two_stationary Experiment Report

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This is a summary of the data from the two_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.
## -2.800e-07  1.483e-02  2.965e-02  2.965e-02  4.448e-02  5.930e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -1.000e-10  4.074e-05  1.593e-04  2.083e-04  3.514e-04  6.121e-04
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 2.000e-08 1.483e-02 2.965e-02 2.965e-02 4.448e-02 5.931e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -2.800e-07  1.483e-02  2.965e-02  2.965e-02  4.448e-02  5.930e-02
```

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

```
##       Min.    1st Qu.     Median       Mean    3rd Qu.       Max.
## -1.000e-10  4.074e-05  1.593e-04  2.083e-04  3.514e-04  6.121e-04
```

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

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 2.000e-08 1.483e-02 2.965e-02 2.965e-02 4.448e-02 5.931e-02
```

```
summary(external_data_averages)
```

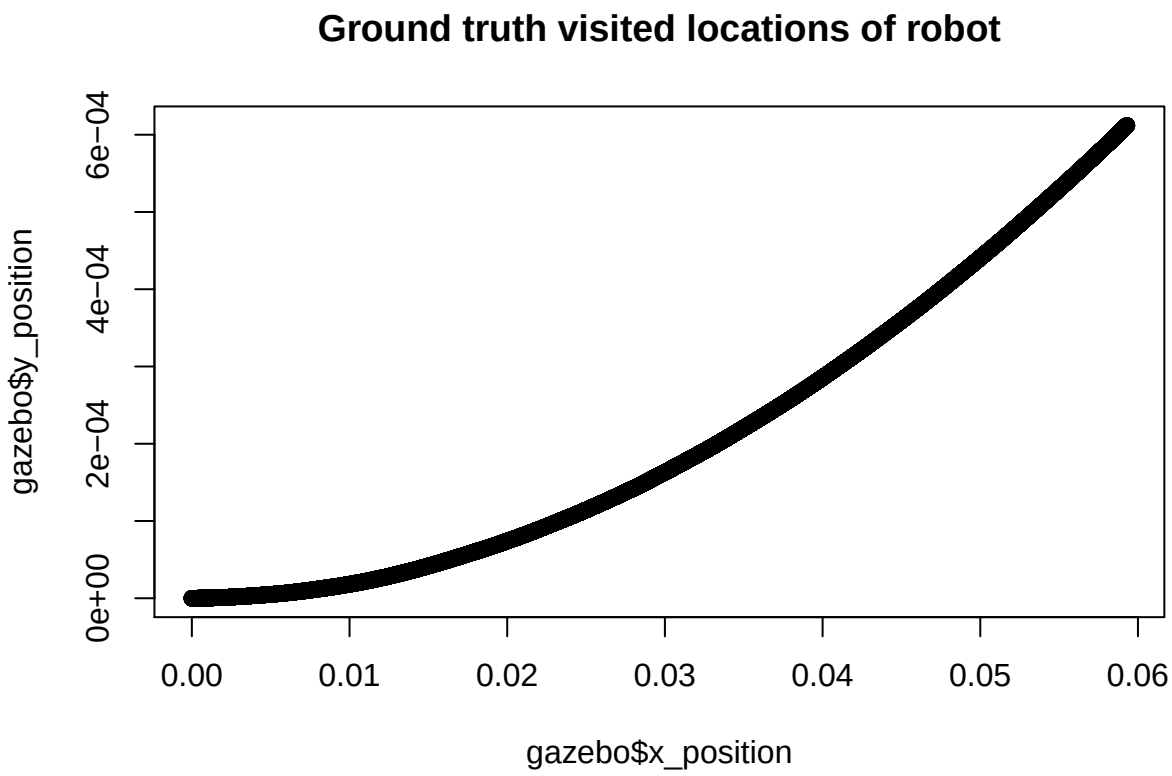
```
##      Length Class  Mode
## [1,] 1      -none- numeric
```

