one_stationary Experiment Report

Matthew Swartwout

July 12, 2016

This is a summary of the data from the one_stationary 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.
## 2.362e-06 2.499e-06 2.553e-06 2.552e-06 2.602e-06 2.730e-06
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 2.416e-10 4.190e-10 5.631e-10 6.346e-10 8.412e-10 1.090e-09
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 2.362e-06 2.499e-06 2.553e-06 2.552e-06 2.602e-06 2.730e-06
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 6.793e-07 2.564e-06 4.425e-06 4.697e-06 6.828e-06 8.694e-06
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 8.187e-11 5.509e-10 1.002e-09 1.166e-09 1.601e-09 3.539e-09
```

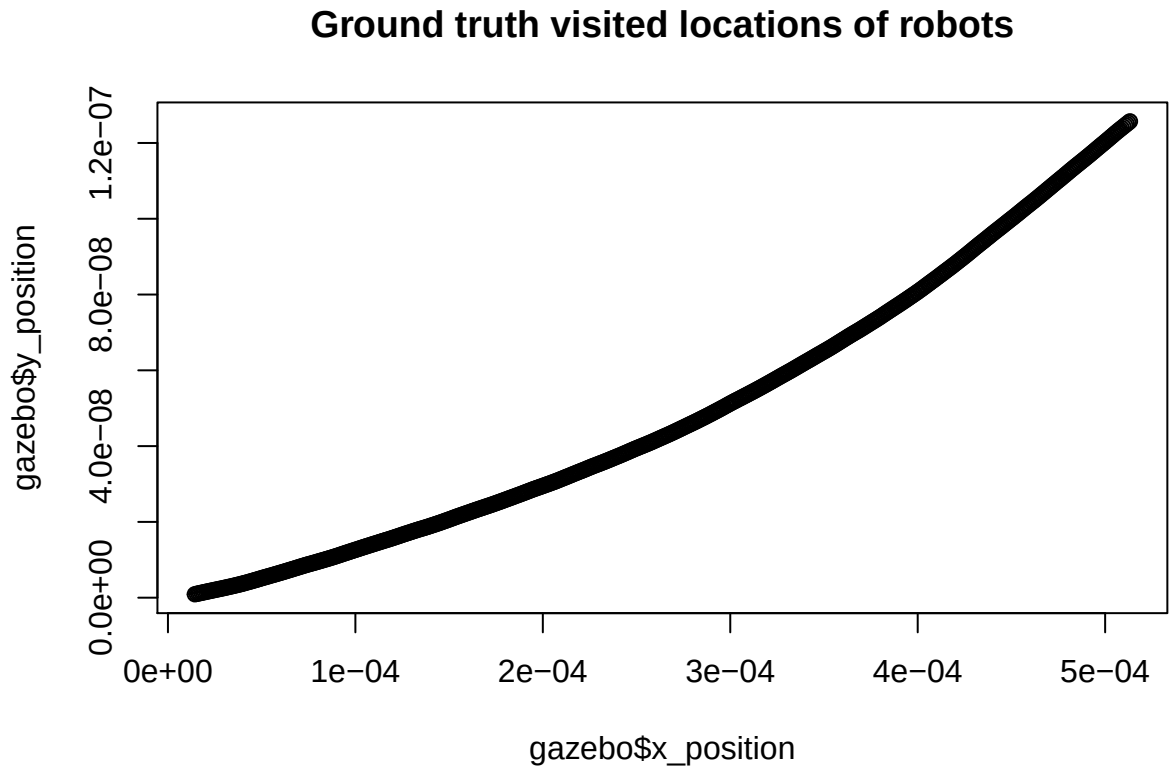
```
summary(discrete$dist_error)
```

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 6.793e-07 2.564e-06 4.425e-06 4.697e-06 6.828e-06 8.694e-06
```

