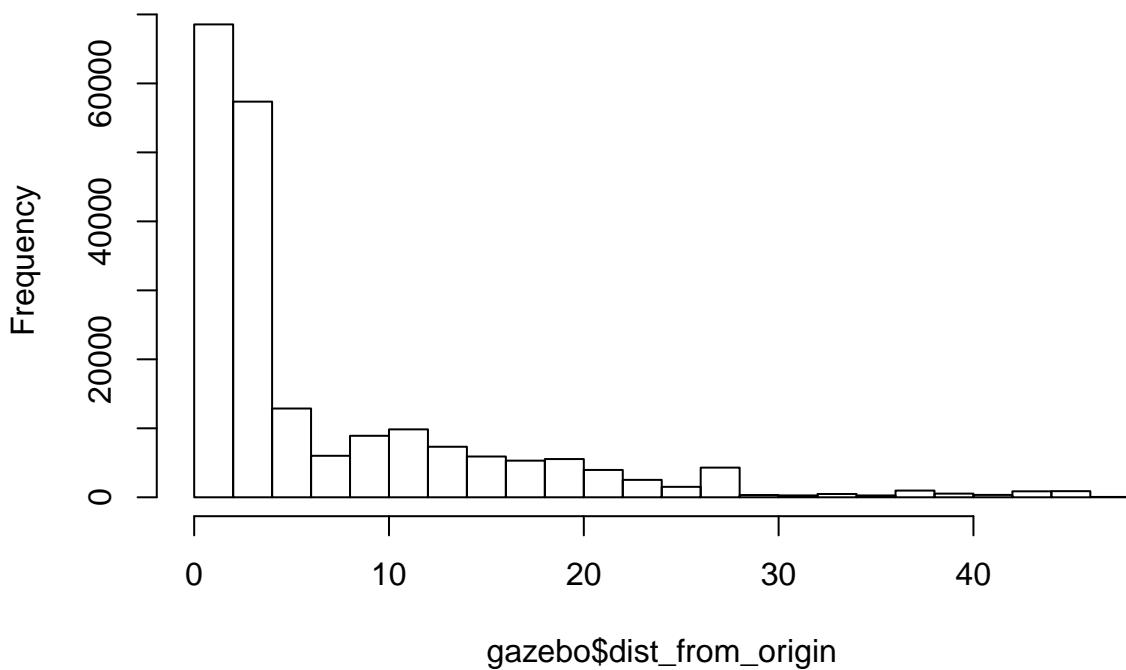
```
plot(gazebo$x_position, gazebo$y_position,
     main = "Ground truth visited locations of robots")
```

## Ground truth visited locations of robots



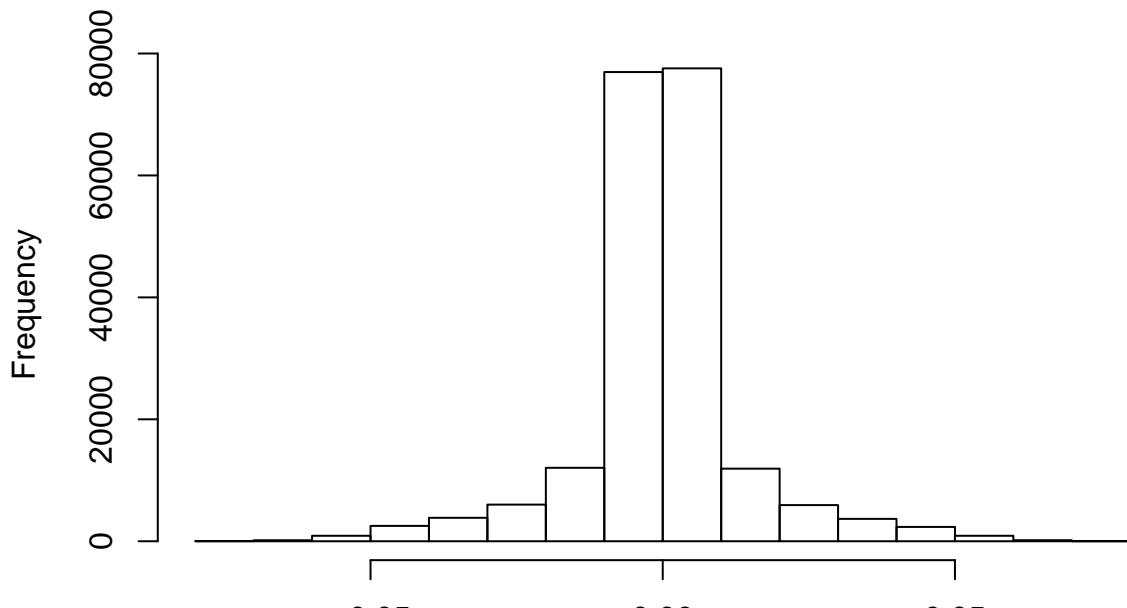
```
hist(gazebo$dist_from_origin,  
      main = "Distance from origin vs. time")
```