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

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

```
## ground truth
```

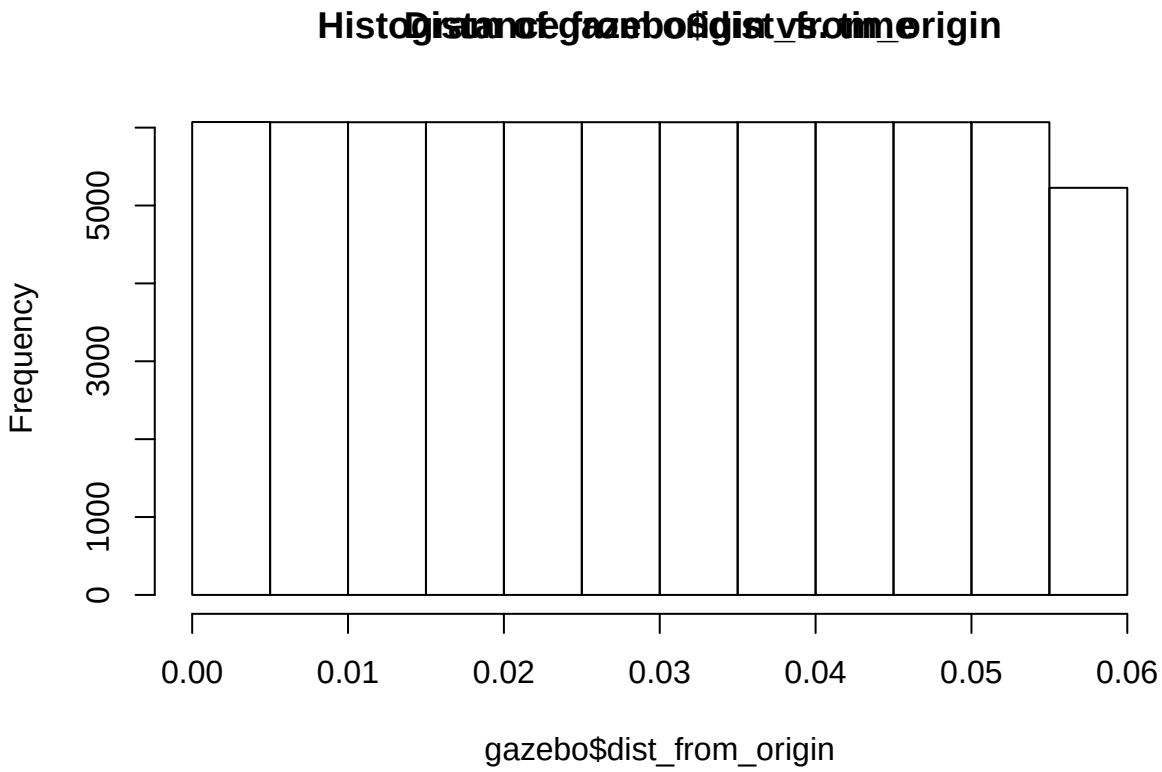
```
plot(gazebo$x_position, gazebo$y_position)
title("Ground truth visited locations of robot")
```




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

```
## dist from origin
```

