

one_mobile_noiseless_no_gps Turtlebot 1 Report

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This is a summary of the data from the one_mobile_noiseless_no_gps experiment, Turtlebot #1.

The runtime of this experiment was 0 hours, 6 minutes, and 40.4 seconds.

The total number of external pose measurements received by the robot during this time was 0 which means poses were received at an average of 0 poses per second.

Shown below is the summary of each filter's error 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.
## -0.1514  0.1342  0.1342  0.1328  0.1342  0.2492

summary(continuous$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -0.312600 -0.312500 -0.312500 -0.308100 -0.312400  0.002268

summary(continuous$yaw_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -3.14100 -1.44000 -0.05255  0.01221  1.59100  3.14000

summary(continuous$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## 0.0000158 0.3401000 0.3401000 0.3363000 0.3401000 0.3433000

summary(discrete$x_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -0.1498  0.1286  0.1286  0.1272  0.1287  0.2420

summary(discrete$y_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -0.299300 -0.299200 -0.299200 -0.2995100 -0.299200  0.002269

summary(discrete$yaw_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -3.13800 -1.44000 -0.05491  0.01126  1.58700  3.14100

summary(discrete$dist_error)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## 0.0000158 0.3257000 0.3257000 0.3221000 0.3257000 0.3304000

summary(noisy_odom$x_err)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -2.9050 -0.8748  0.1310  0.4429  0.2608  6.5010
```

```

summary(noisy_odom$y_err)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## -4.4030 -2.2810 -0.8002 -1.3090 -0.3698  0.5684

summary(noisy_odom$dist_err)

##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## 0.000027 0.401000 1.398000 2.114000 3.465000 7.113000

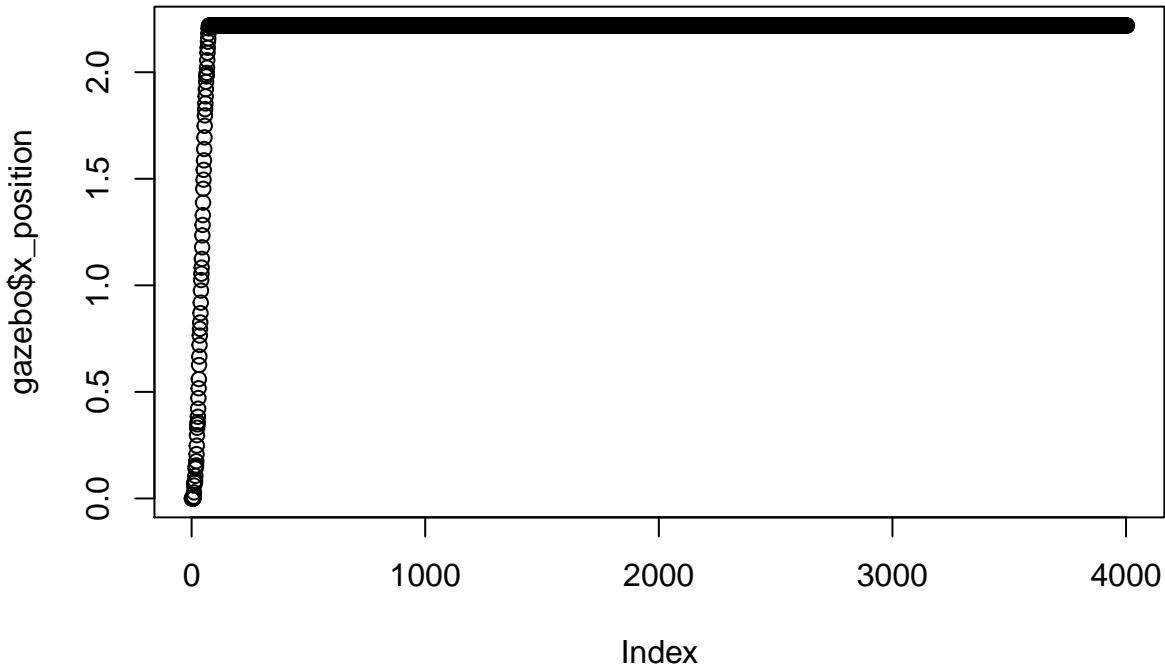
if (NROW(gps) > 0) {
  summary(gps$x_err)
  summary(gps$y_err)
  summary(gps$dist_err)
}

if (NROW(noisy_odom) > 0) {
  summary(noisy_odom$x_variance)
  summary(noisy_odom$y_variance)
  summary(noisy_odom$yaw_variance)
}

