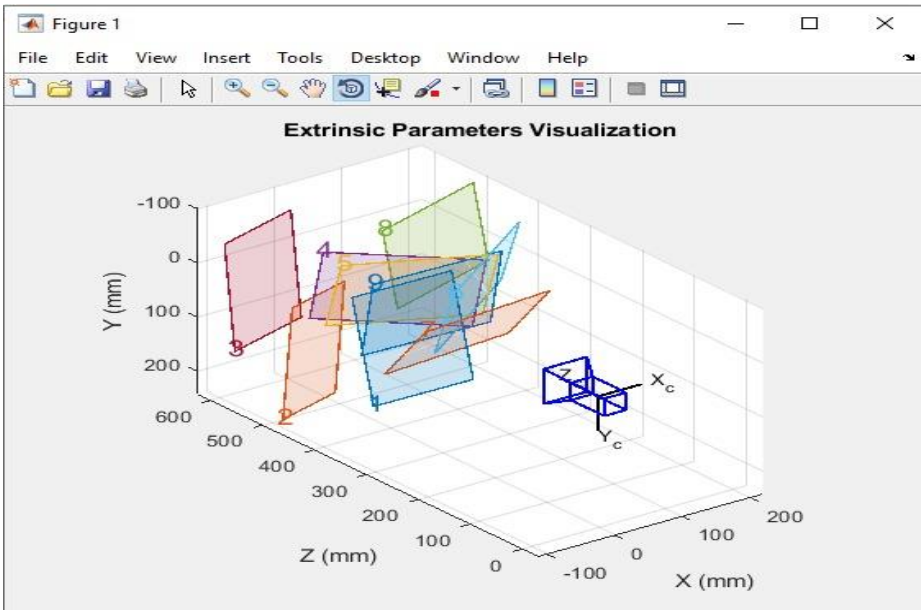
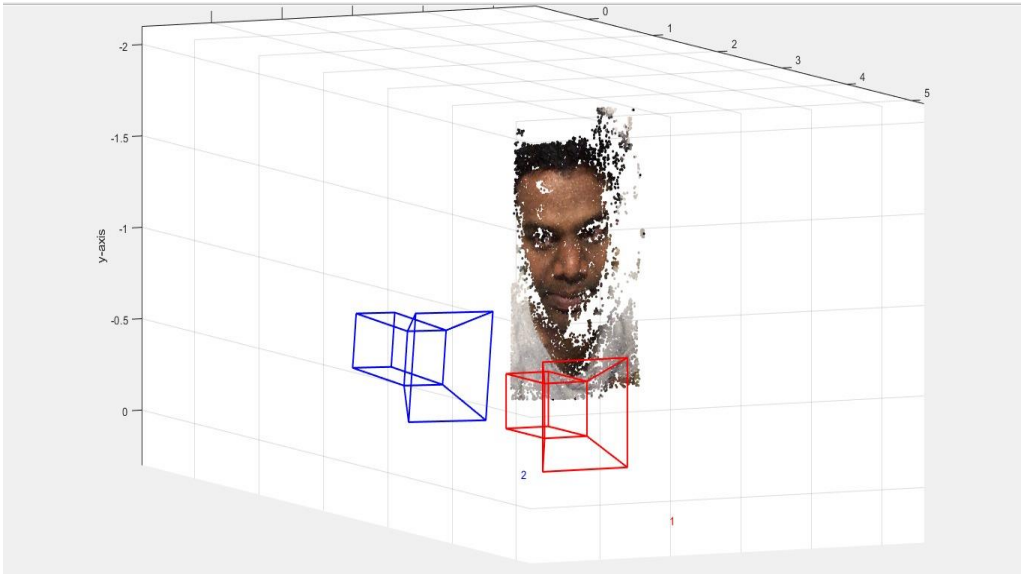
BASICS OF COMPUTER VISION IN AUTONOMOUS ROBOTICS

CAMERA PARAMETERS ESTIMATION:



CAMERA CALIBRATION – CHESSBOARD PATTERNS IN PATTERNS IN 3D SPACE
(INTRINSICS AND EXTRINSICS ESTIMATION)

