one_stationary_imu_yaw_vel Experiment Report

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This is a summary of the data from the one_stationary_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.
## -2.297e-07  4.916e-04  9.845e-04  9.845e-04  1.477e-03  1.970e-03
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -9.450e-11  9.041e-08  3.234e-07  3.658e-07  5.976e-07  9.522e-07
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## 2.297e-07  4.916e-04  9.845e-04  9.845e-04  1.477e-03  1.970e-03
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -2.297e-07  4.916e-04  9.845e-04  9.845e-04  1.477e-03  1.970e-03
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -9.450e-11  9.041e-08  3.234e-07  3.658e-07  5.975e-07  9.521e-07
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## 2.297e-07  4.916e-04  9.845e-04  9.845e-04  1.477e-03  1.970e-03
```

```
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")
```
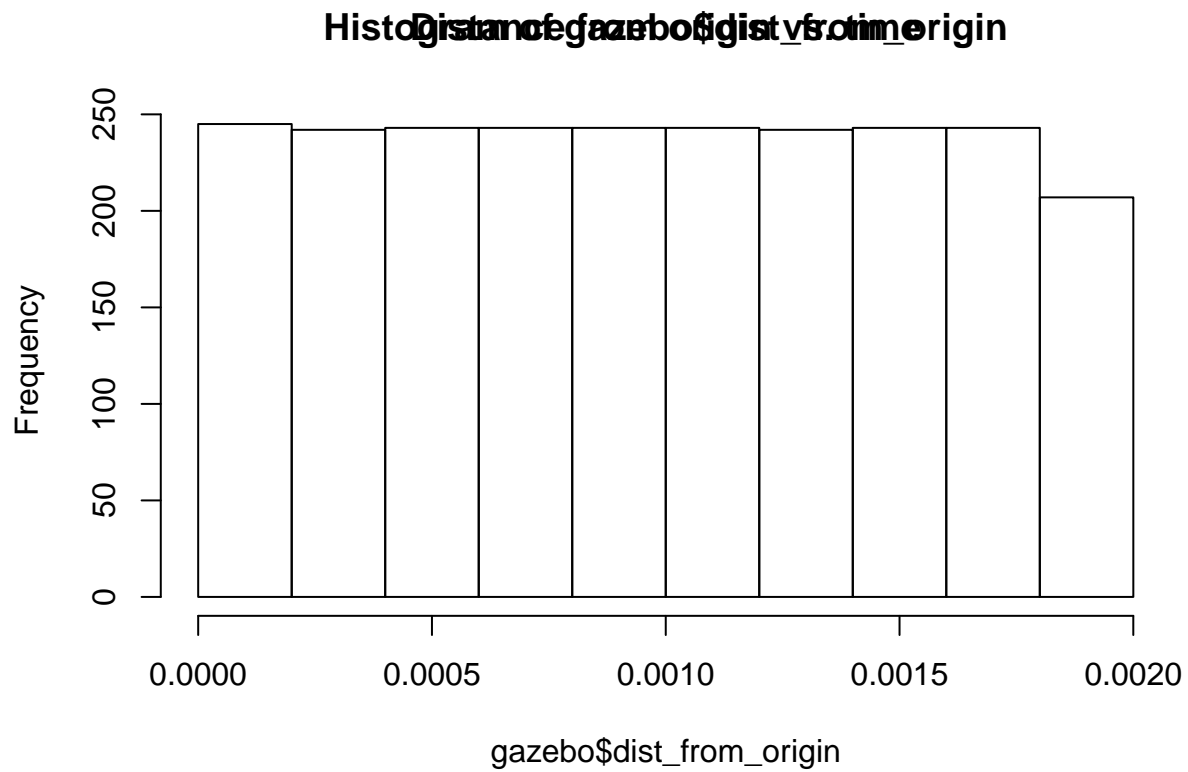
Ground truth visited locations of robot
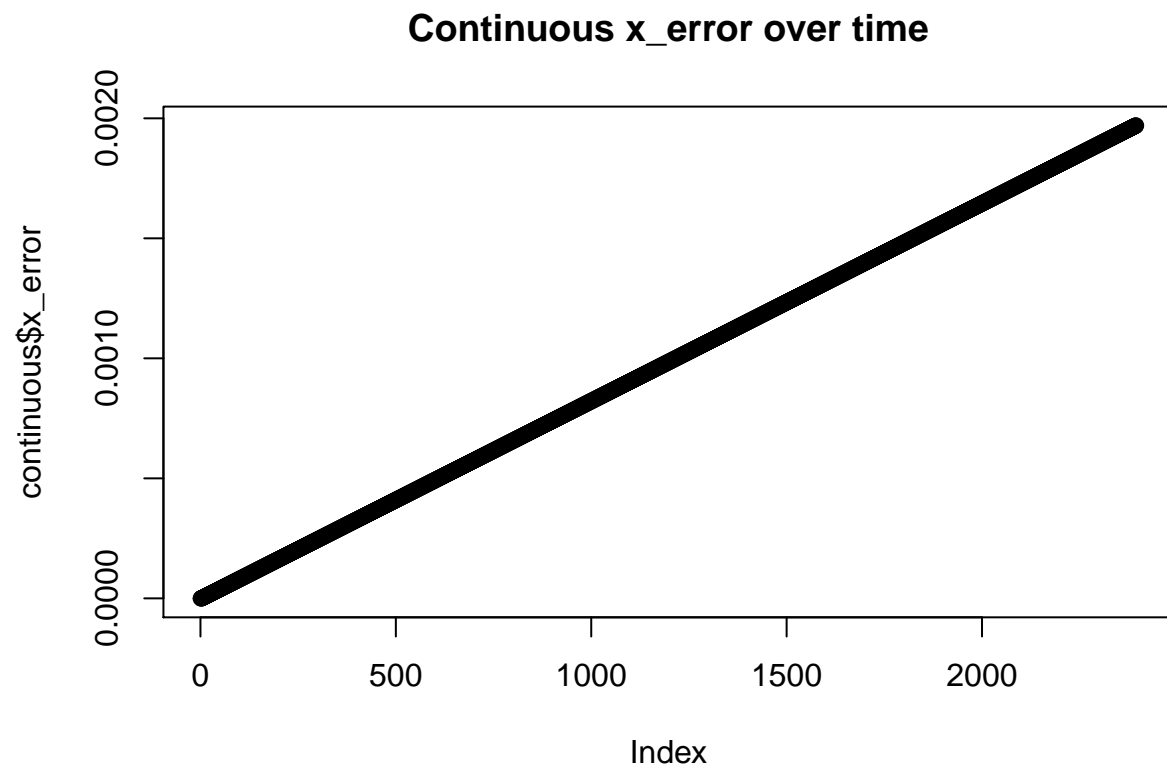