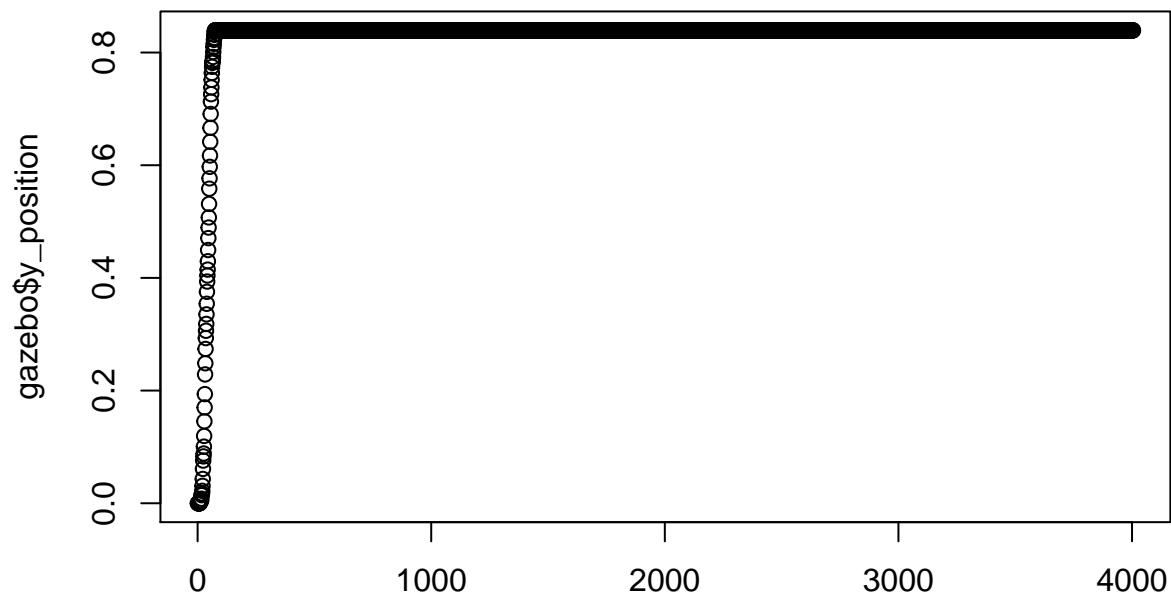
##      Min. 1st Qu. Median     Mean 3rd Qu.    Max.
## 0.000e+00 2.872e-06 7.314e-03 4.856e-03 7.675e-03 8.837e-03

```

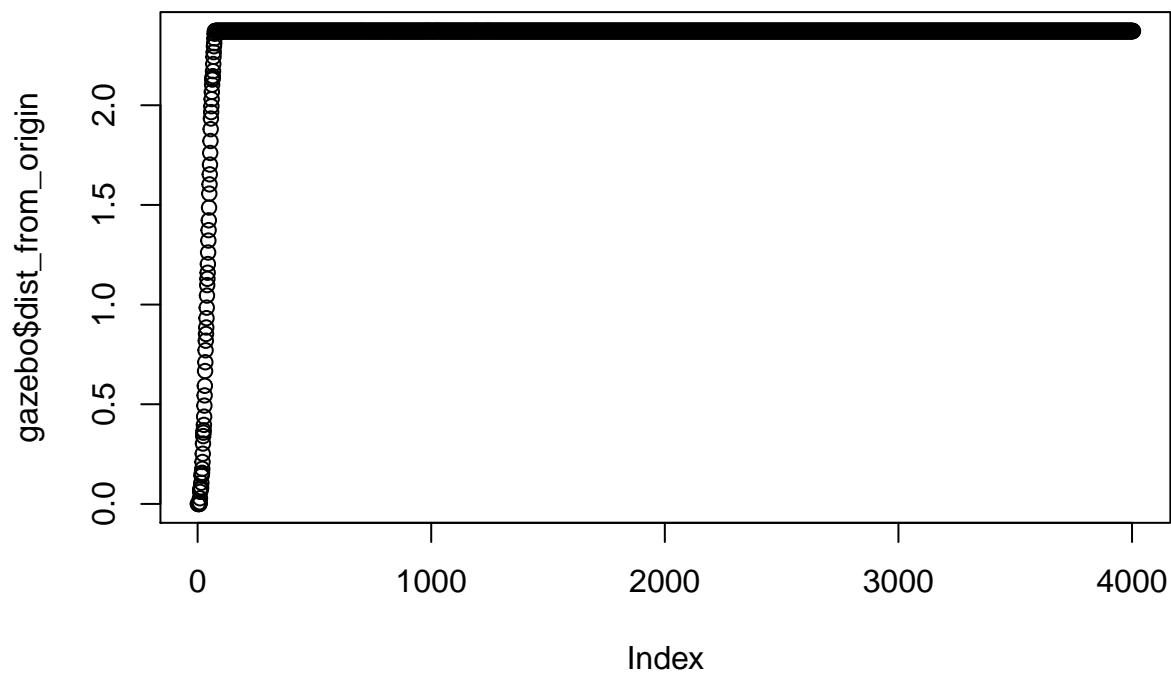
X coordinate of robot over time



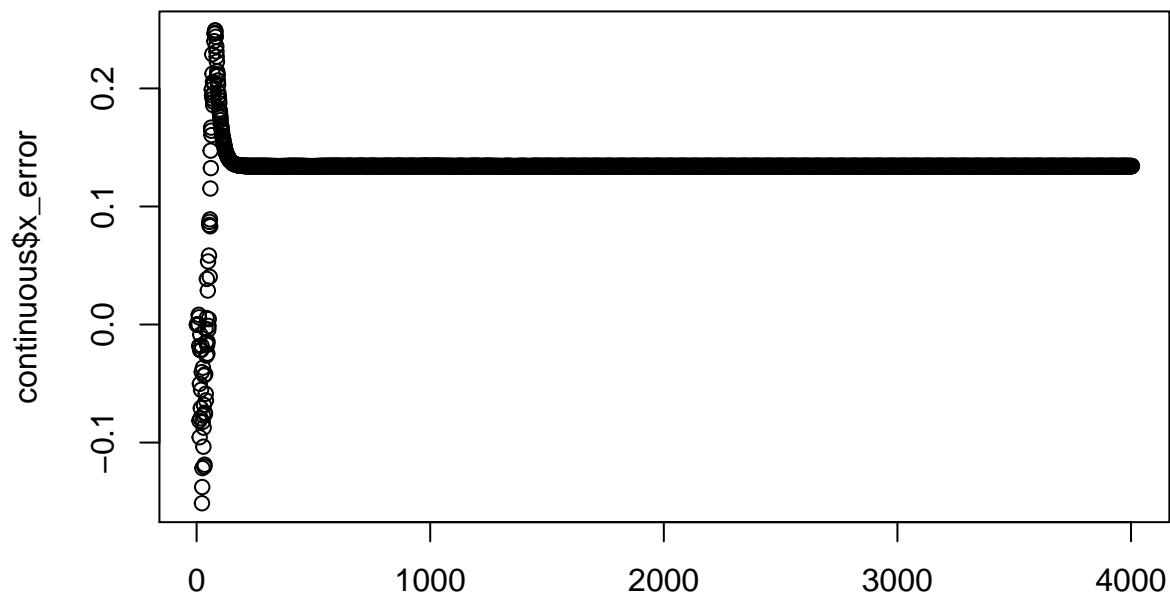
