one_mobile.R

matt

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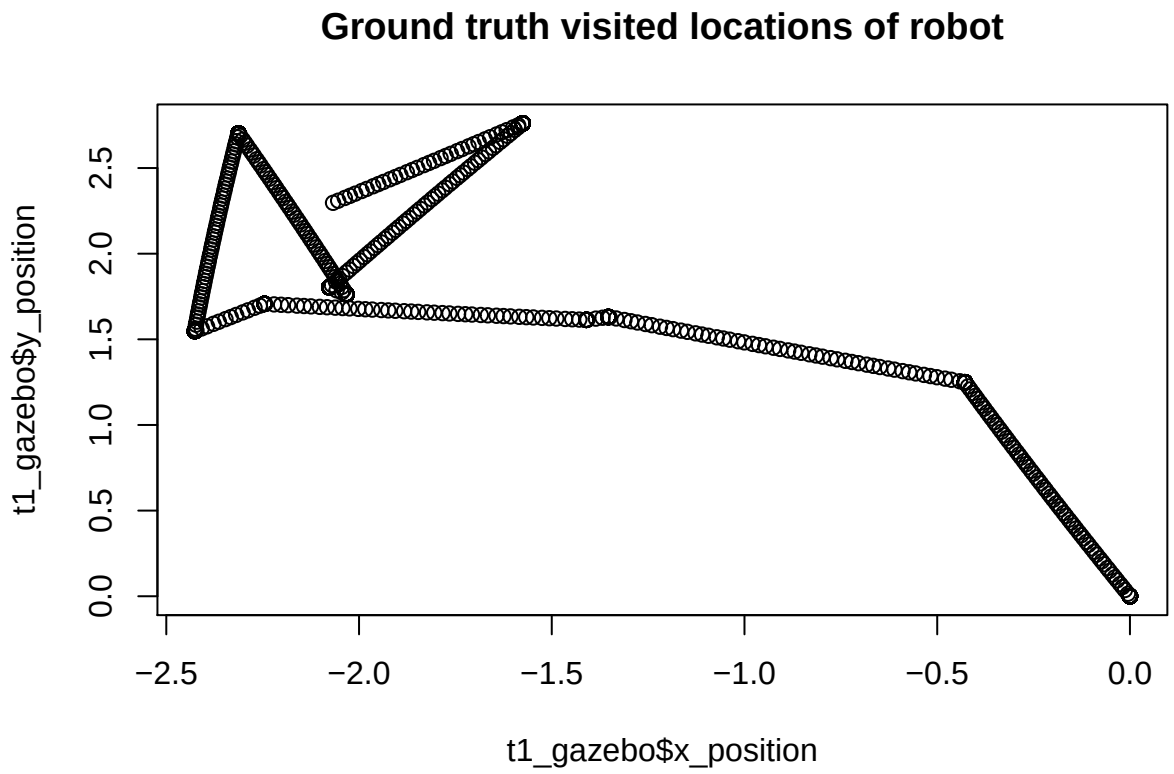
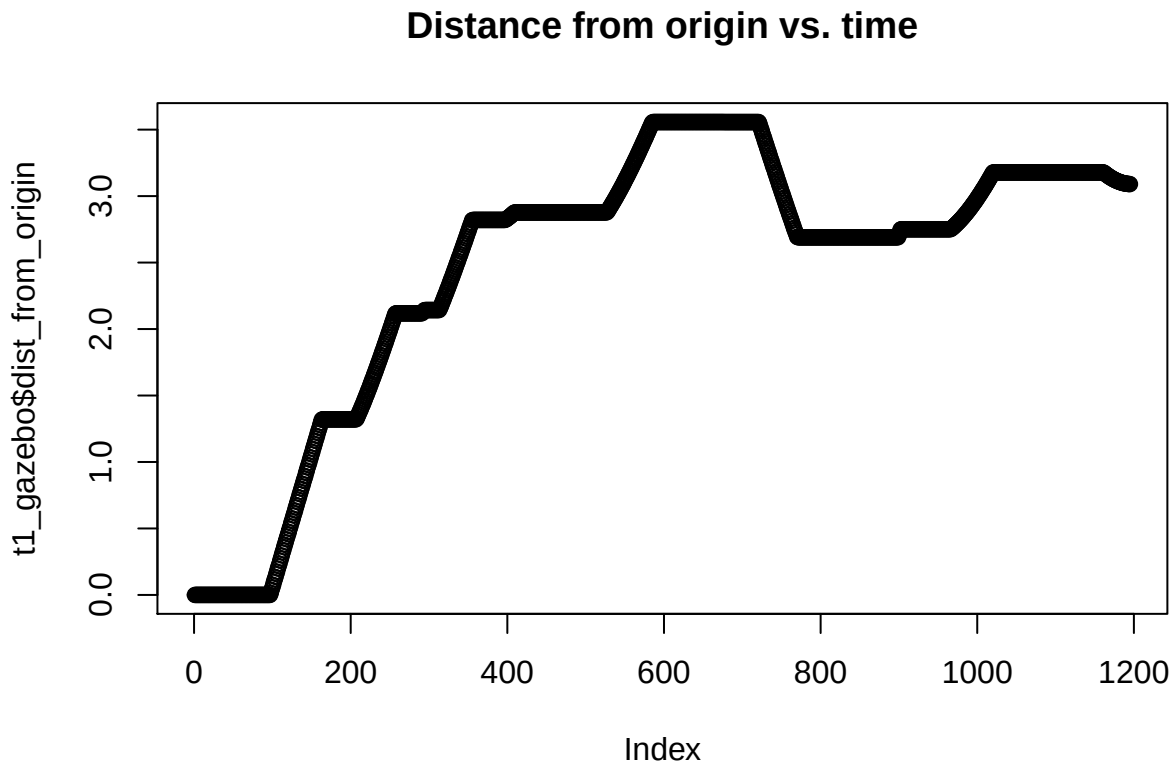
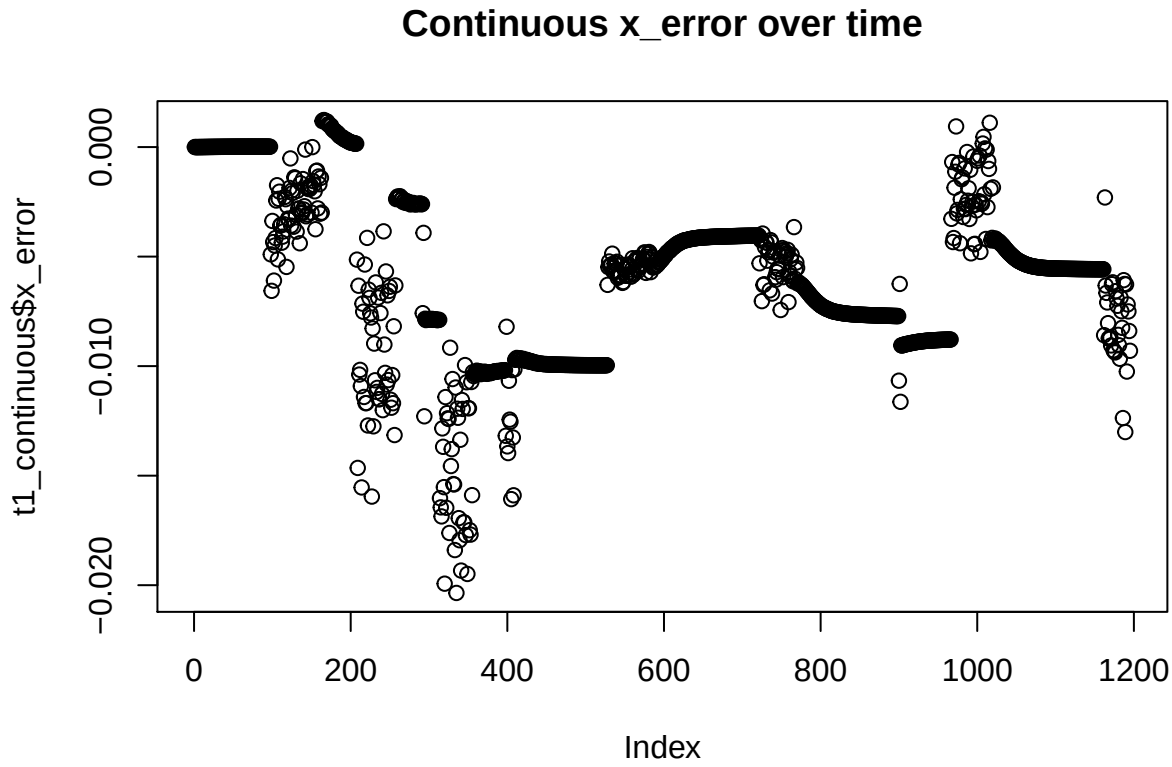
```
params <- data.frame(data_dir="", experiment_name="")

params$data_dir <- "/home/matt/thesis/experiment_data"
params$experiment_name <- "one_mobile"

t1_gazebo <- read.csv(paste(params$data_dir, params$experiment_name, "turtlebot1_gazebo_odometry_filter
t1_continuous <- read.csv(paste(params$data_dir, params$experiment_name, "turtlebot1_continuous_odometry
t1_discrete <- read.csv(paste(params$data_dir, params$experiment_name, "turtlebot1_discrete_odometry_fi
t1_external_count <- read.csv(paste(params$data_dir, params$experiment_name, "turtlebot1_external_pose_

t1_gazebo$dist_from_origin <- sqrt(t1_gazebo$x_position ^ 2 + t1_gazebo$y_position ^ 2)

t1_discrete$x_error <- t1_gazebo$x_position - t1_discrete$x_position
t1_discrete$y_error <- t1_gazebo$y_position - t1_discrete$y_position
t1_discrete$dist_error <- sqrt(t1_discrete$x_error ^ 2 + t1_discrete$y_error ^ 2)

t1_continuous$x_error <- t1_gazebo$x_position - t1_continuous$x_position
t1_continuous$y_error <- t1_gazebo$y_position - t1_continuous$y_position
t1_continuous$dist_error <- sqrt(t1_continuous$x_error ^ 2 + t1_continuous$y_error ^ 2)

#pdf(paste0(params$experiment_name, "_ground_truth_locations.pdf"))
plot(t1_gazebo$x_position, t1_gazebo$y_position)
title("Ground truth visited locations of robot")
```