```r
message("dist from origin")
```

```
## dist from origin
```

```r
hist(gazebo$dist_from_origin)
title("Distance from origin vs. time")
```

Histogram of gazebo$dist_vs_from_origin

gazebo$dist_from_origin

```r
message("continuous x")
```

```
## continuous x
```

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

Continuous x_error over time

Index

```r
message("continous y")
```
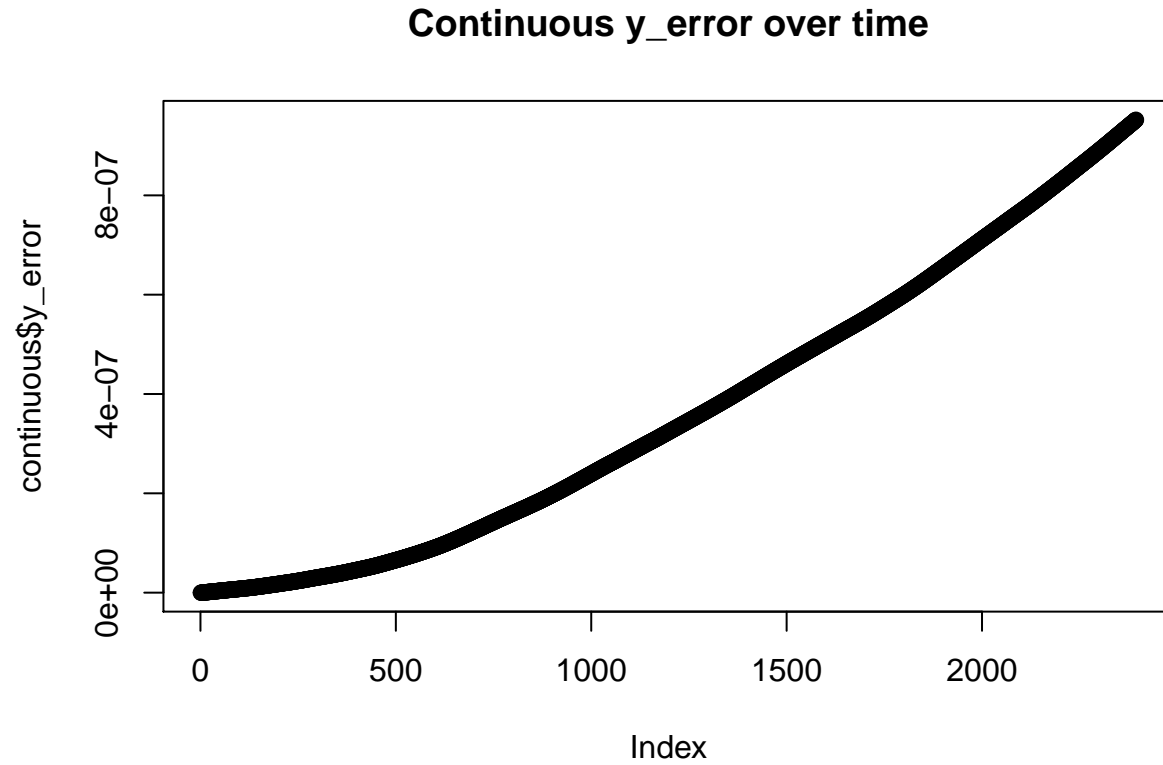
```
## continous y
```