Y coordinate of robot over time



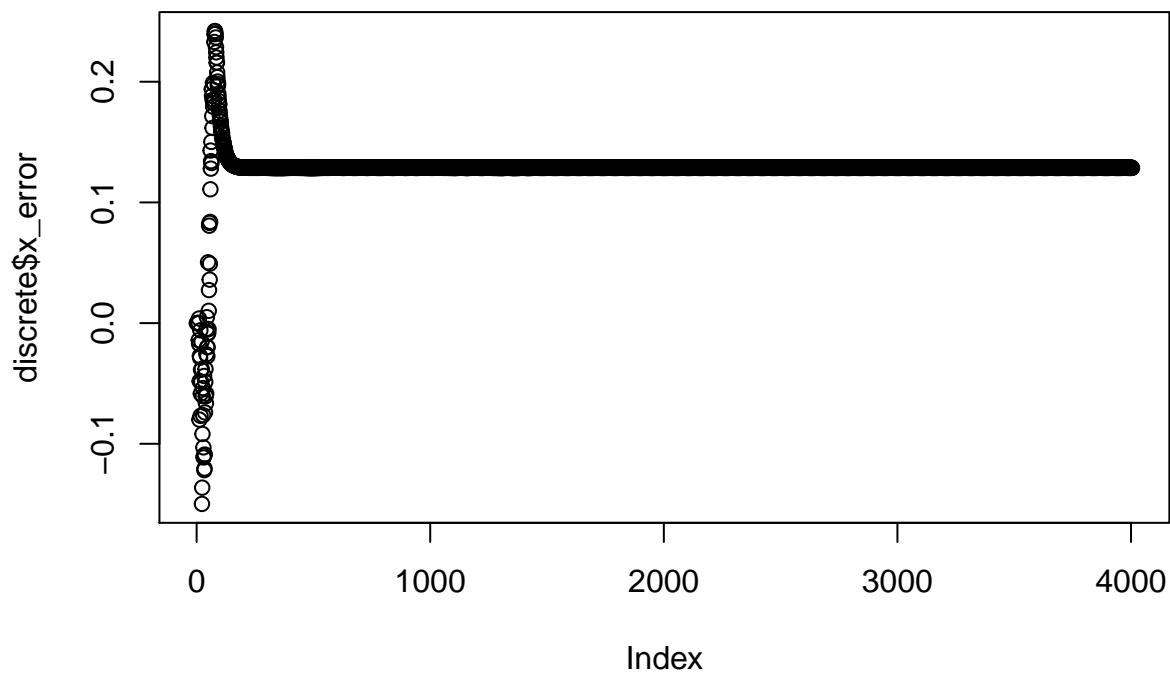
Distance from origin vs. time



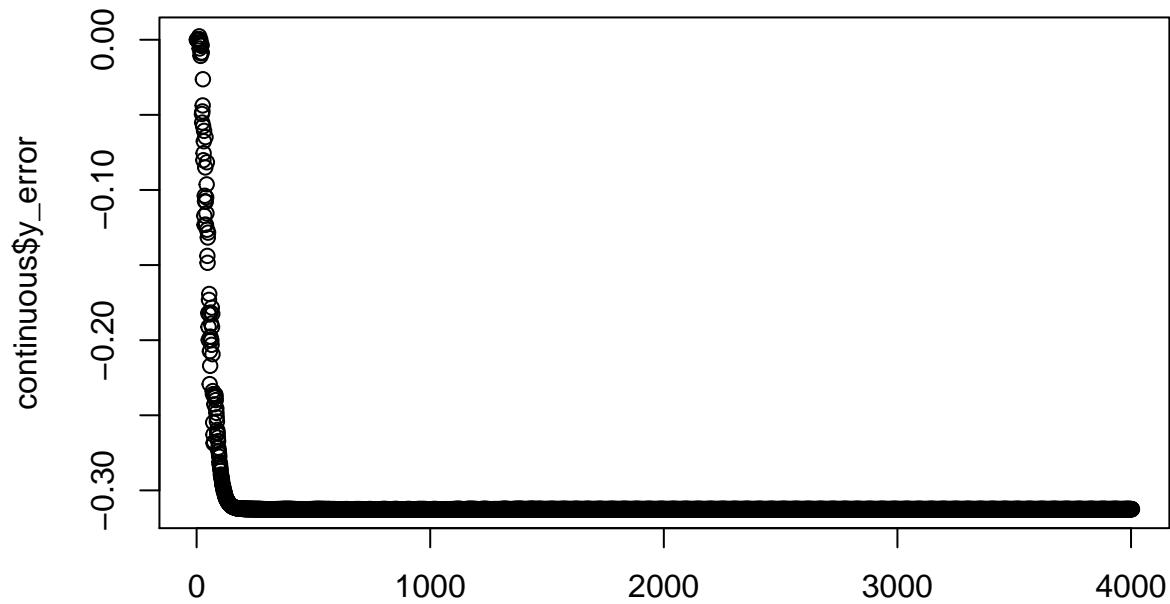
Continuous x_error over time



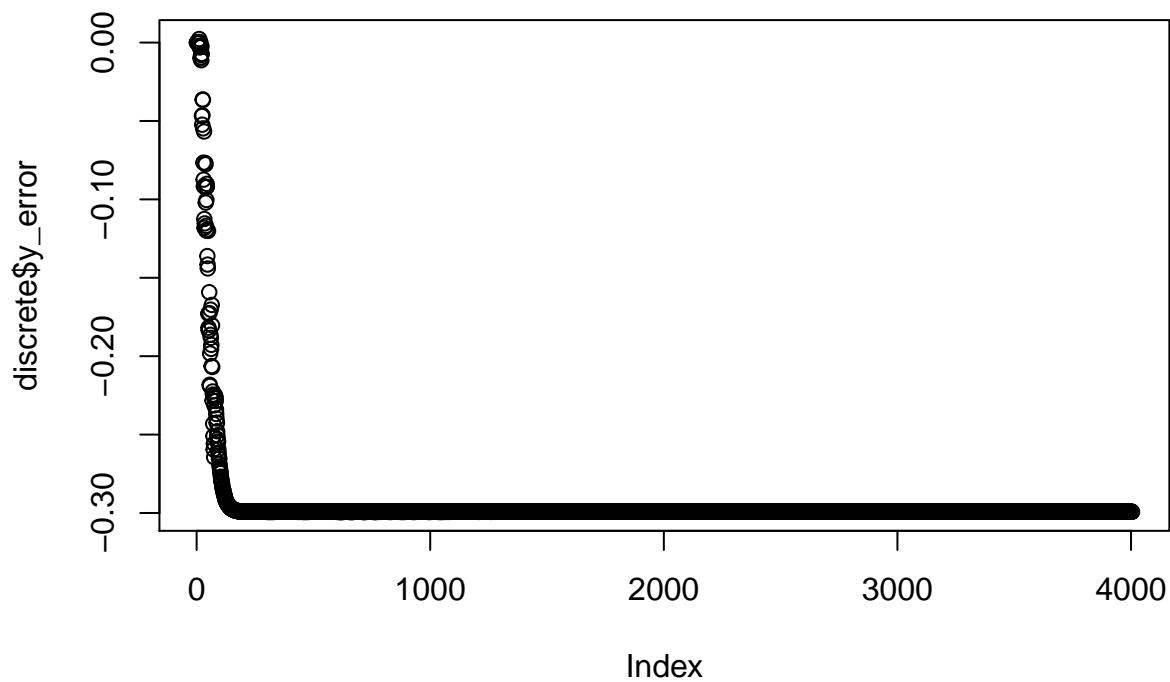
Discrete x_error over time



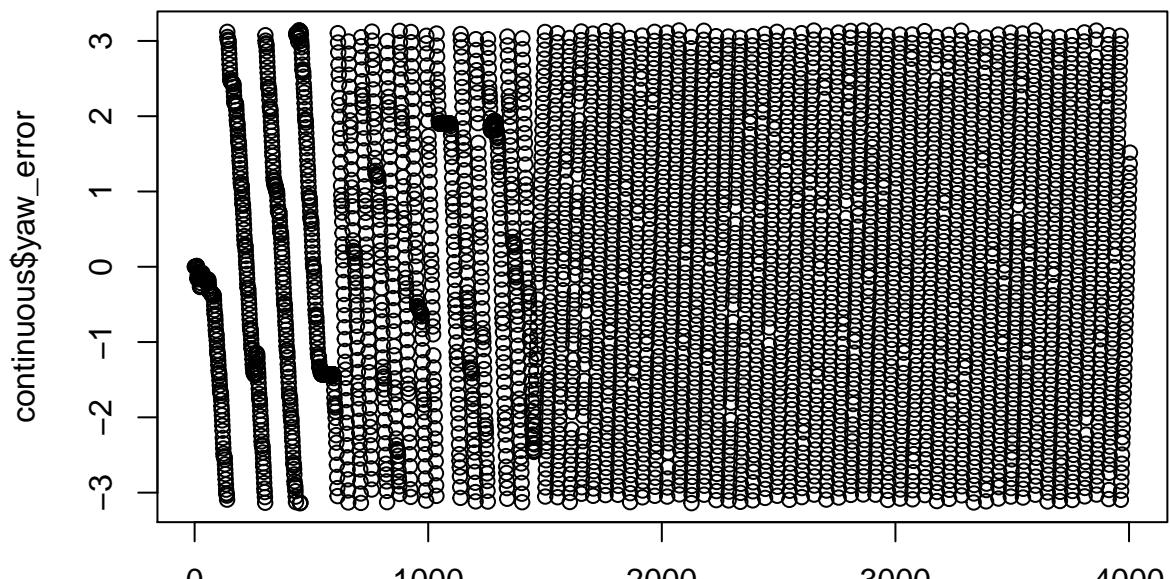
