

one_mobile_imu_yaw_vel Experiment Report

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This is a summary of the data from the one_mobile_imu_yaw_vel 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.
## -1.511e-02  1.404e-05  5.855e-03  6.201e-03  1.267e-02  3.291e-02
```

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

```
##      Min.  1st Qu.  Median      Mean  3rd Qu.      Max.
## -0.09723 -0.06197 -0.03752 -0.04228 -0.01944  0.01923
```

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

```
##      Min.  1st Qu.  Median      Mean  3rd Qu.      Max.
## 8.000e-08 1.966e-02 4.108e-02 4.436e-02 6.383e-02 1.011e-01
```

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

```
##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
## -3.2670 -1.2980  0.7949  0.2594  1.1330  3.8400
```

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

```
##      Min.  1st Qu.  Median      Mean  3rd Qu.      Max.
## -4.917000 -2.410000  0.000005 -0.101500  1.761000  4.373000
```

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

```
##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
##  0.000   2.297   2.777   3.046   4.130   5.183
```

```
summary(external_data_averages)
```

```
##      Length Class  Mode
## [1,] 1      -none- numeric
```

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

```
message("ground truth")
```

```
## ground truth
```

```
plot(gazebo$x_position, gazebo$y_position)
title("Ground truth visited locations of robot")
```

Ground truth visited locations of robot



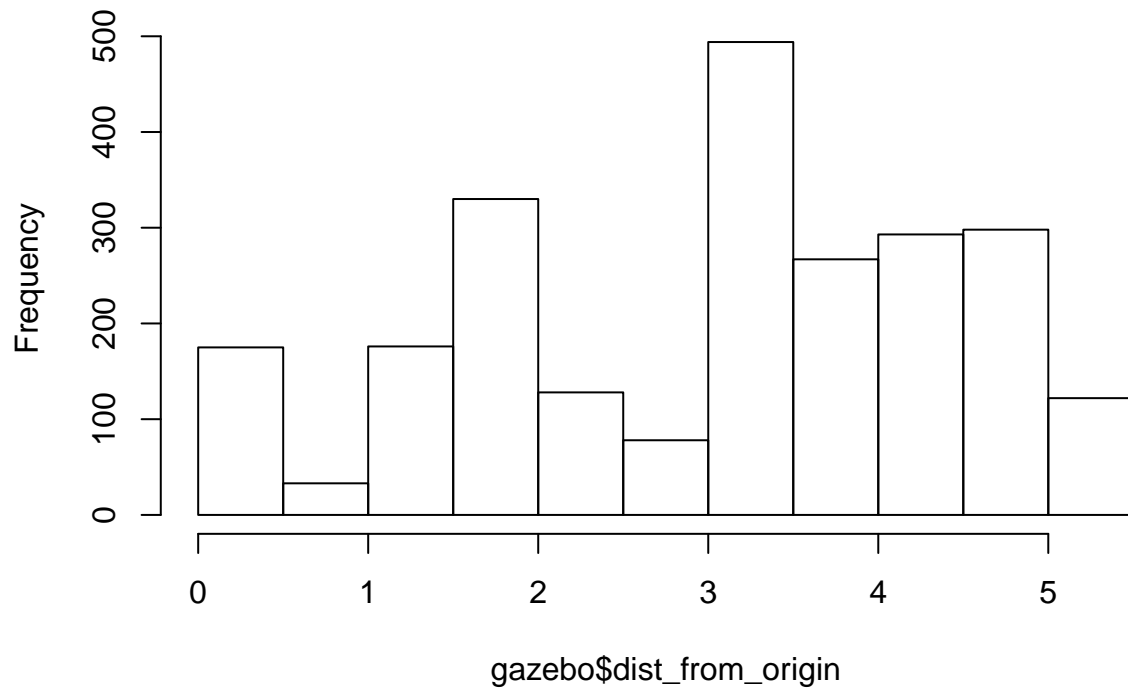
```
message("dist from origin")
```

