# 3D Reconstruction on an IMU enabled Mobile Device

## Mini Project - CSD310

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# Plan

1. Position and Orientation estimate from IMU sensors.
2. Refining the position and orientation using local regression, smoothening and Kalman filter.
3. Generate corresponding points between images.
4. Triangulation
5. Bundle Adjustment
6. Dense 3D Reconstruction

# Present Progress

1. Processed position and orientation estimate from sensors- available ASAP
2. Tracking and correspondence generation running in real time at 8 fps on 640*480 resolution on phone
3. Triangulation working on phone with R,T data from sensors and tracked data.

# Difficulties

- Incorrect point tracking taking place leading to improper triangulation (Put in image of correct and incorrect tracks)
- Sensor data can at times drift leading to incorrect extrinsic parameters estimations. (Bundle adjustment will resolve this error).

# Whats next

- Improving the tracking obtained from the KL tracker using Kalman filter
- Test and optimize bundle adjustment to run on the phone
- Dense tracking using GPU and correspondance for dense 3D reconstruction.

# Thank You