```r
plot(continuous$y_error)
title("Continuous y_error over time")
```

Continuous y_error over time

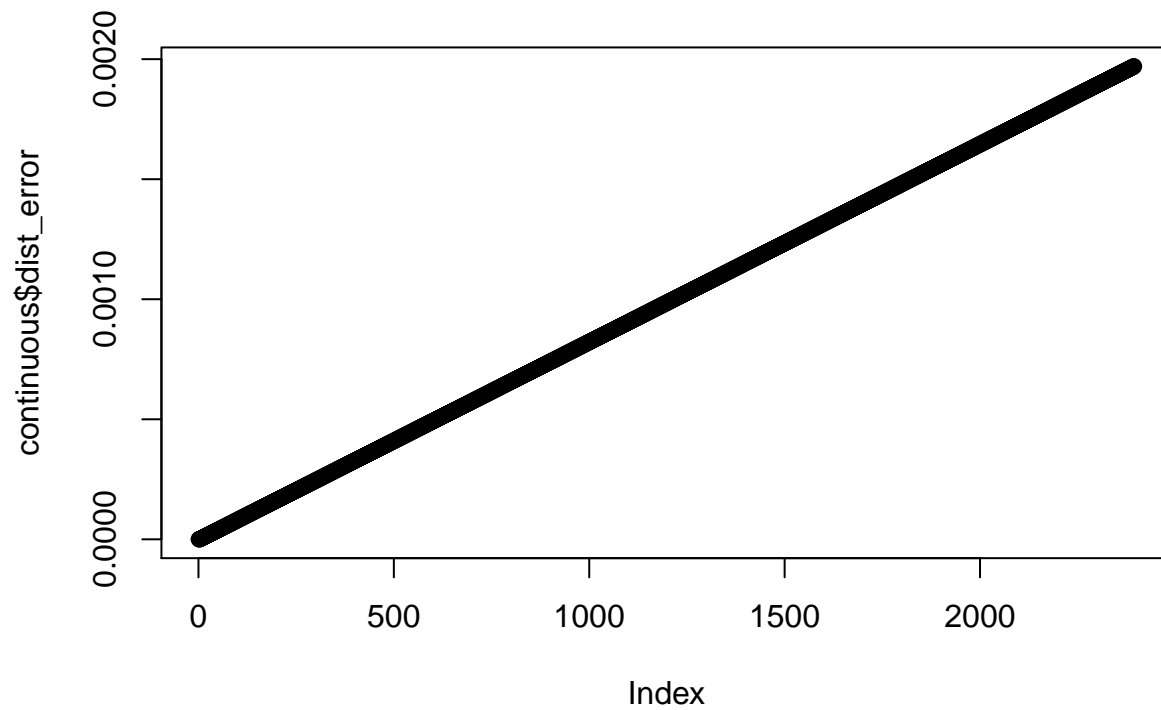
```r
message("continuous dist")
```