```
## dist from origin
```

```
hist(gazebo$dist_from_origin)
```

```
title("Distance from origin vs. time")
```

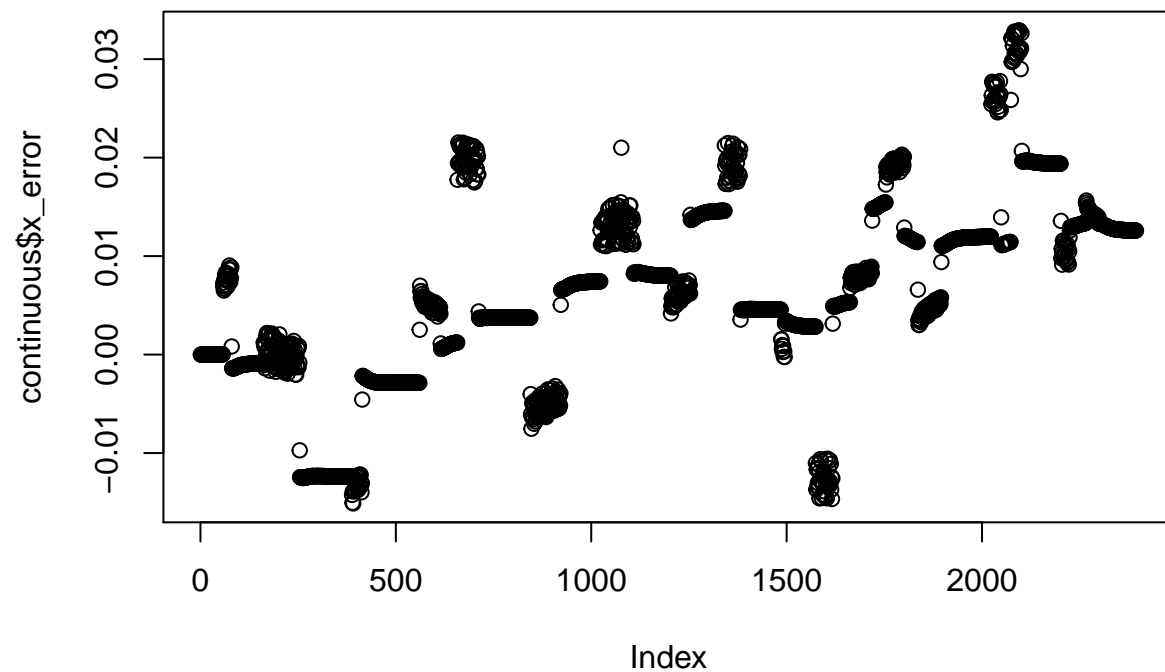
Histogram of gazebo\$dist_from_origin



```
message("continuous x")

## continuous x
plot(continuous$x_error)
title("Continuous x_error over time")
```

Continuous x_error over time

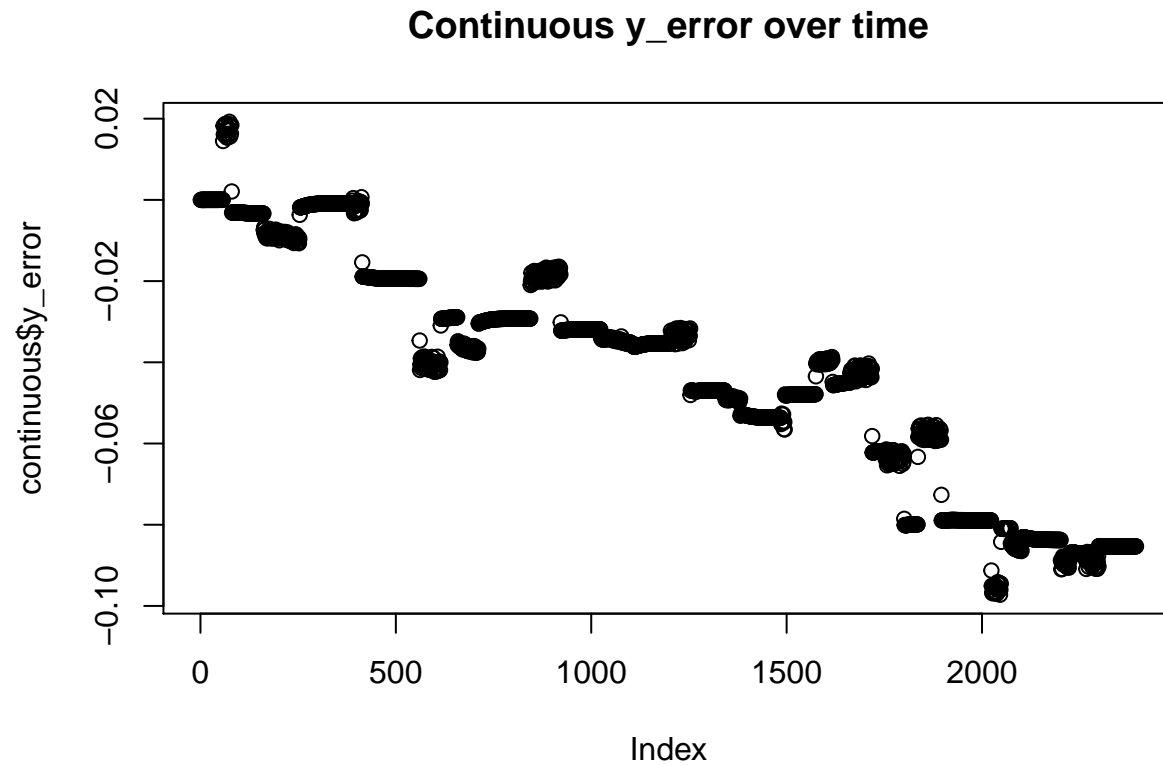