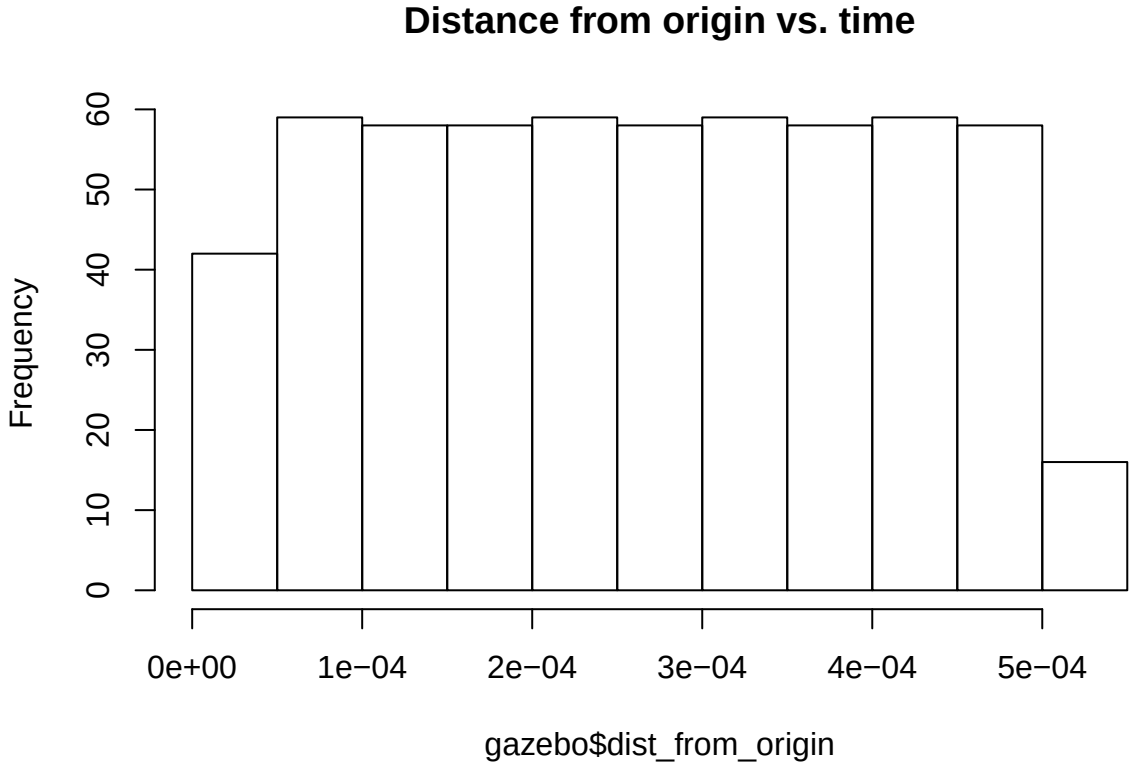
```
if (params$robot >= 2) {
    summary(external_data_averages)
}
```

Shown below are plots representing the robot's motion and error over time.

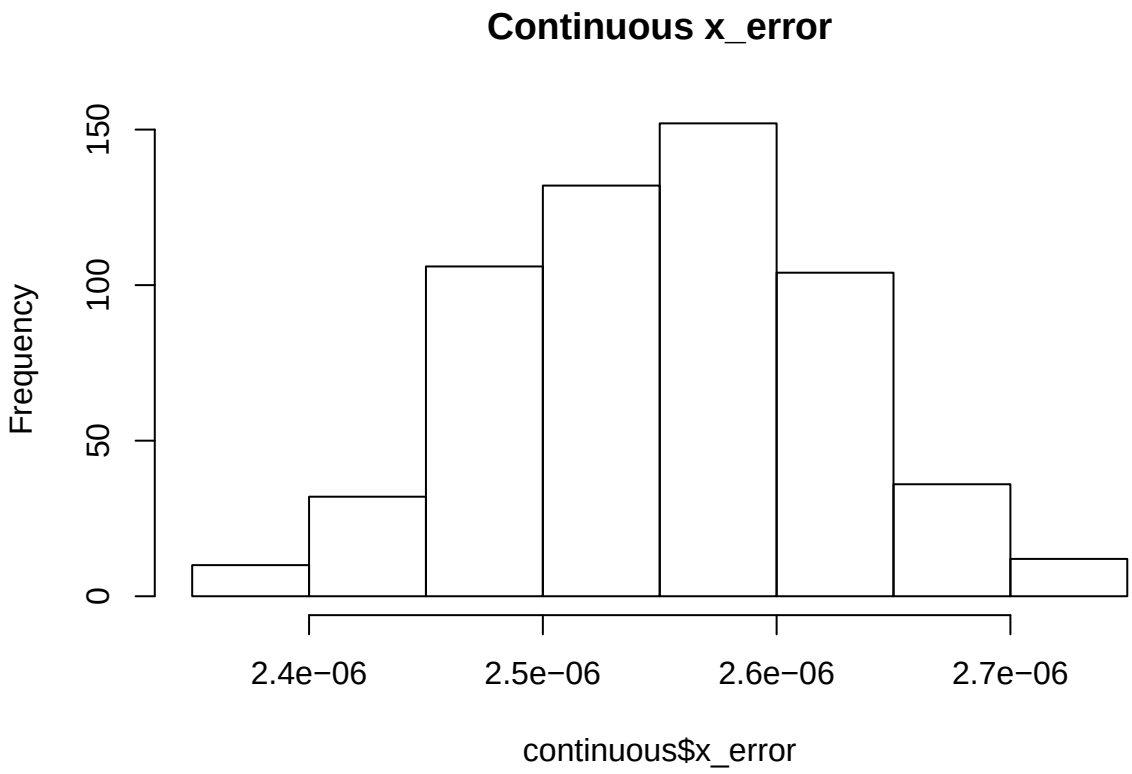
```
plot(gazebo$x_position, gazebo$y_position,
     main = "Ground truth visited locations of robots")
```



