

# Indoor Navigation

Suriya Narayanan L, MSCV, CMU

## Brief description of the solution:

1. Accelerometer, gyroscope and heading data, provided, were used
2. Linear accelerations, x and y were used along with rotation, z to determine movement in the 2D world
3. Kalman filter was used to smooth out the 'z' rotation component and the 'x' and 'y' components of linear acceleration
4. Turns were cross checked with the 'TrueHeading' data
5. Vertical depth was added by double integrating the z component of linear acceleration

## Link to source code for better 3d visualization:

[https://github.com/SuriyaNitt/Indoor\\_navigation](https://github.com/SuriyaNitt/Indoor_navigation)

## Results:

Top View of the reconstructed path:

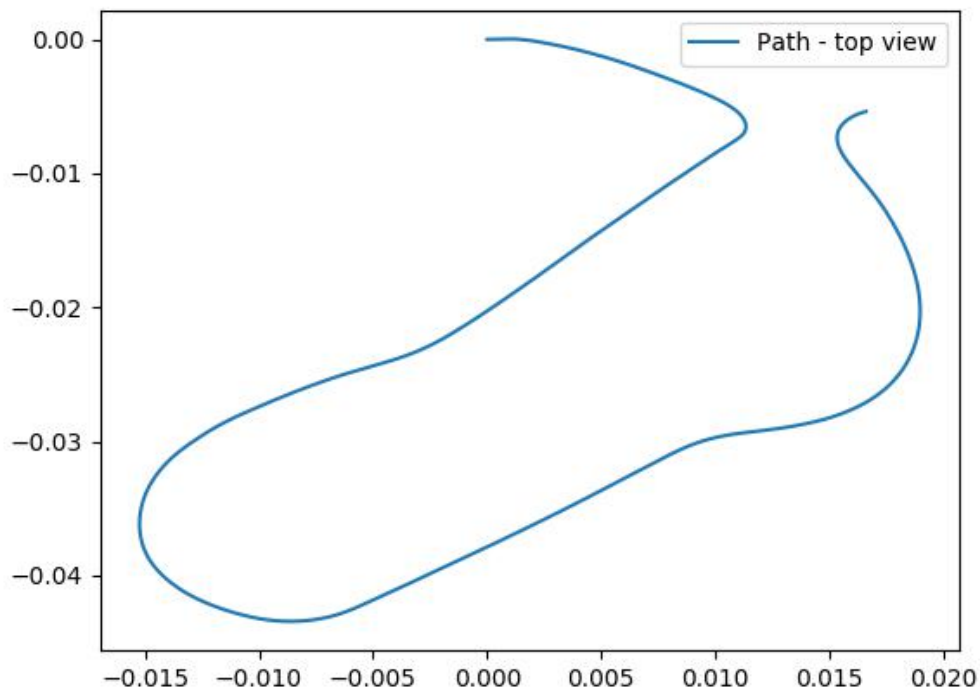


Fig. 1. Top view of the path

Few views of the 3d reconstructed path:

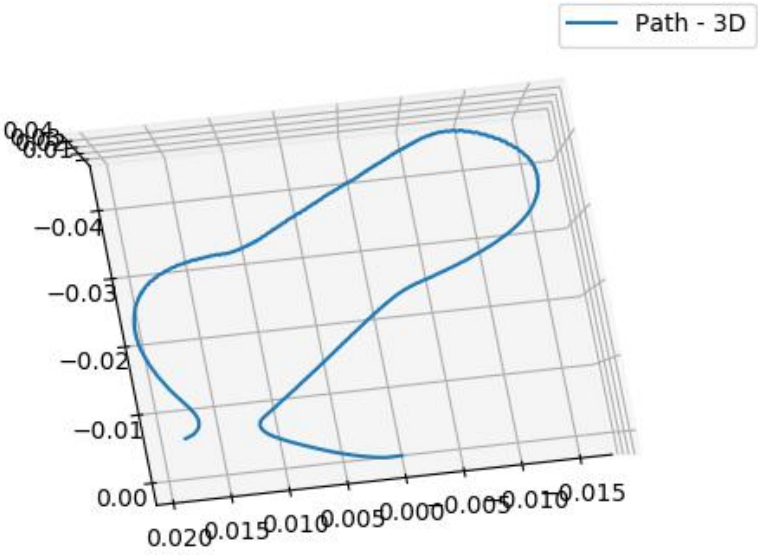


Fig. 2. View no. 1

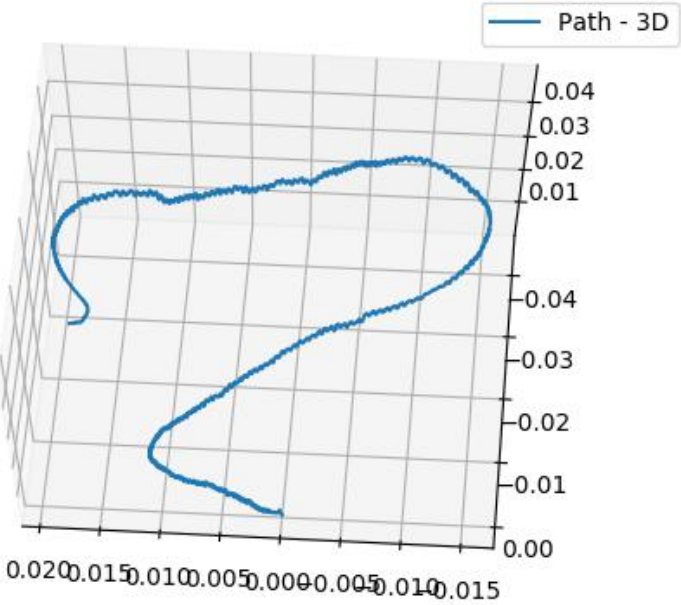


Fig. 3. View no. 2

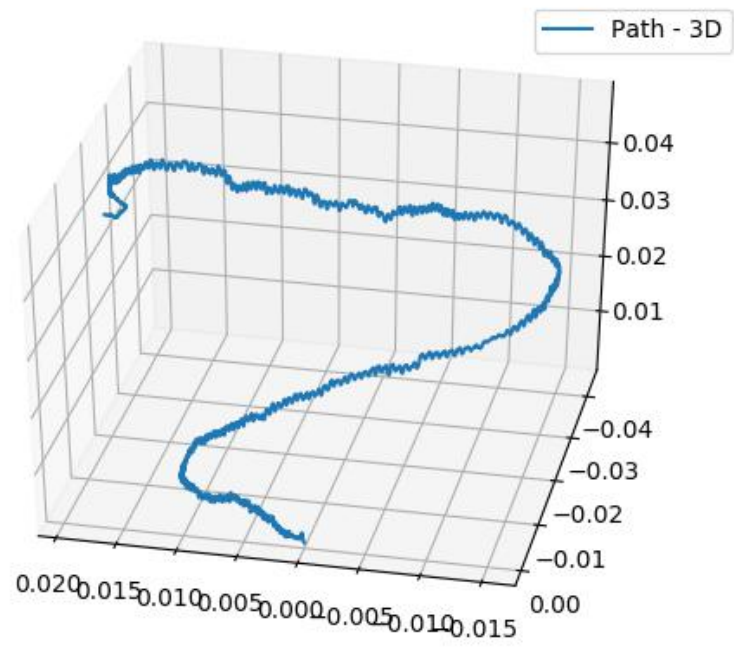


Fig. 4. View no. 3