Continuous y_error over time



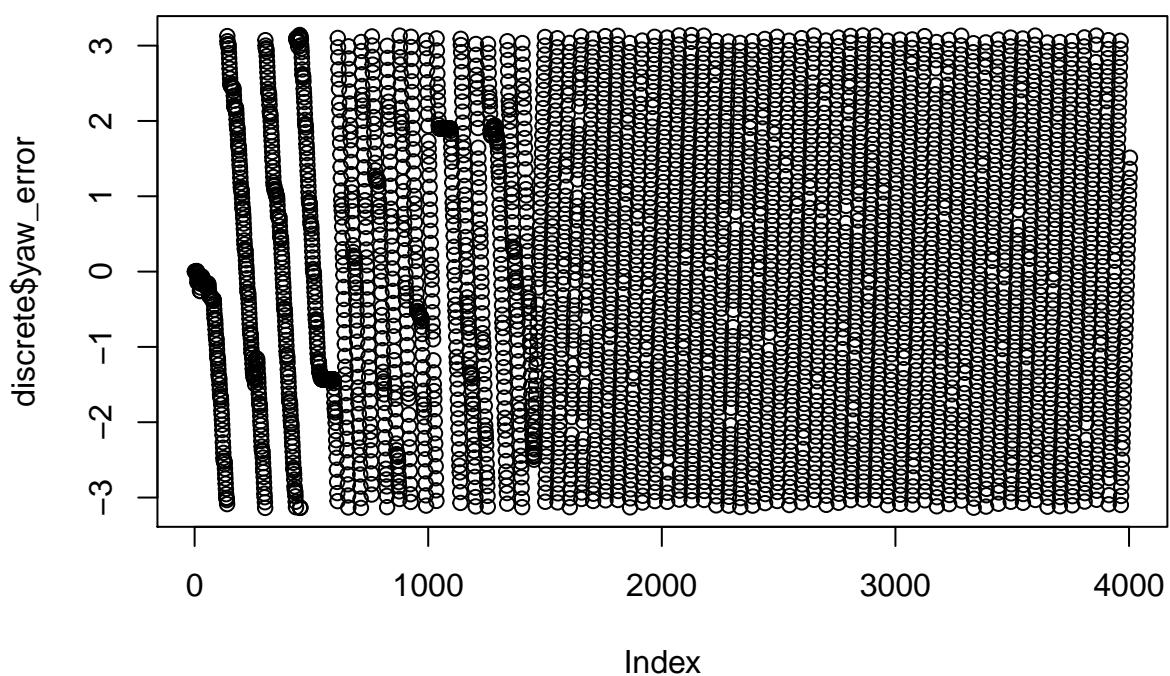
Discrete y_error over time



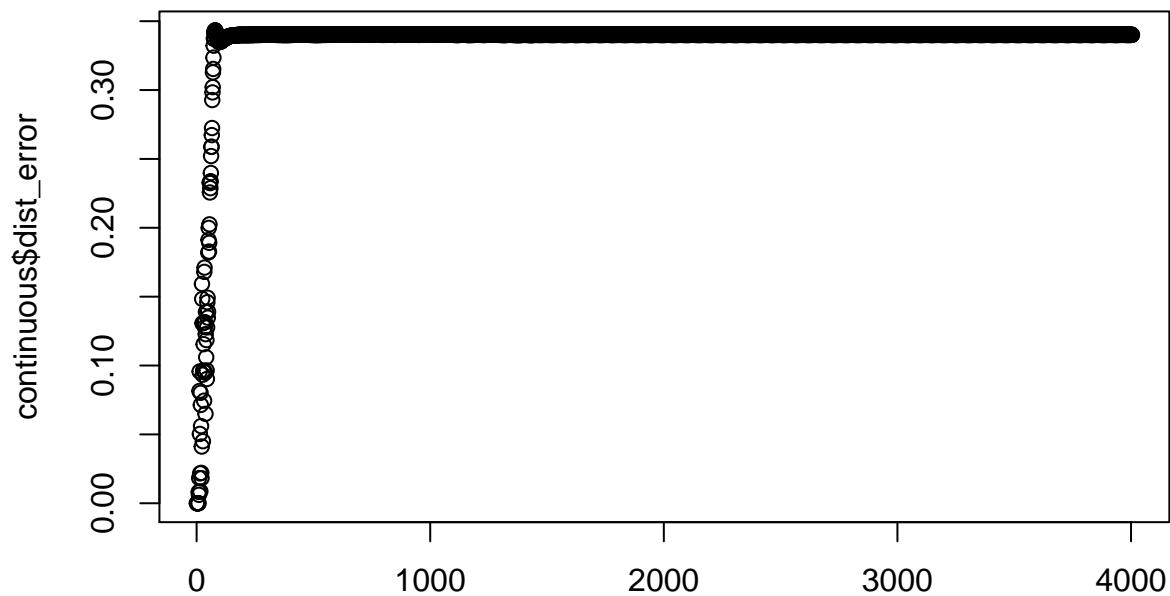
Continuous yaw error over time



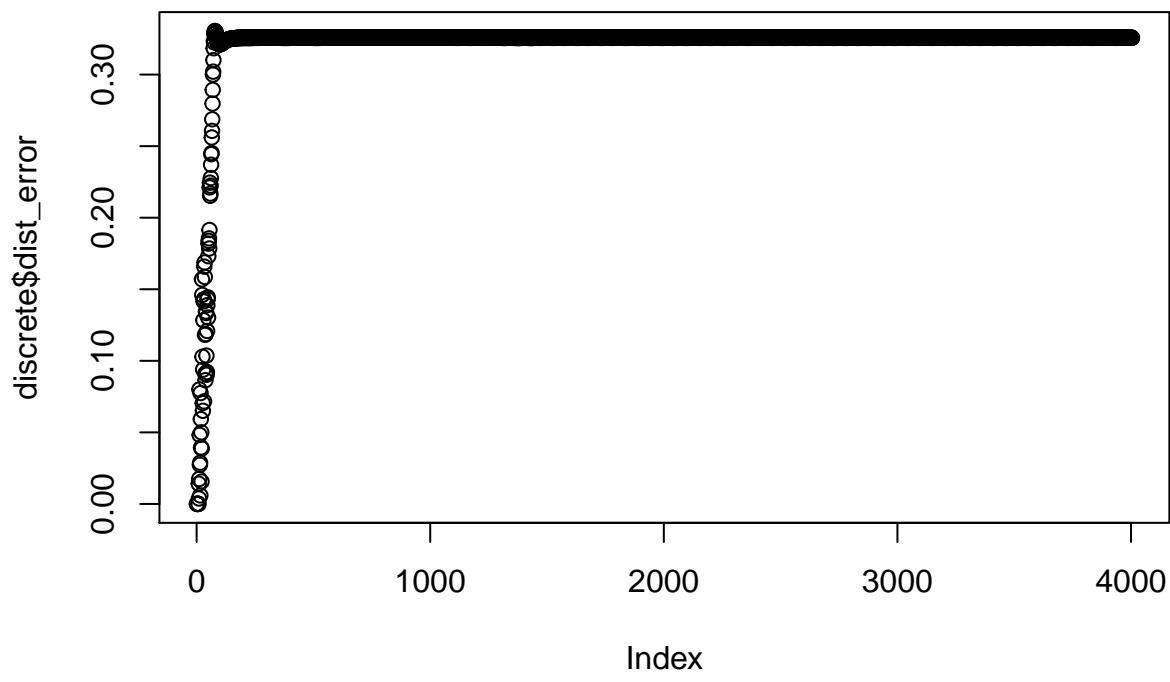
Discrete yaw error over time



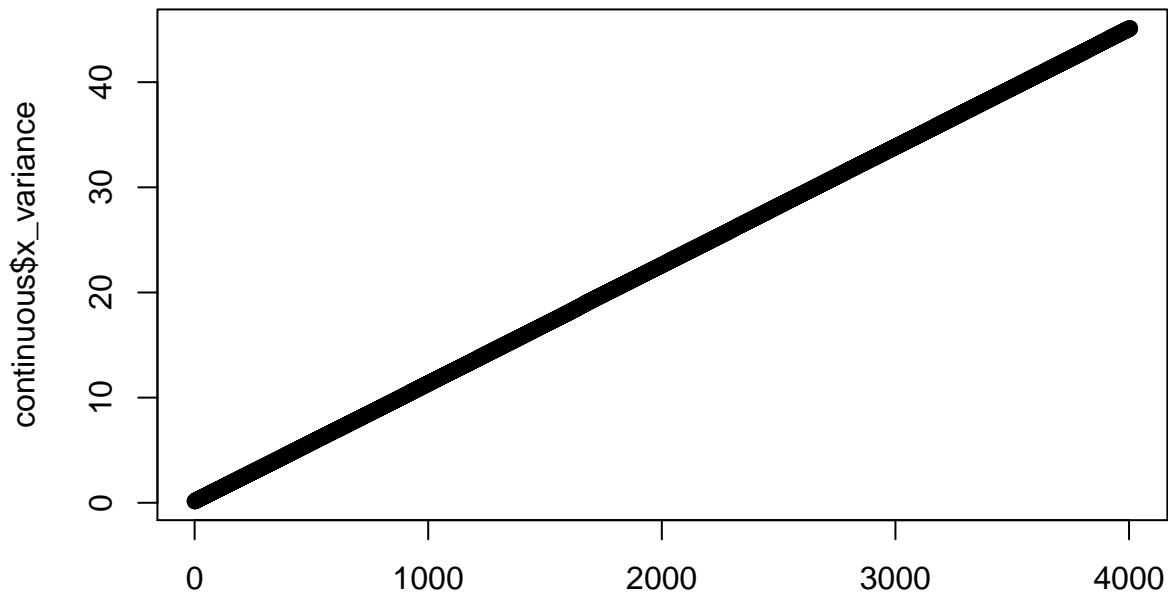