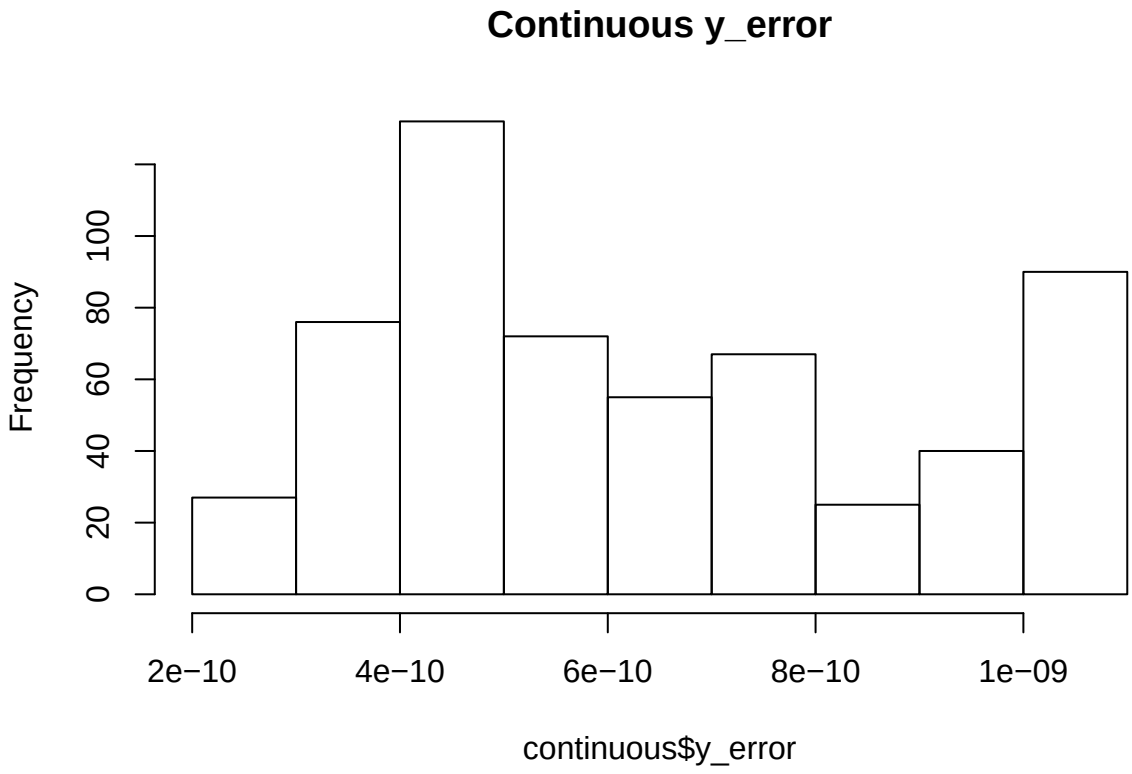

```
hist(gazebo$dist_from_origin,
     main = "Distance from origin vs. time")
```