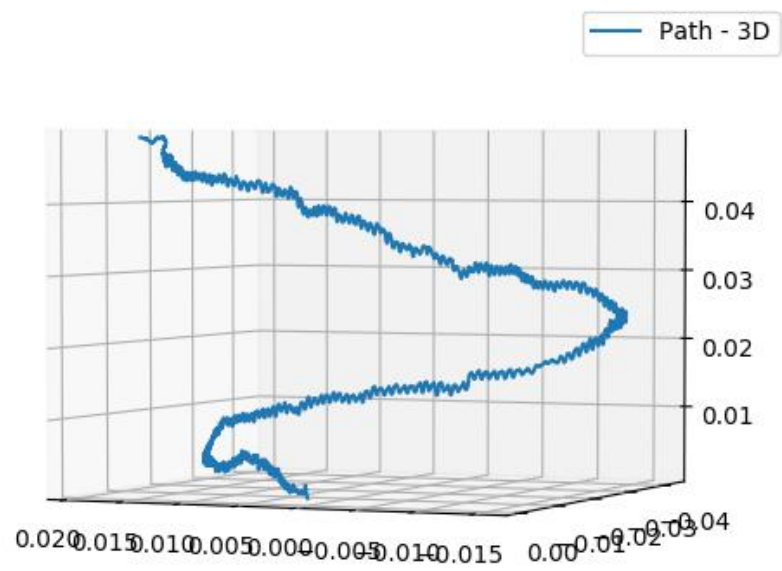


Fig. 5. View no. 4

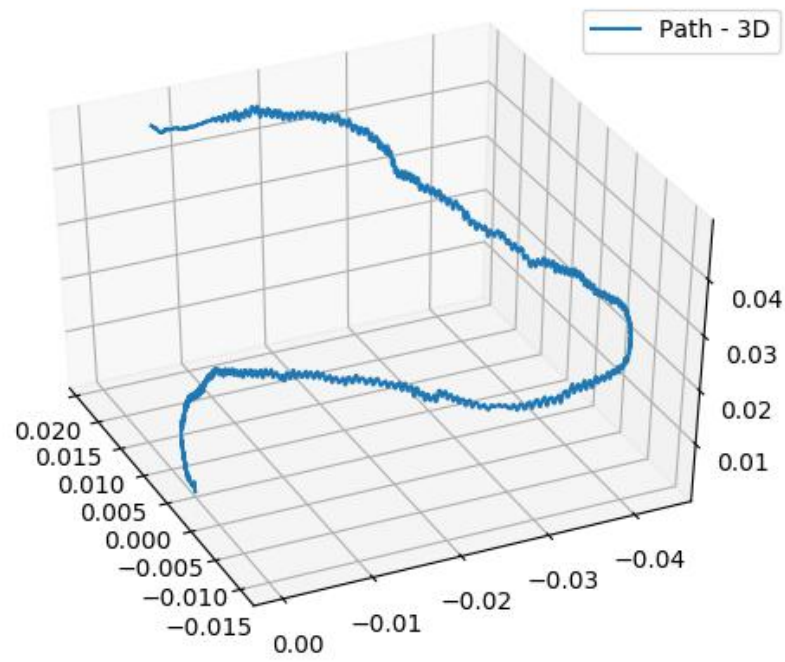


Fig. 6. View no. 5

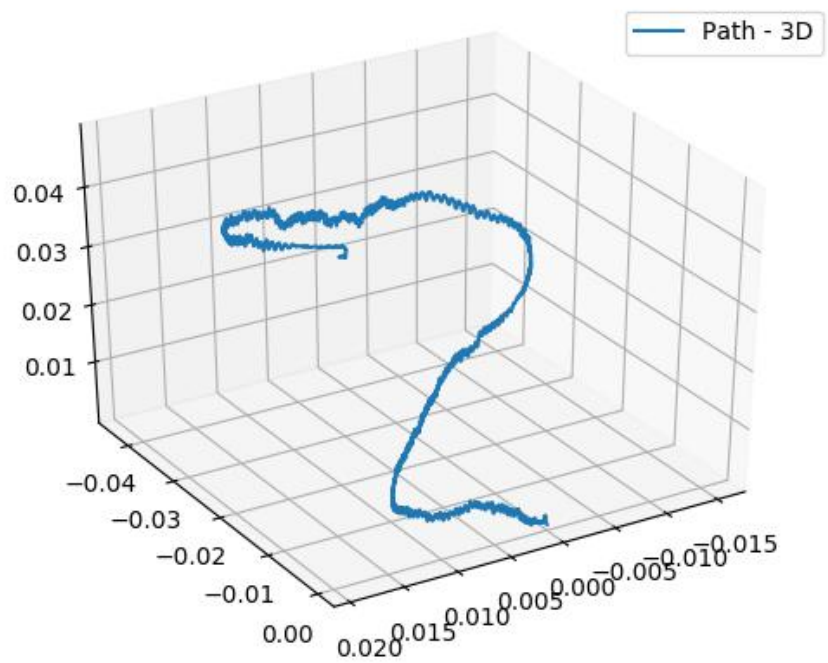


Fig. 7. View no. 6