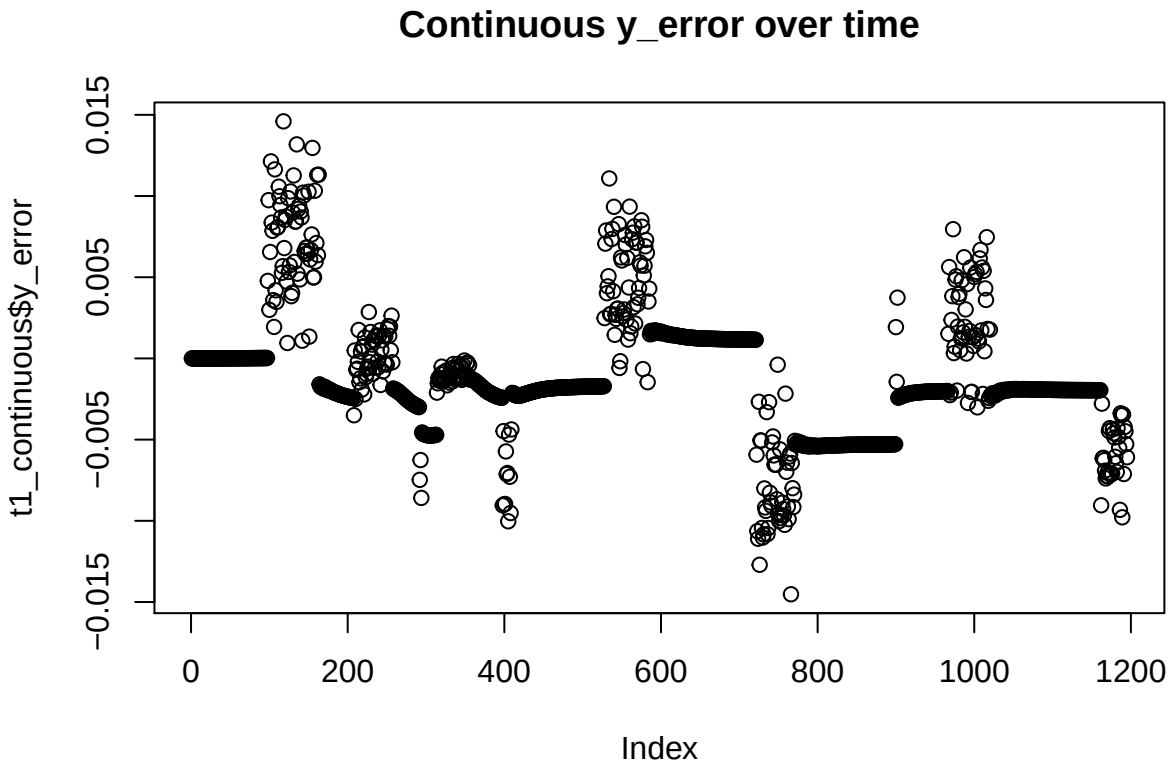

```
#dev.off()

#pdf(paste0(params$experiment_name, "_dist_from_origin.pdf"))
plot(t1_gazebo$dist_from_origin)
title("Distance from origin vs. time")
```