## Distance from origin vs. time



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

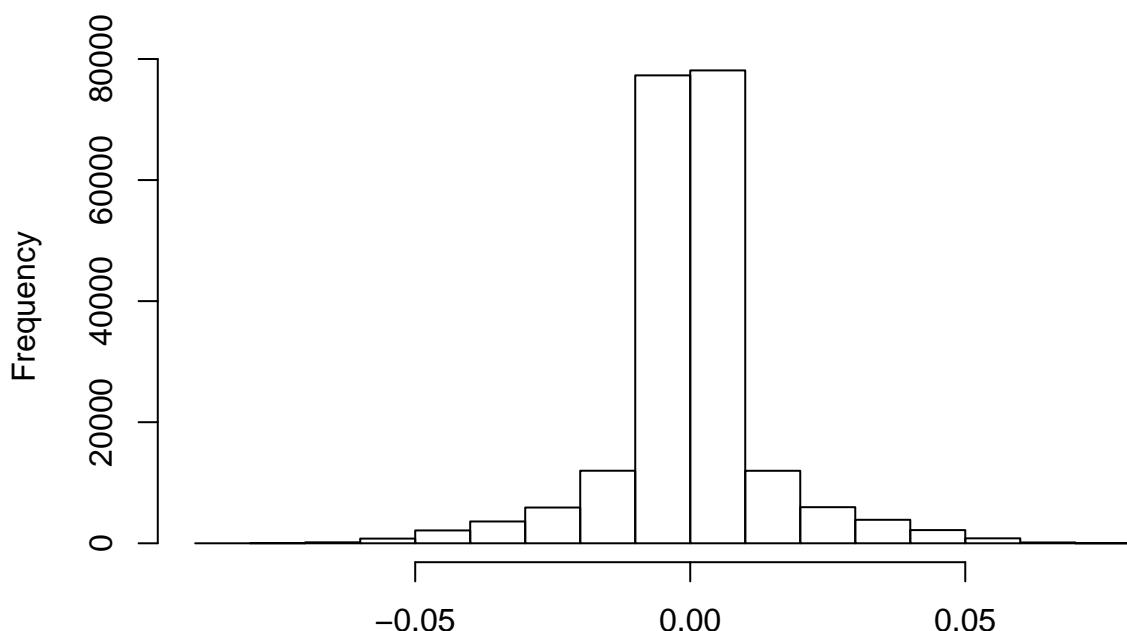
### Continuous x\_error



continuous\$x\_error

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

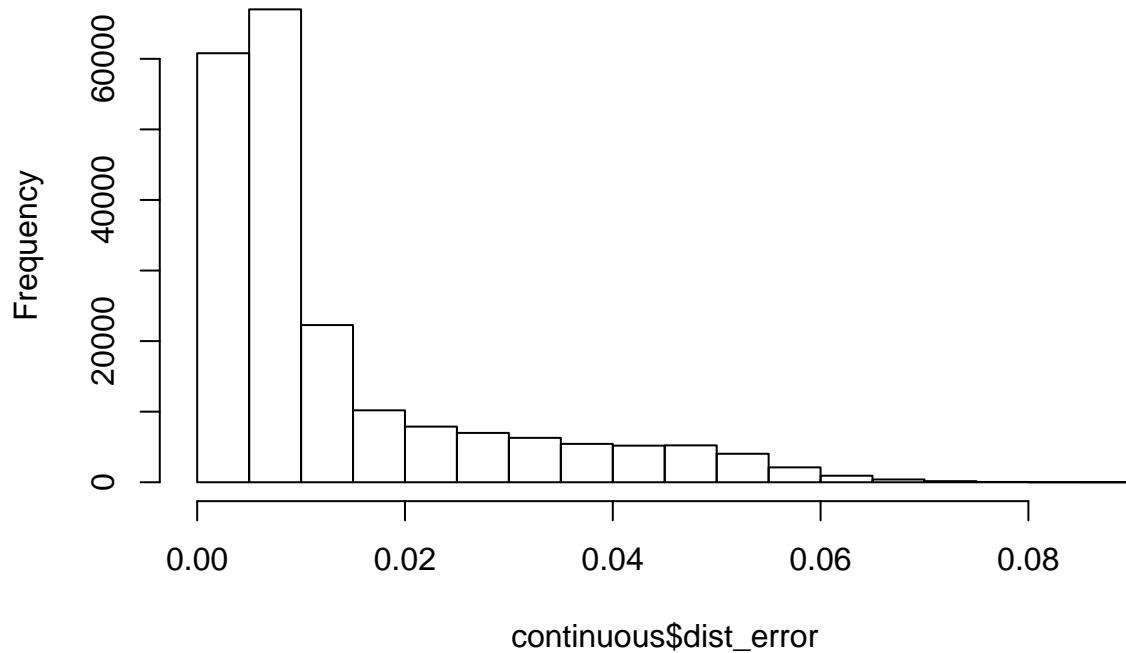
### Continuous y\_error



continuous\$y\_error