Continuous total distance error over time



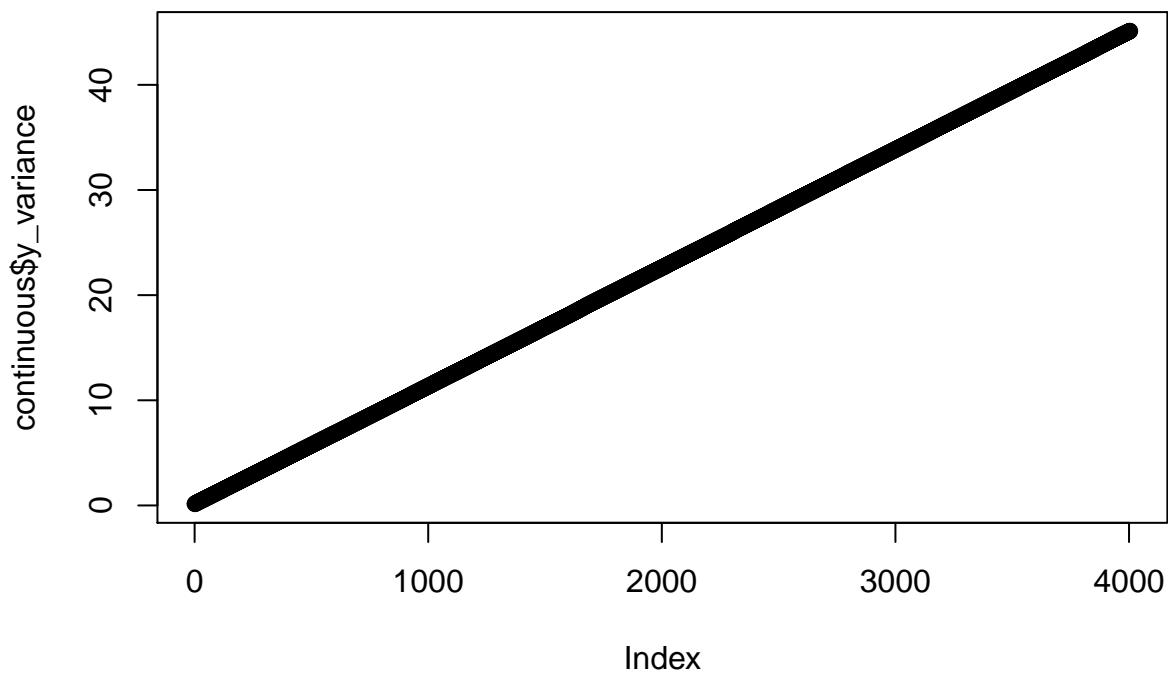
Discrete total distance error over time



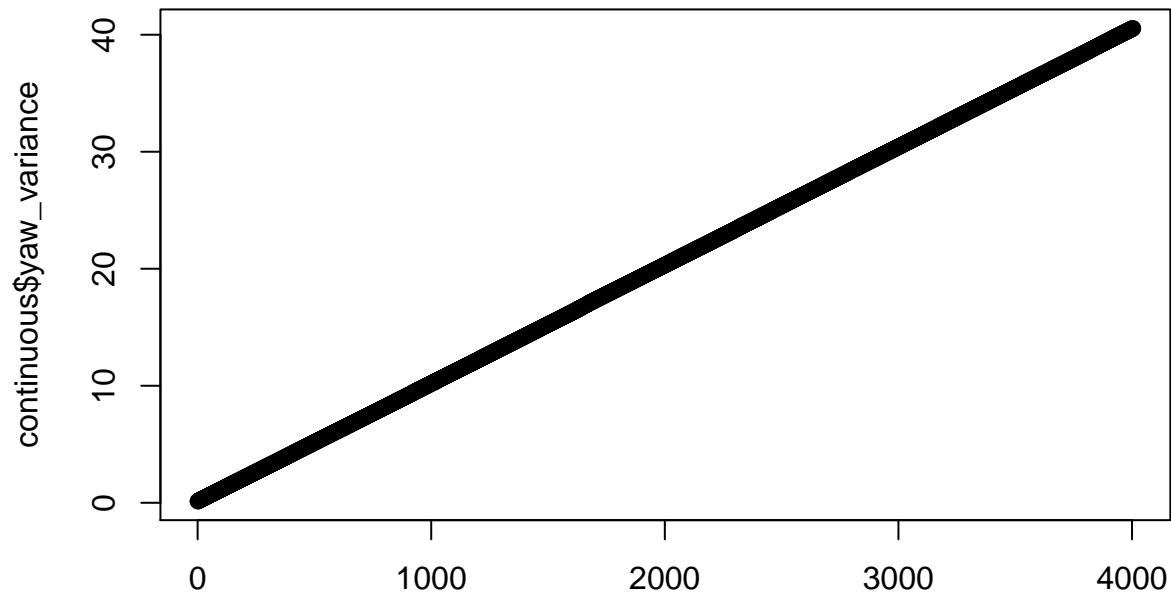
Continuous Filter X Variance Over Time



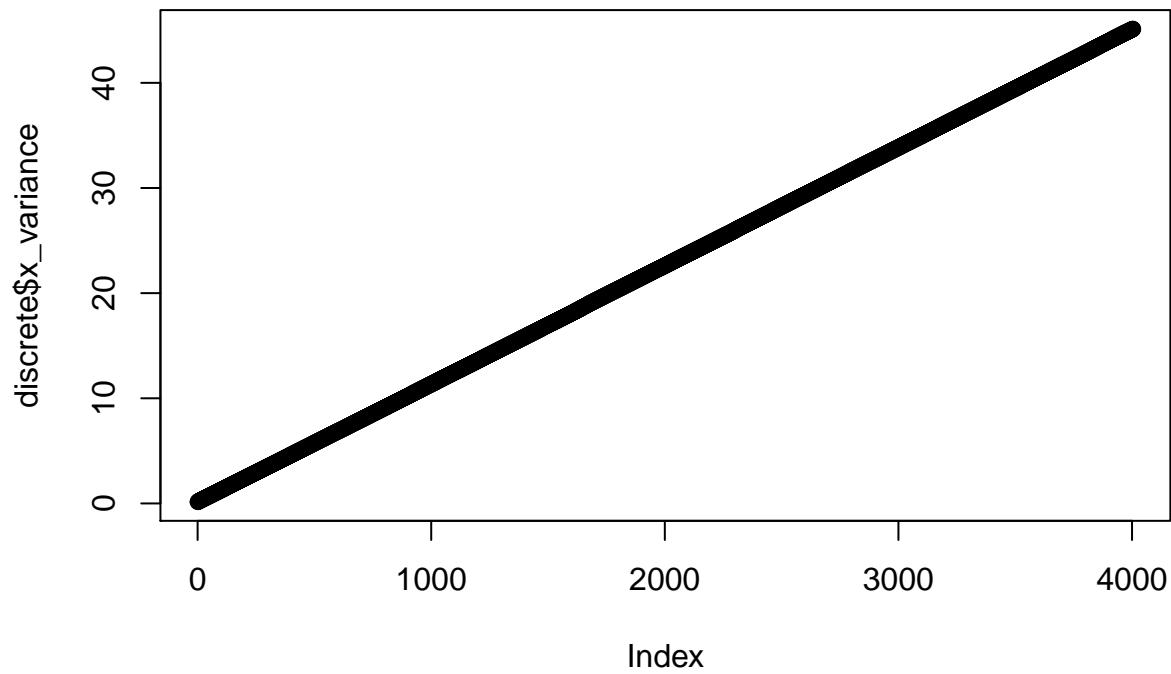
Continuous Filter Y Variance Over Time