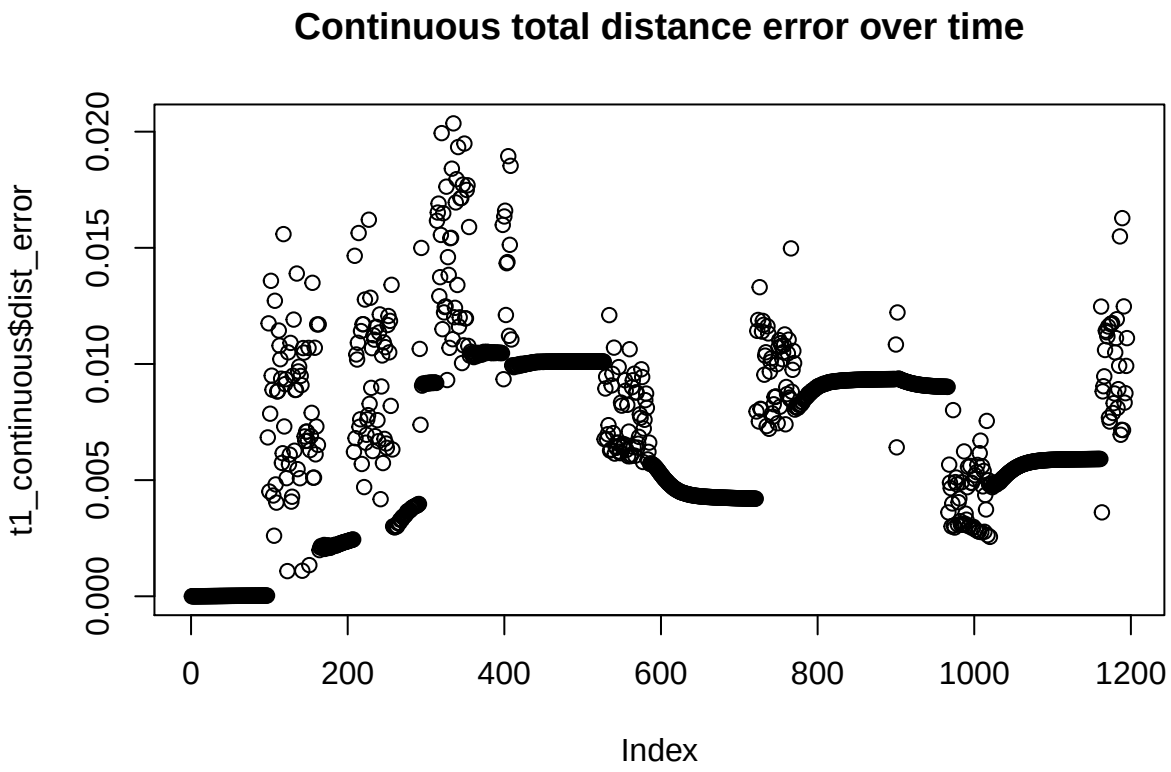
```
#dev.off()

plot(t1_continuous$x_error)
title("Continuous x_error over time")
```