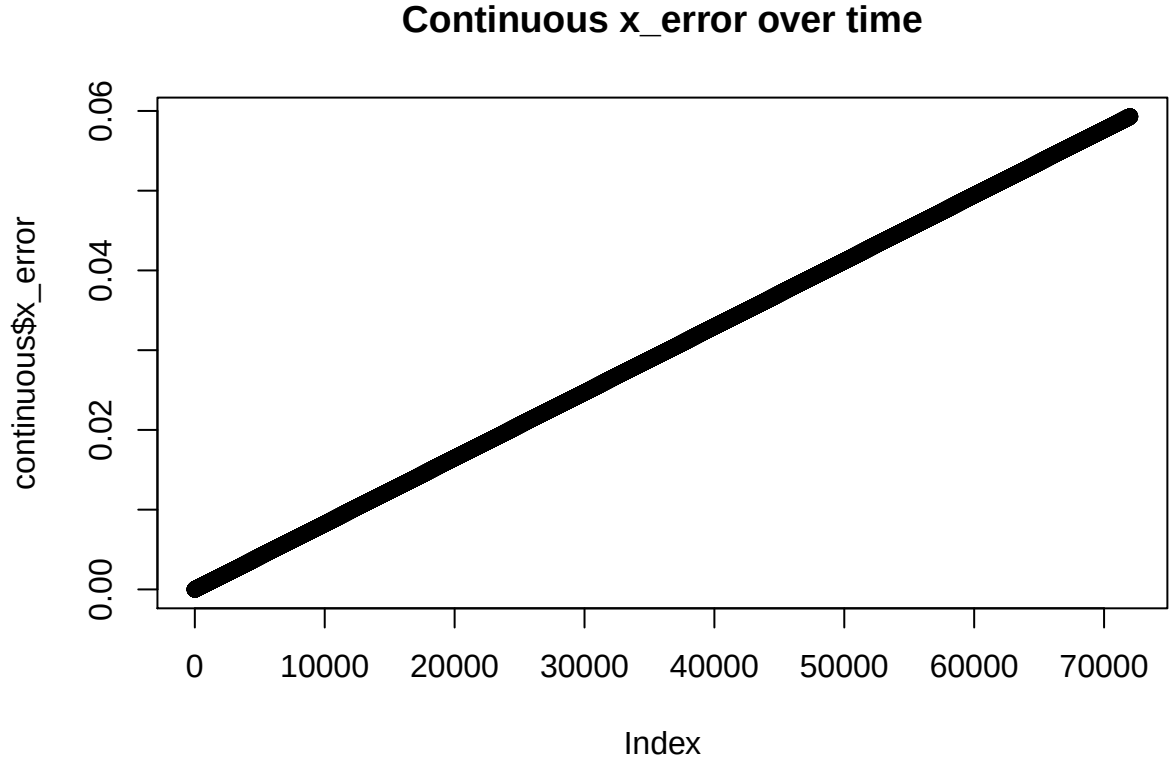
```
hist(gazebo$dist_from_origin)
title("Distance from origin vs. time")
```




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

```
## continuous x
```

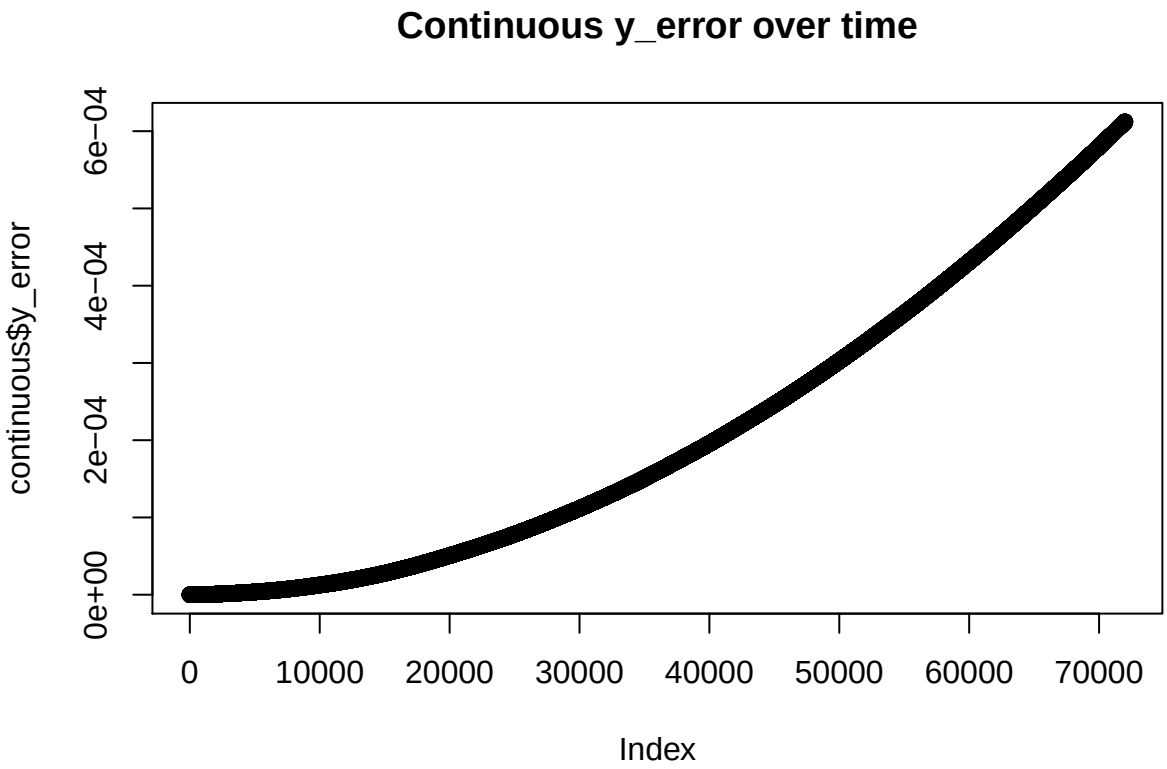
```
plot(continuous$x_error)
title("Continuous x_error over time")
```