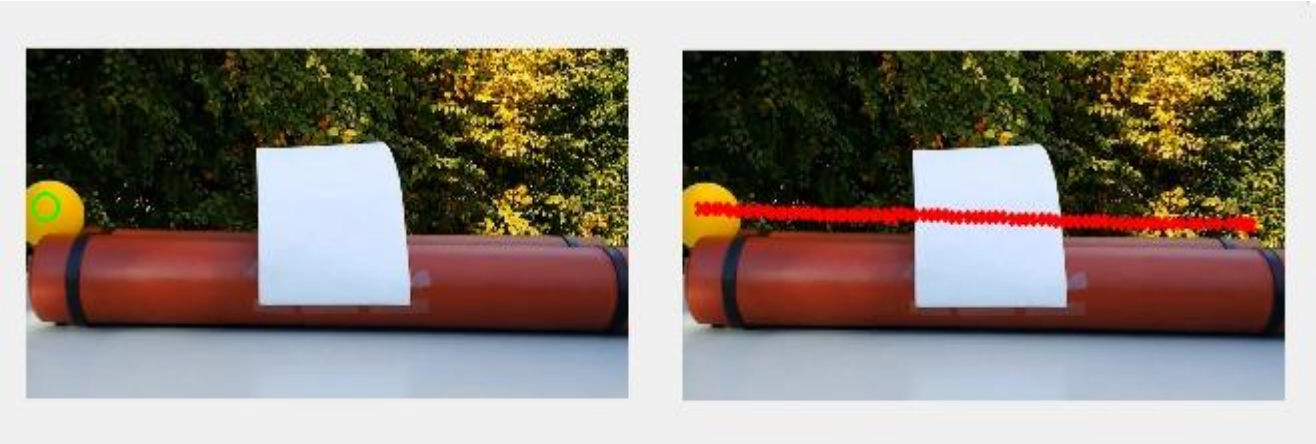
STRUCTURE FROM MOTION:



3D RECONSTRUCTION AND CAMERA ORIENTATIONS IN SPACE (SPARSE)

* I used 2 images of my face and after reconstruction observed sparse 3D points
* Rotate axes on GUI to see the clear orientations and Reconstruction with Facial Features

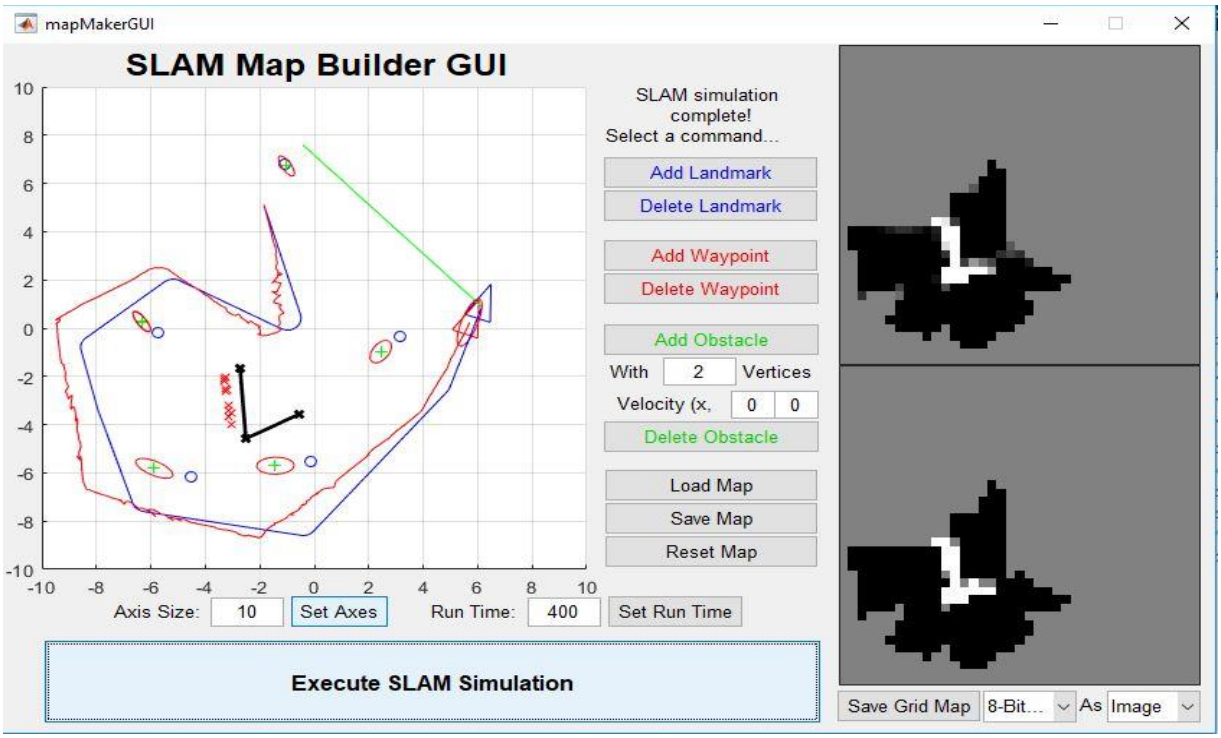
OBJECT TRACKING IN VIDEOS:



BALL TRACKING IN VIDEO (For Faces Detection refer Project Report)

LEFT IMAGE – has green mark indicating the position of the ball after movement
RIGHT IMAGE- Red Line indicates the trajectory of the ball starting form right to left in a video

SLAM Simulator Design:



1. Add obstacles
2. Add Landmarks
3. Add Robot Path-points
4. Click Execute
5. Blue curve is one is the expected path
6. Red curve is the real trajectory with errors
7. Green line is the path closure problem