```
message("continuous y")
```

```
## continuous y
```

```
plot(continuous$y_error)
```

```
title("Continuous y_error over time")
```



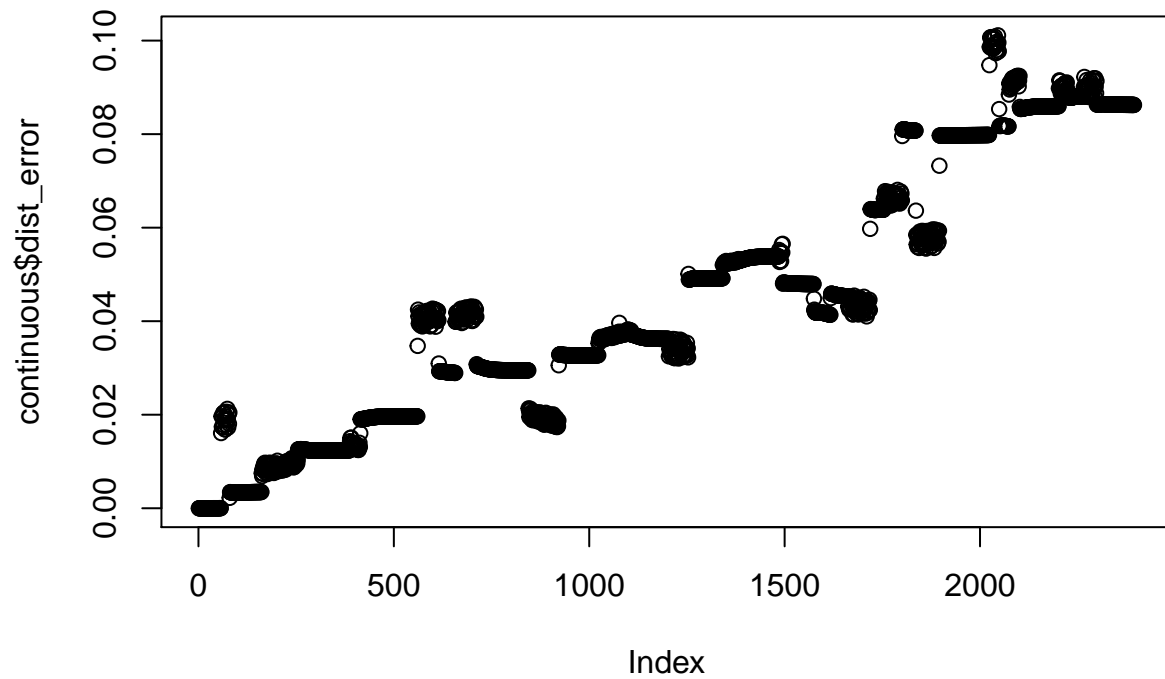
```
message("continuous dist")
```

```
## continuous dist
```

```
plot(continuous$dist_error)
```

```
title("Continuous total distance error over time")
```

Continuous total distance error over time



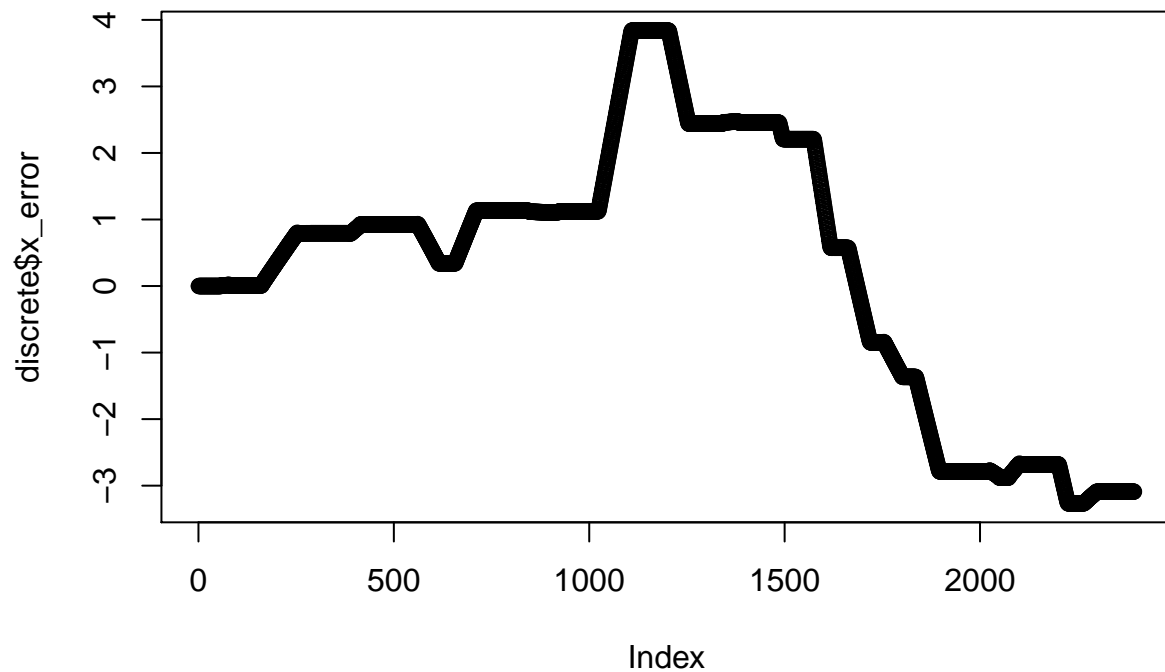
```
message("discrete x")
```