```
## continuous dist
```

```r
plot(continuous$dist_error)
title("Continuous total distance error over time")
```
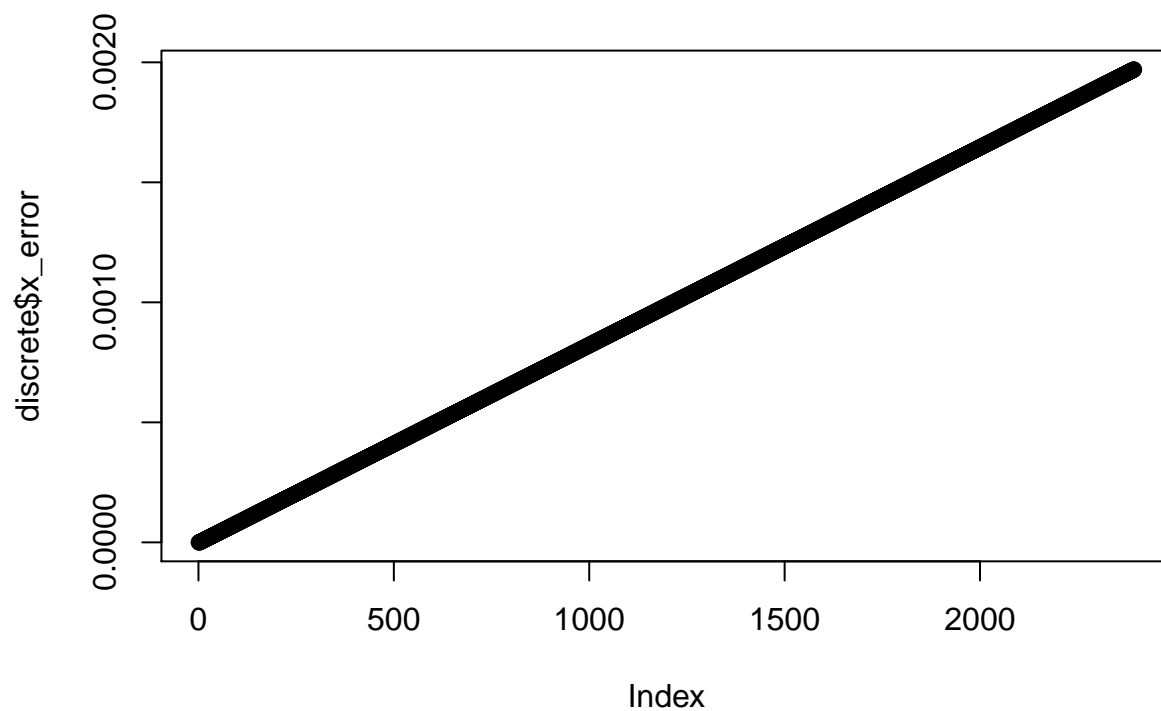
Continuous total distance error over time


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

```
## discrete x
```

```
plot(discrete$x_error)
title("Discrete x_error over time")
```
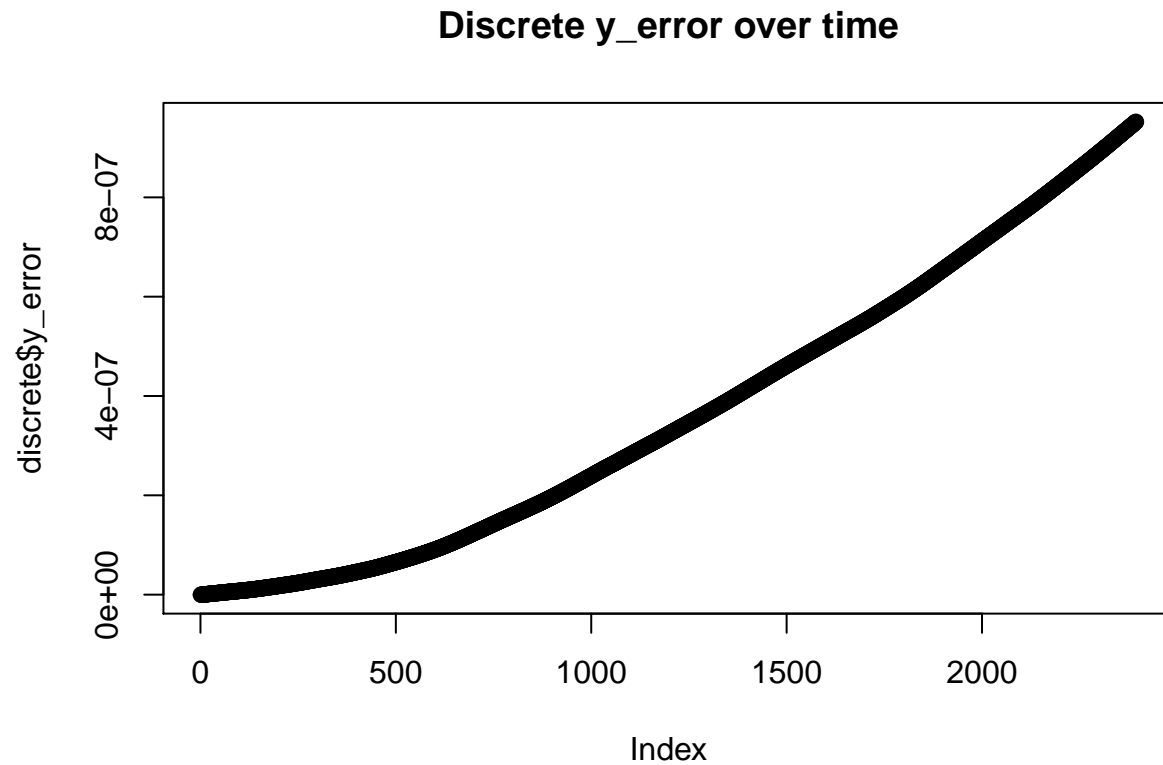
Discrete x_error over time

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

discrete y

```r
plot(discrete$y_error)
title("Discrete y_error over time")
```

Discrete y_error over time


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

discrete dist

```r
plot (discrete$dist_error)
title("Discrete total distance error over time")
```

Discrete total distance error over time