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

```
## continous y
```

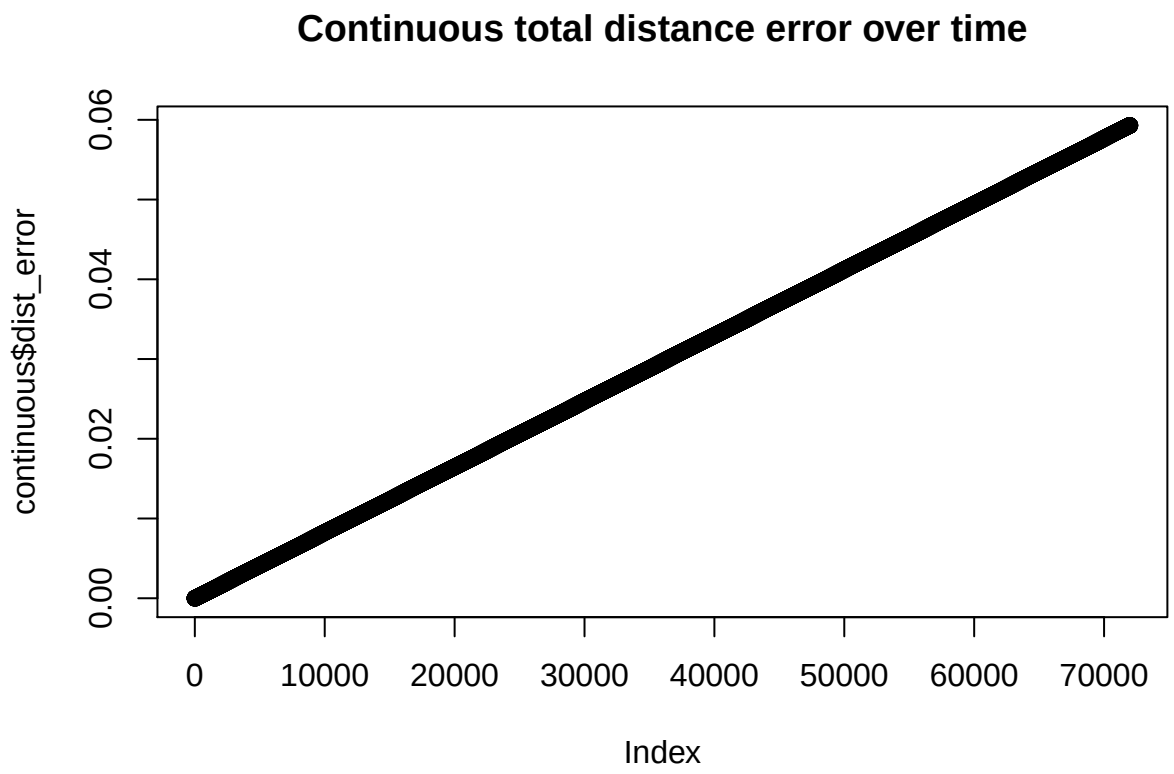
```r
plot(continuous$y_error)
title("Continuous y_error over time")
```




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

```
## continuous dist
```