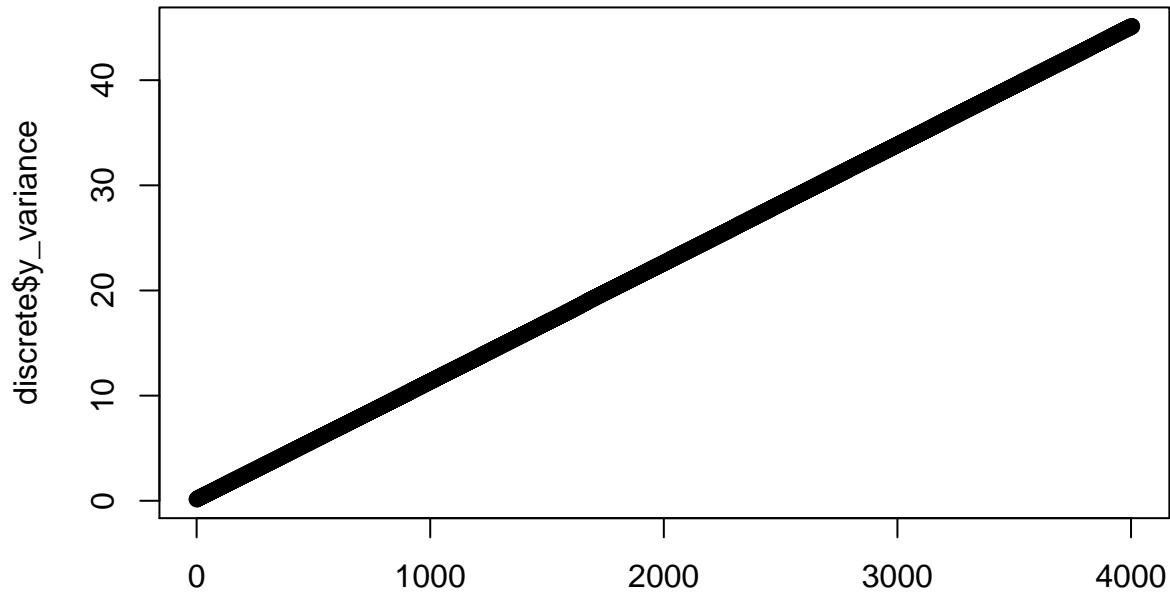
Continuous Filter Yaw Variance Over Time



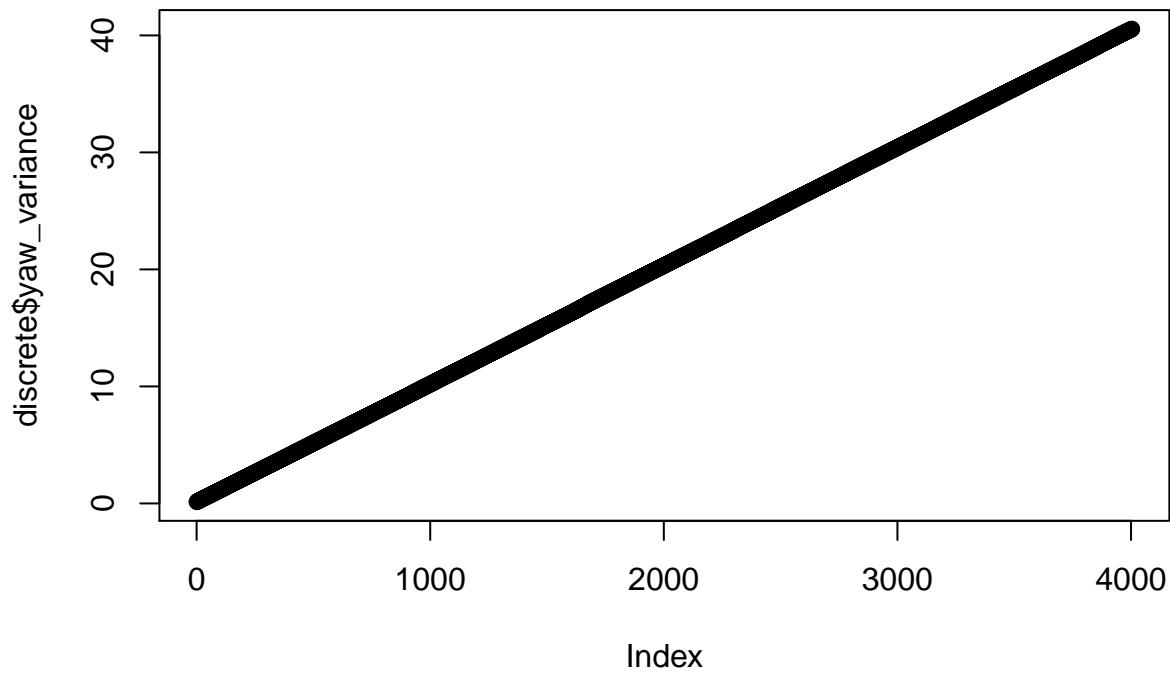
Discrete Filter X Variance Over Time



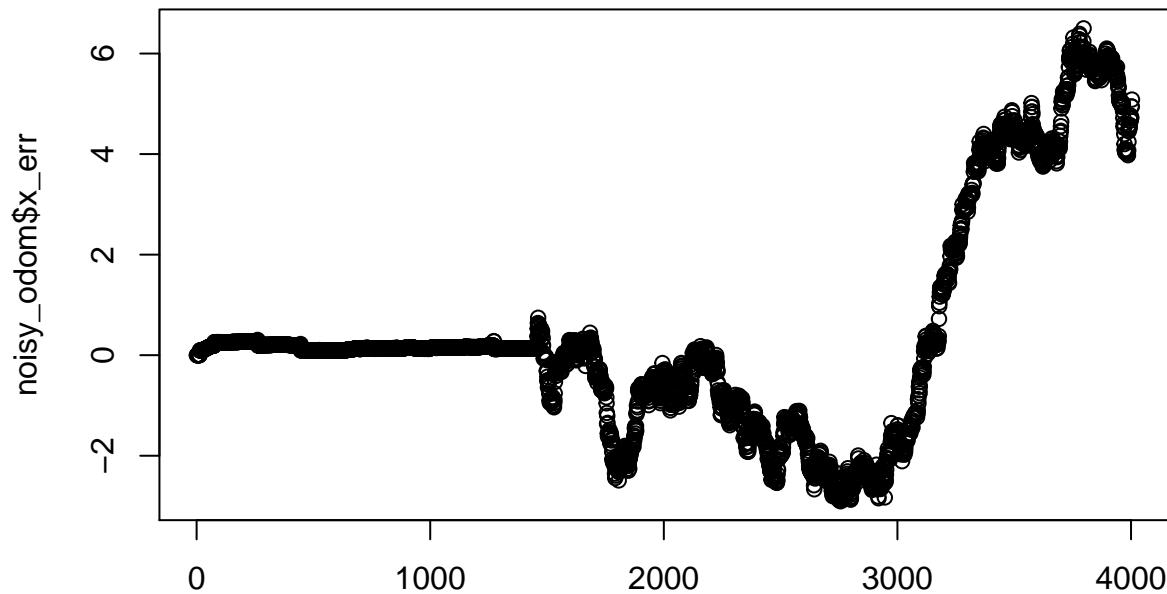
Discrete Filter Y Variance Over Time



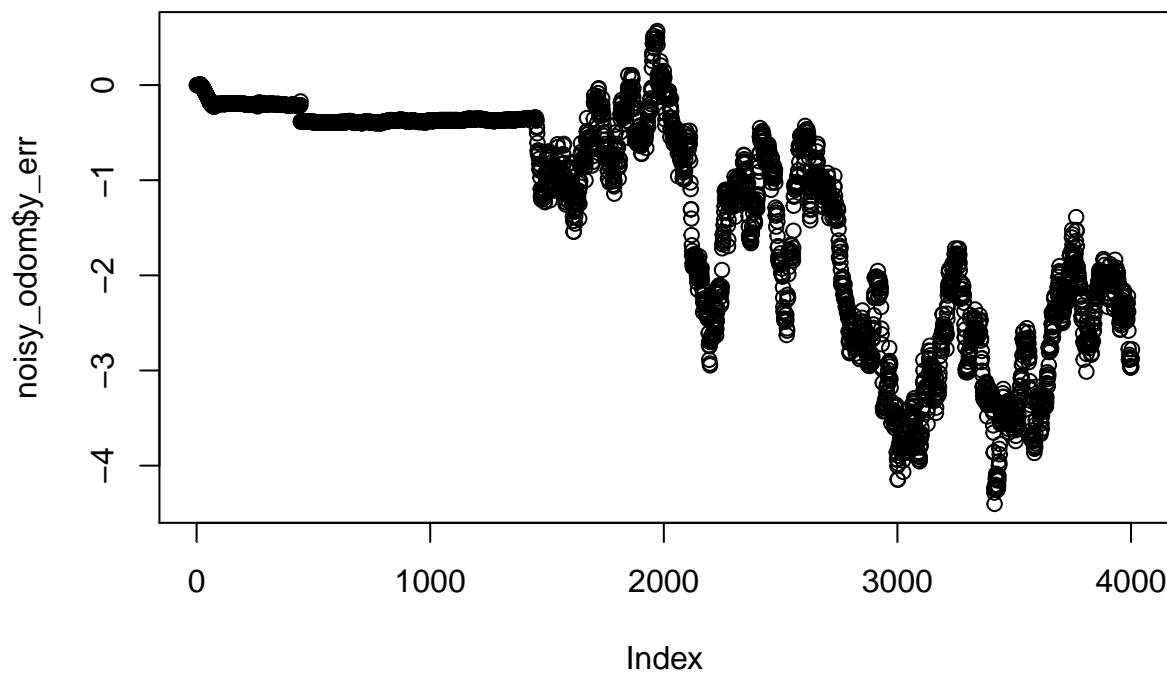
