

Final project : Camera

Rubric fulfillment

- FP.1 Match 3D Objects

- 'matchBoundingBoxes()' function is implemented to find matching bounding boxes based on the keypoint matches that they contain.
- For this, every keypoint match was iterated through. The 'hit-score' for bounding box(es) containing the keypoints in each frame was kept and finally the combinations with the highest hit-score was returned.

- FP.2 Lidar based TTC

- Lidar based TTC is calculated in 'computeTTCLidar()' using the constant velocity model
- For robustness against noise when calculating the closest distance to lidar point, all points smaller than $\mu - 2\sigma$ were ignored.

- FP.3 Associate keypoint correspondences with bounding boxes

- The Bounding Boxes are populated with the keypoints and matches that lie within them
- The previously obtained bounding box matches were used here to make it robust against false matches.

- FP.4 Camera based TTC

- 'computeTTCCamera()' function is used to calculate this.
- for robustness,
 - matches with a large distance are ignored
 - keypoints with distance less than 0.01 are ignored to avoid numerical inaccuracies in the ratio
- For distance ratio, the average as well as median was explored and average was used in the end

- FP.5 Performance Evaluation 1 : Lidar

- Refer to SFND_3D_Object_Tracking/resultAnalysis/LidarTTC.pdf

- FP.6 Performance Evaluation 2 : Camera

- Refer to SFND_3D_Object_Tracking/resultAnalysis/CameraTTC.pdf