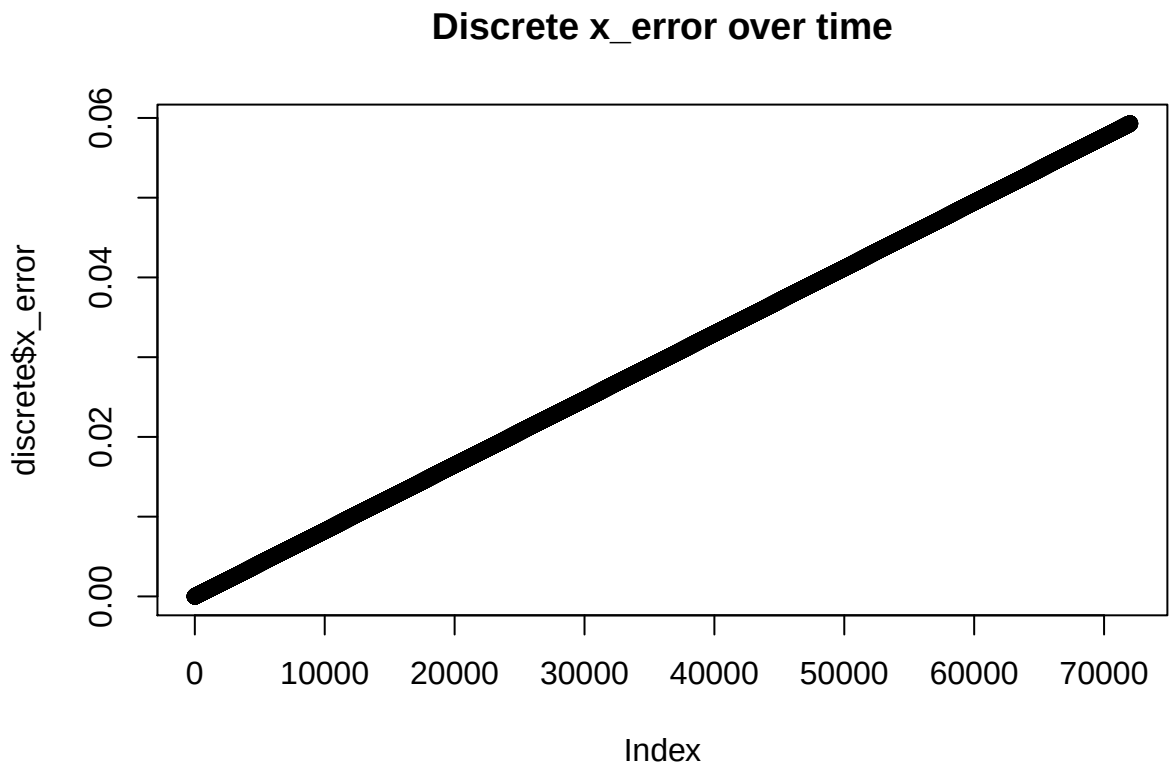
```r
plot(continuous$dist_error)
title("Continuous total distance error over time")
```




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

```
## discrete x
```

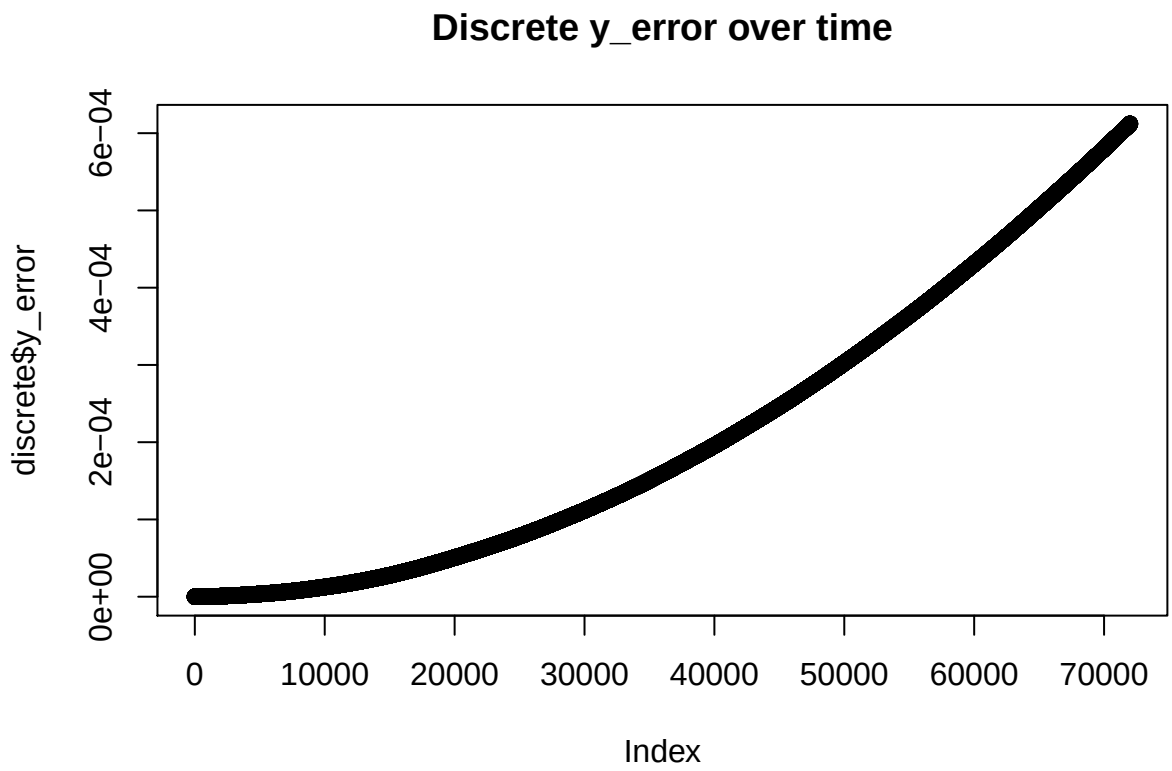
```
plot(discrete$x_error)
title("Discrete x_error over time")
```