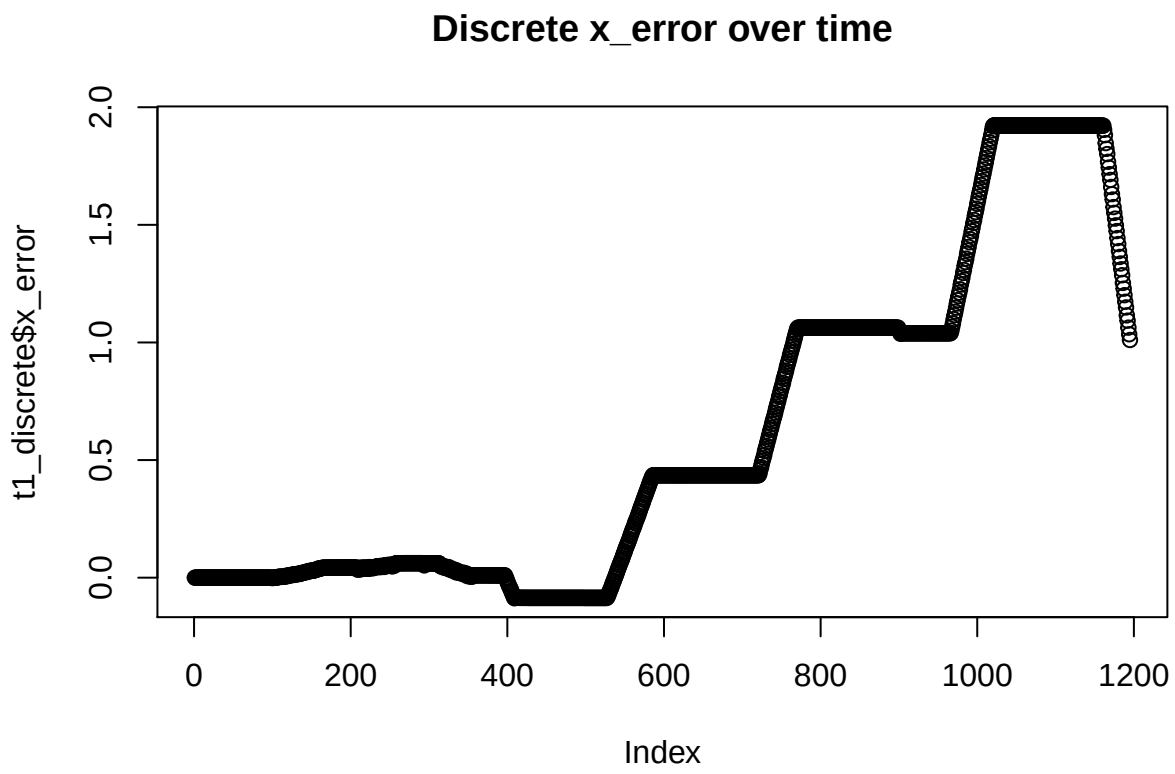

```
plot(t1_continuous$y_error)
title("Continuous y_error over time")
```



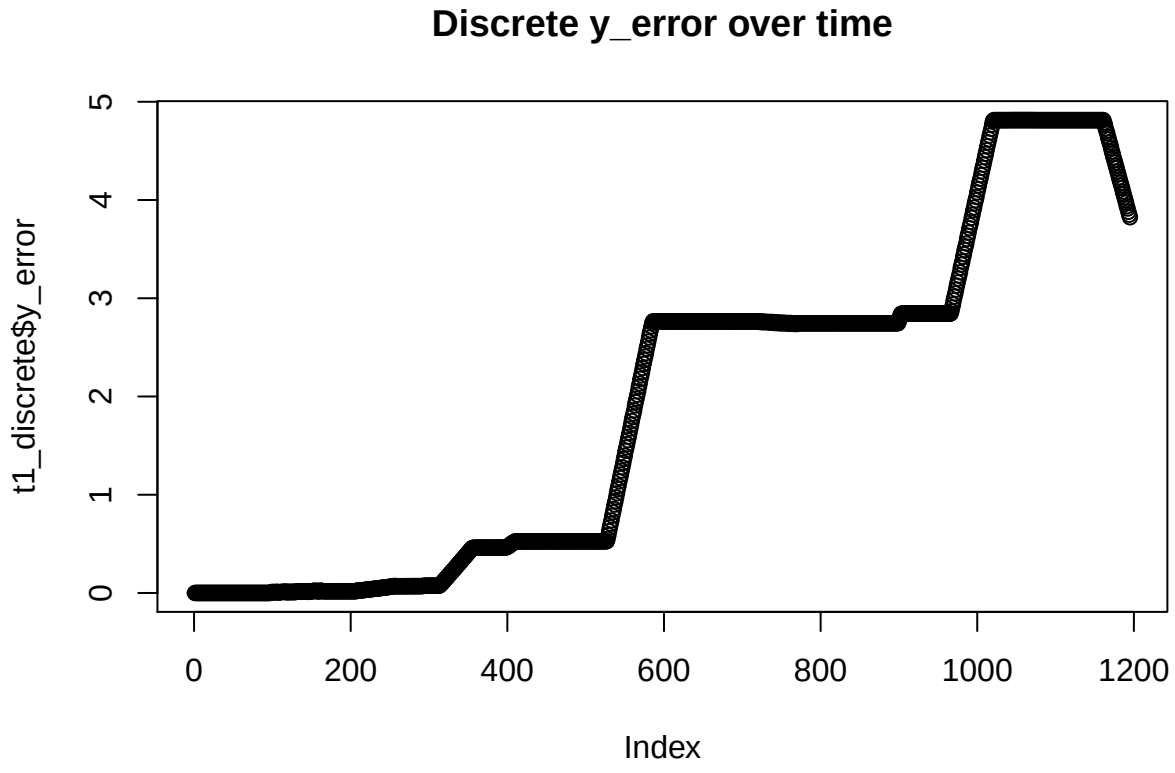

```
plot(t1_continuous$dist_error)
title("Continuous total distance error over time")
```