```
## discrete x
```

```
plot(discrete$x_error)
```

```
title("Discrete x_error over time")
```

Discrete x_error over time

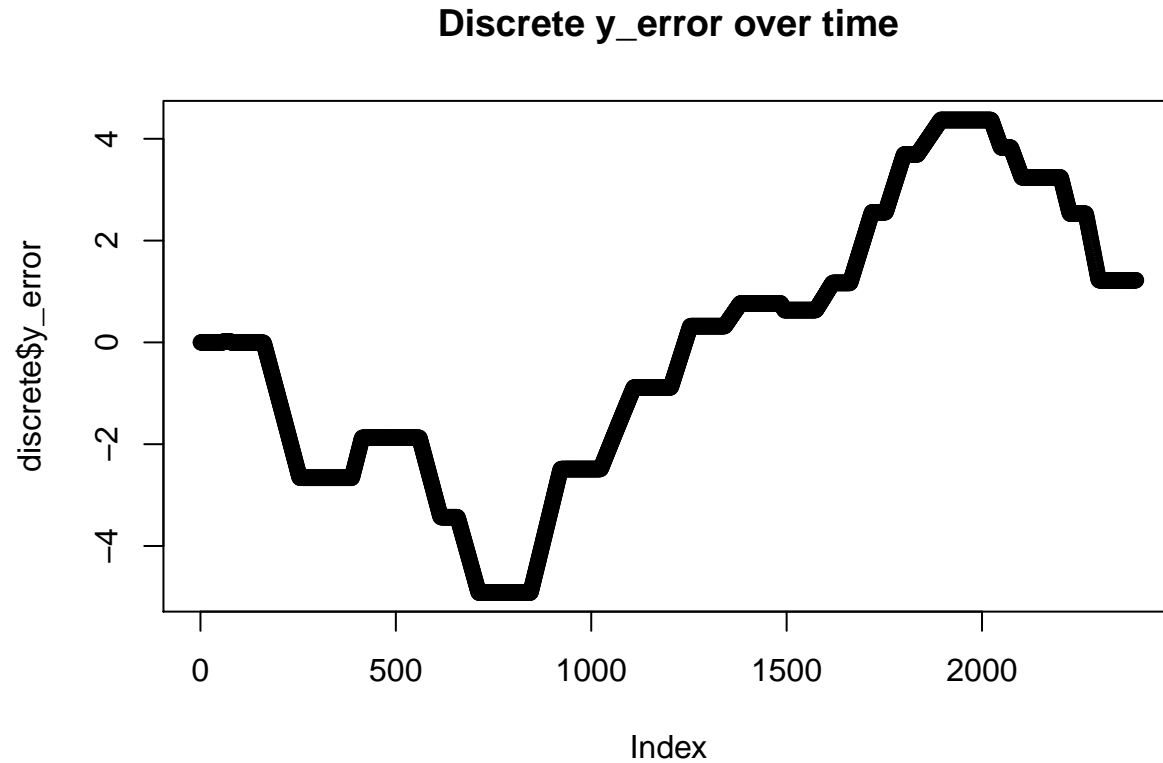


```
message("discrete y")
```

```
## discrete y
```

```
plot(discrete$y_error)
```

```
title("Discrete y_error over time")
```



```
message("discrete dist")
```

```
## discrete dist
```

```
plot (discrete$dist_error)
```

```
title("Discrete total distance error over time")
```

Discrete total distance error over time