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

```
## discrete y
```

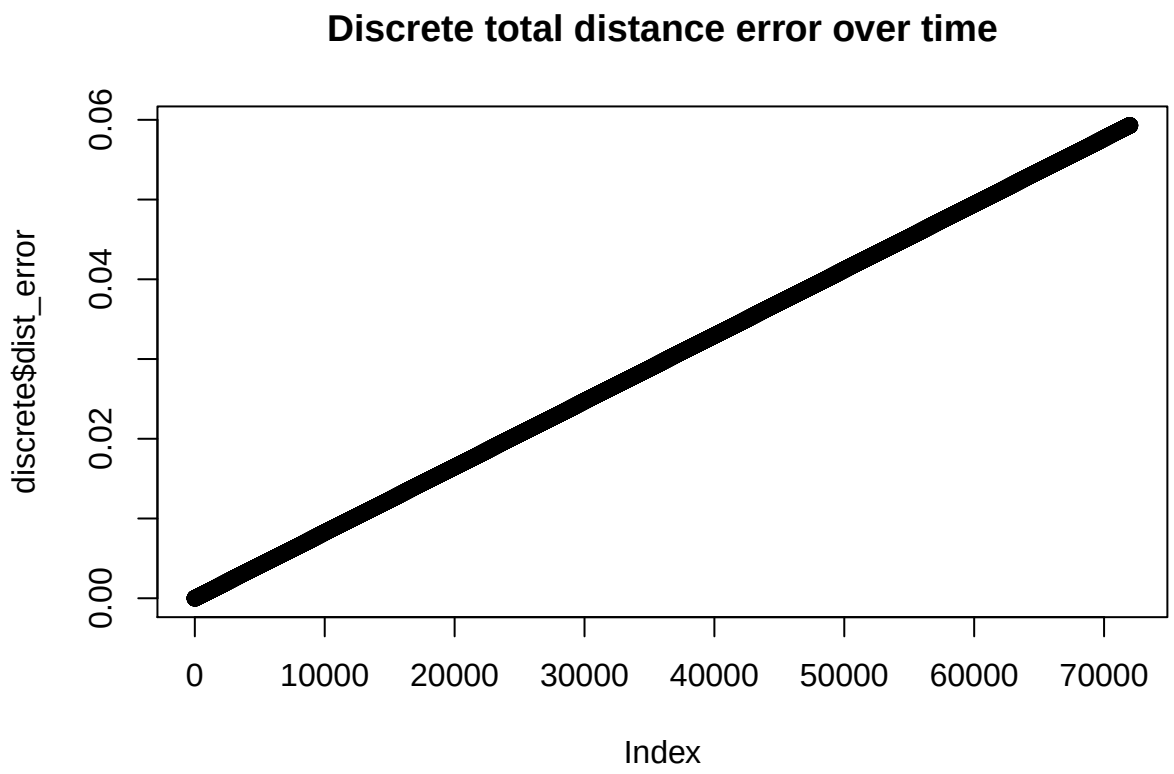
```r
plot(discrete$y_error)
title("Discrete y_error over time")
```




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

```
## discrete dist
```

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


Discrete total distance error over time
discrete$dist_error
0.00
0.02
0.04
0.06
0
10000
20000
30000
40000
50000
60000
70000
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