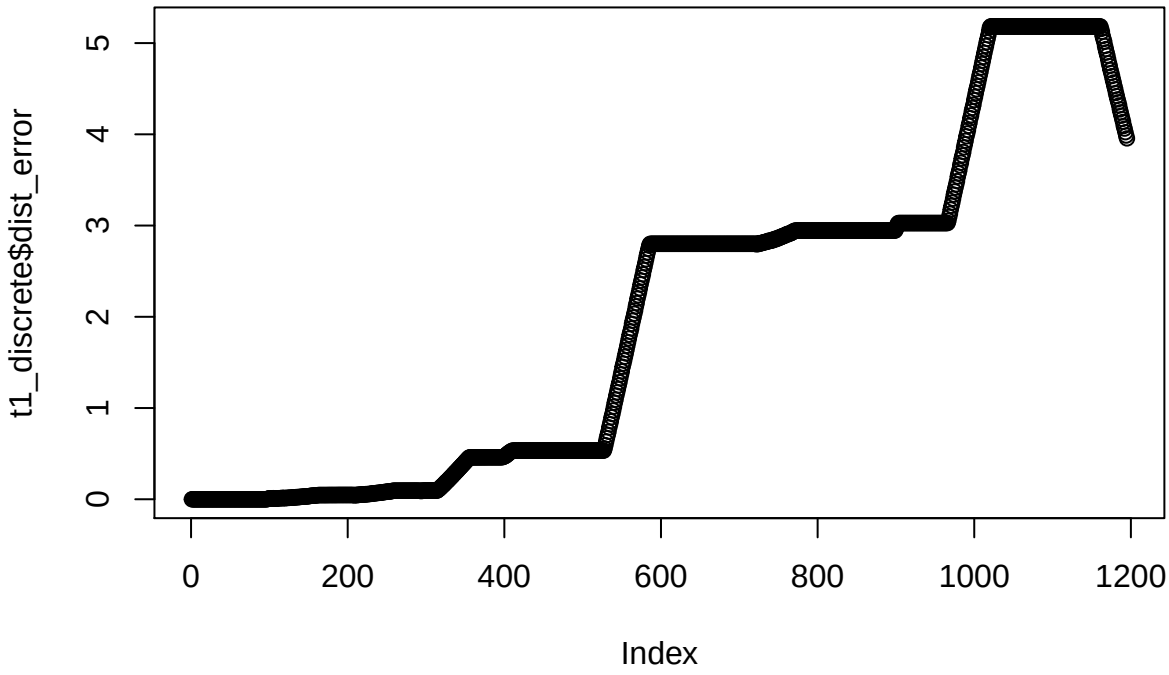

```
plot(t1_discrete$x_error)
title("Discrete x_error over time")
```




```
plot(t1_discrete$y_error)
title("Discrete y_error over time")
```




```
plot (t1_discrete$dist_error)
title("Discrete total distance error over time")
```




```
summary(t1_continuous$x_error)
```

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -0.020350 -0.008813 -0.005561 -0.005938 -0.004054  0.001234
```

```
summary(t1_continuous$y_error)
```

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -0.014520 -0.002304 -0.001884 -0.001107  0.001153  0.014600
```

```
summary(t1_continuous$dist_error)
```

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## 8.000e-08 4.379e-03 7.581e-03 7.150e-03 9.936e-03 2.036e-02
```

```
summary(t1_discrete$x_error)
```

```
##     Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
## -0.08749  0.01038  0.43550  0.59670  1.06300  1.92300
```

```
summary(t1_discrete$y_error)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.00000 0.07312 2.74600 1.91600 2.76500 4.81400
```

```
summary(t1_discrete$dist_error)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.00000 0.09511 2.79900 2.02400 2.94500 5.18400
```