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

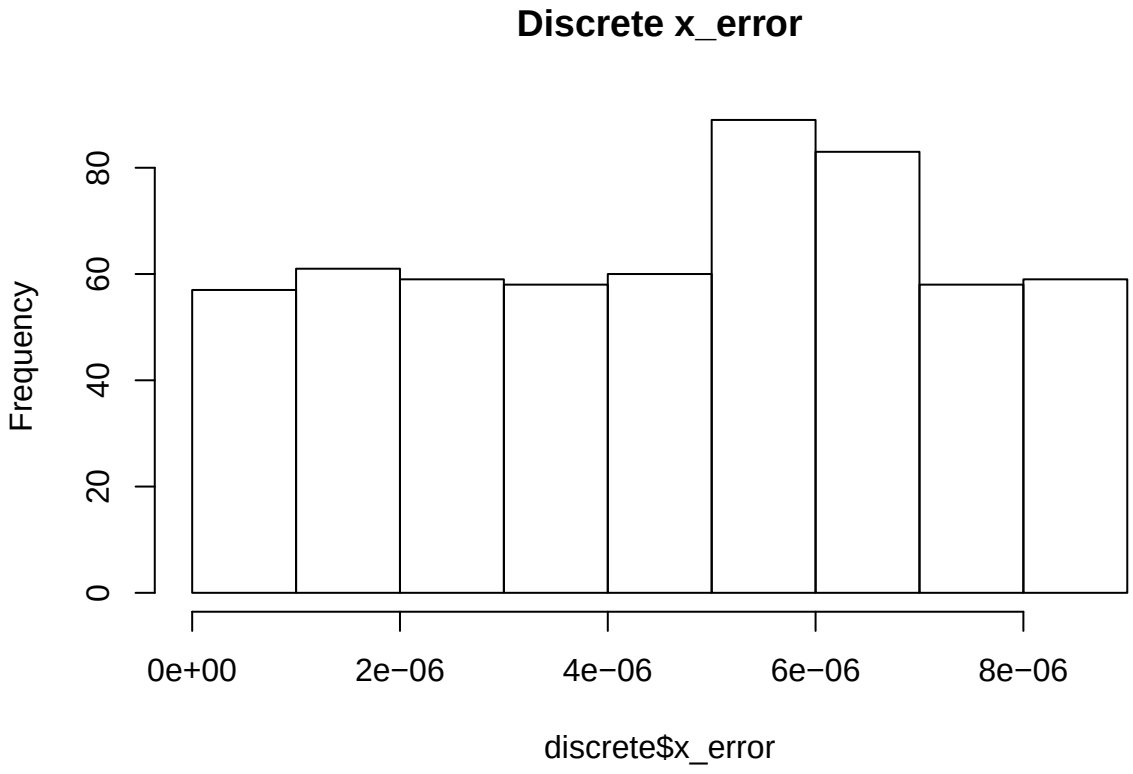



```
hist(continuous$y_error,
      main = "Continuous y_error")
```

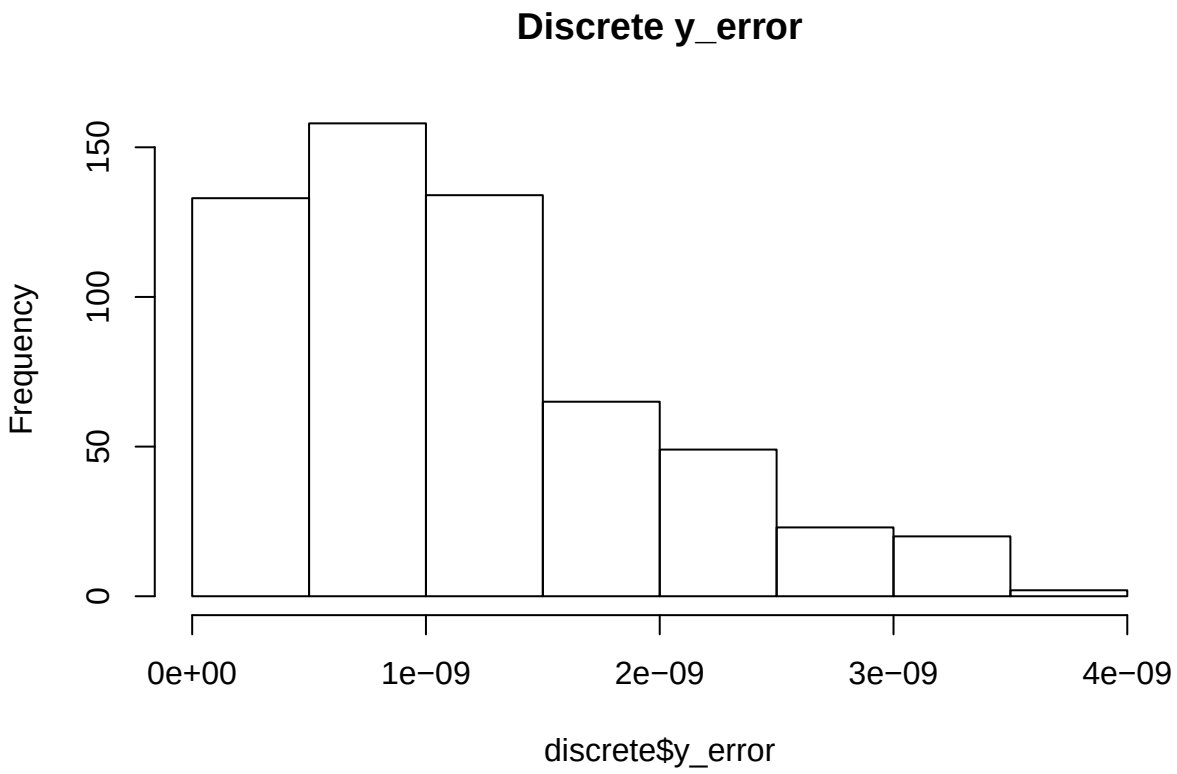



```
hist(continuous$dist_error,
     main = "Continuous total distance error")
```


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




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




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