Discrete Filter Yaw Variance Over Time



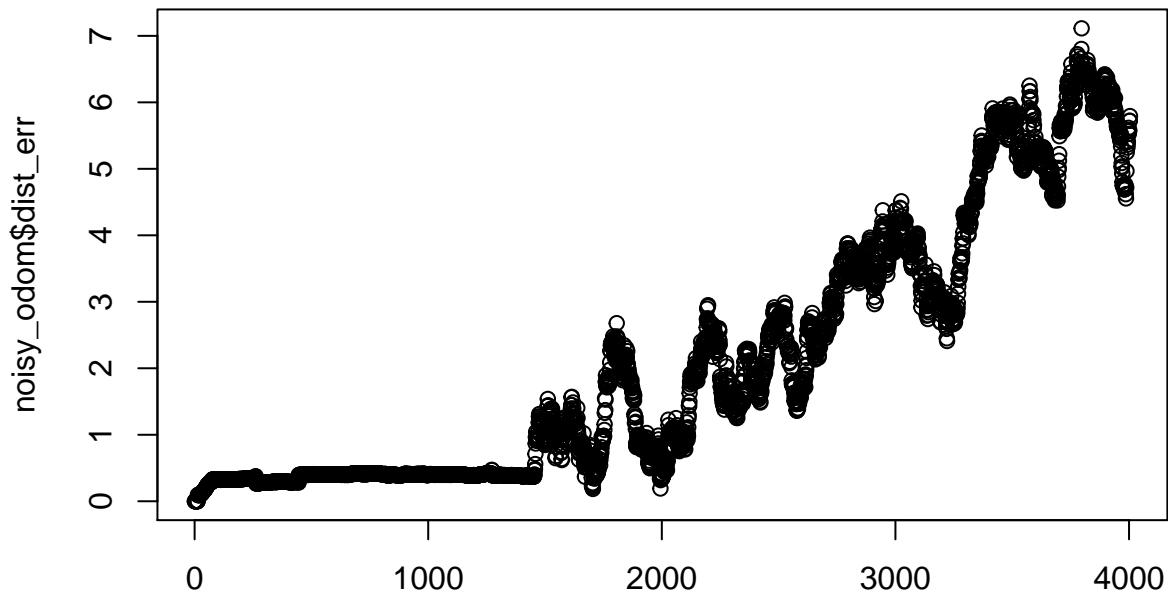
Noisy Odom X Error Over Time



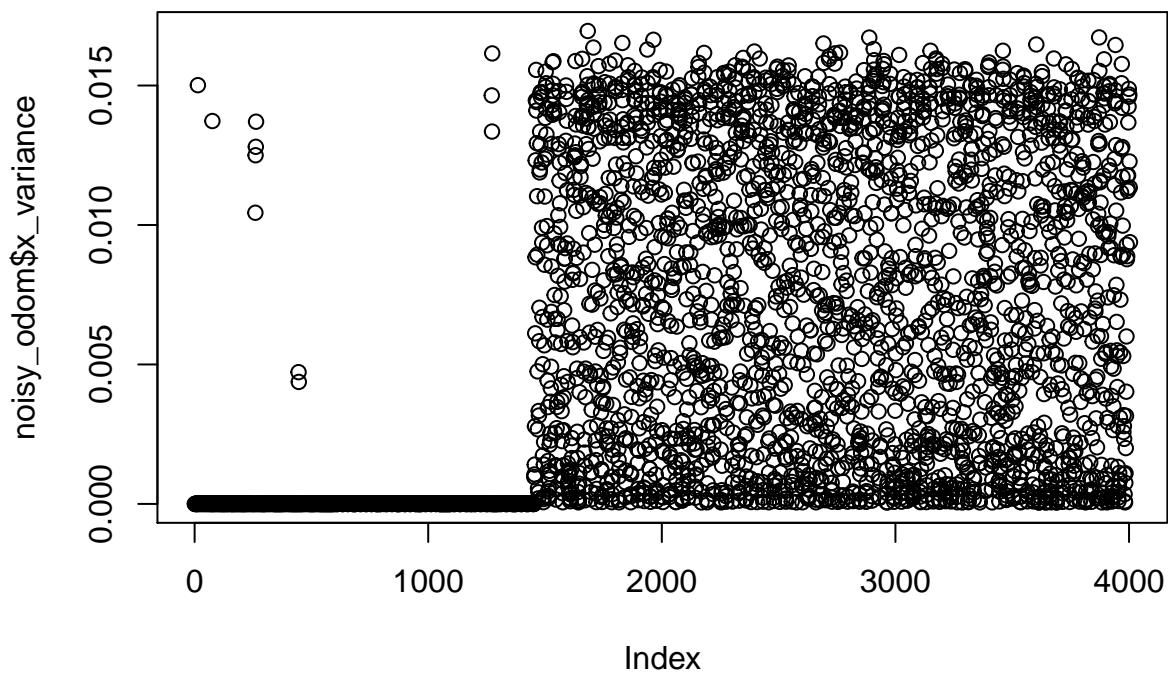
Noisy Odom Y Error Over Time



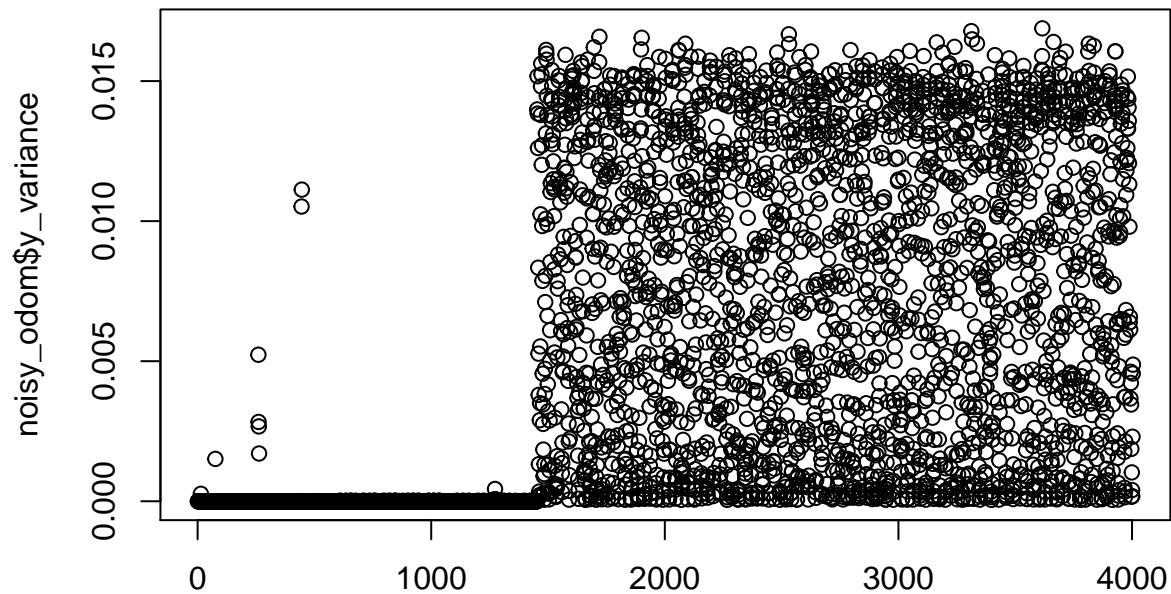
Noisy Odom Horizontal Distance Error Over Time



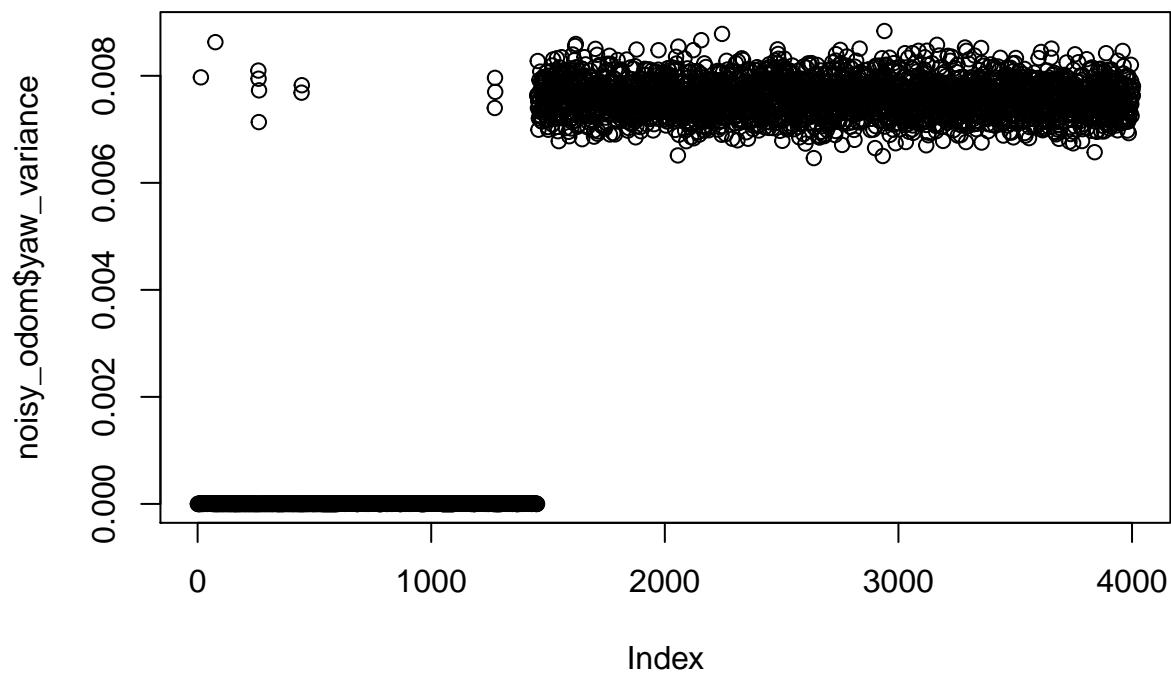