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

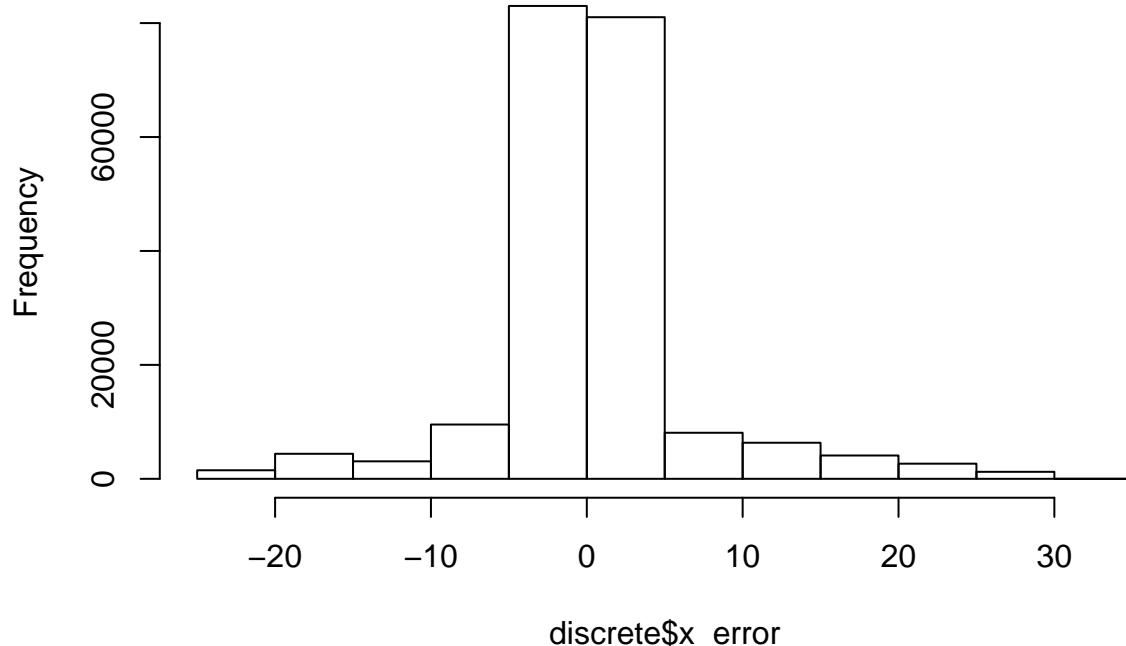
## Continuous total distance error



continuous\$dist\_error

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

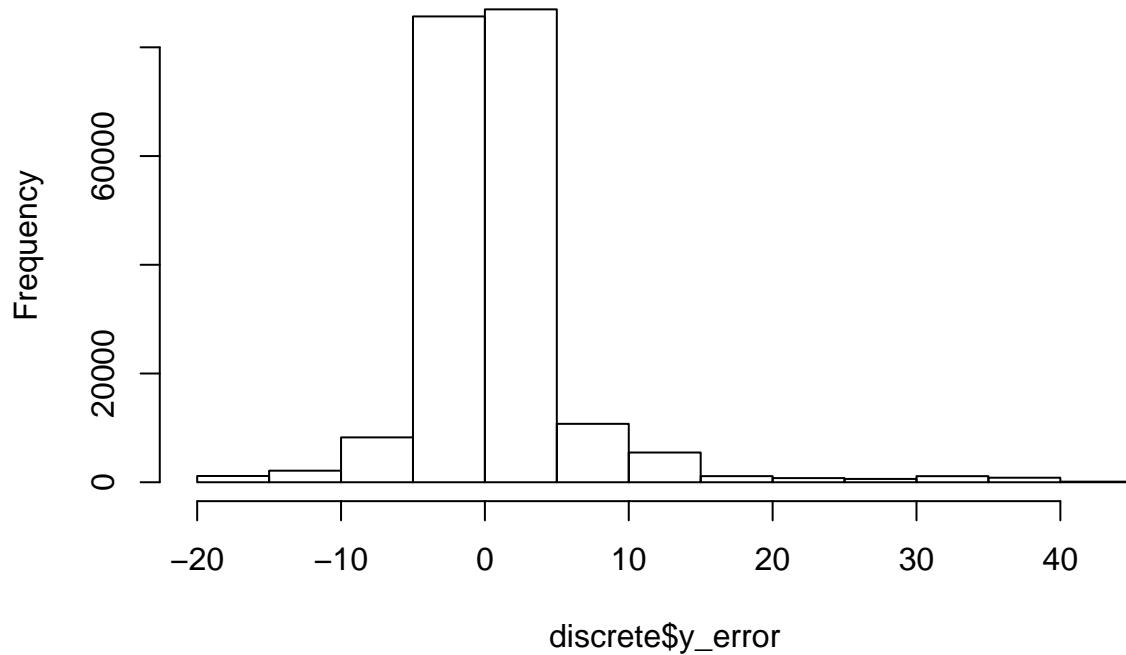
## Discrete x\_error



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