Variance of X Coordinate in Noisy Odometry



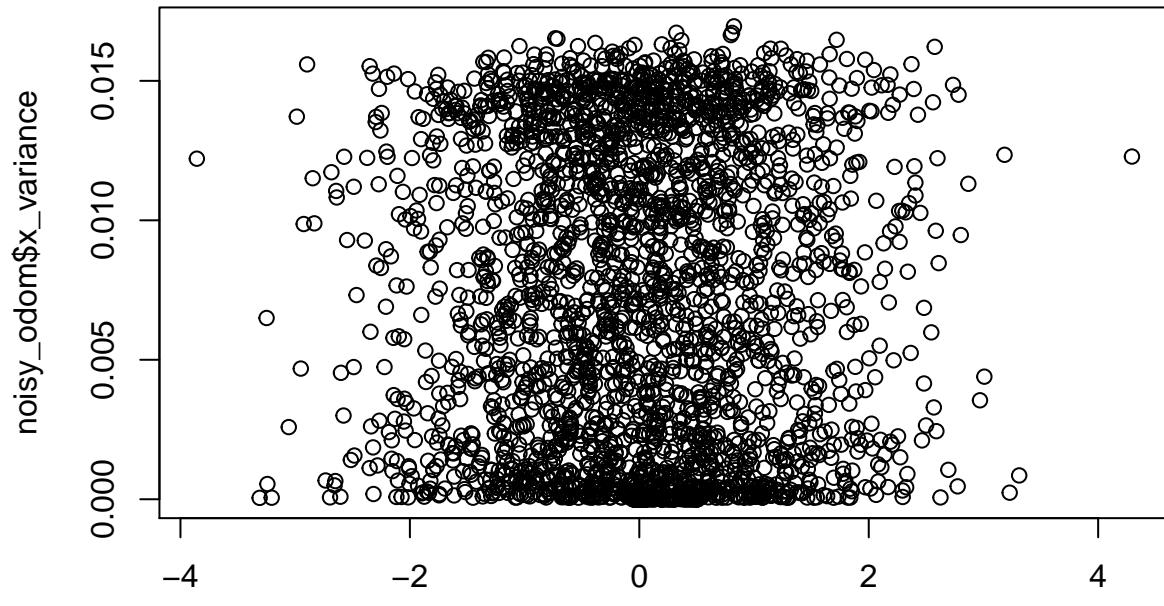
Variance of Y Coordinate in Noisy Odometry



Variance of Yaw Coordinate in Noisy Odometry



Variance vs. Velocity of X in Noisy Odometry



Variance vs. Velocity of Yaw in Noisy Odometry

