Comp9517 Project1 report

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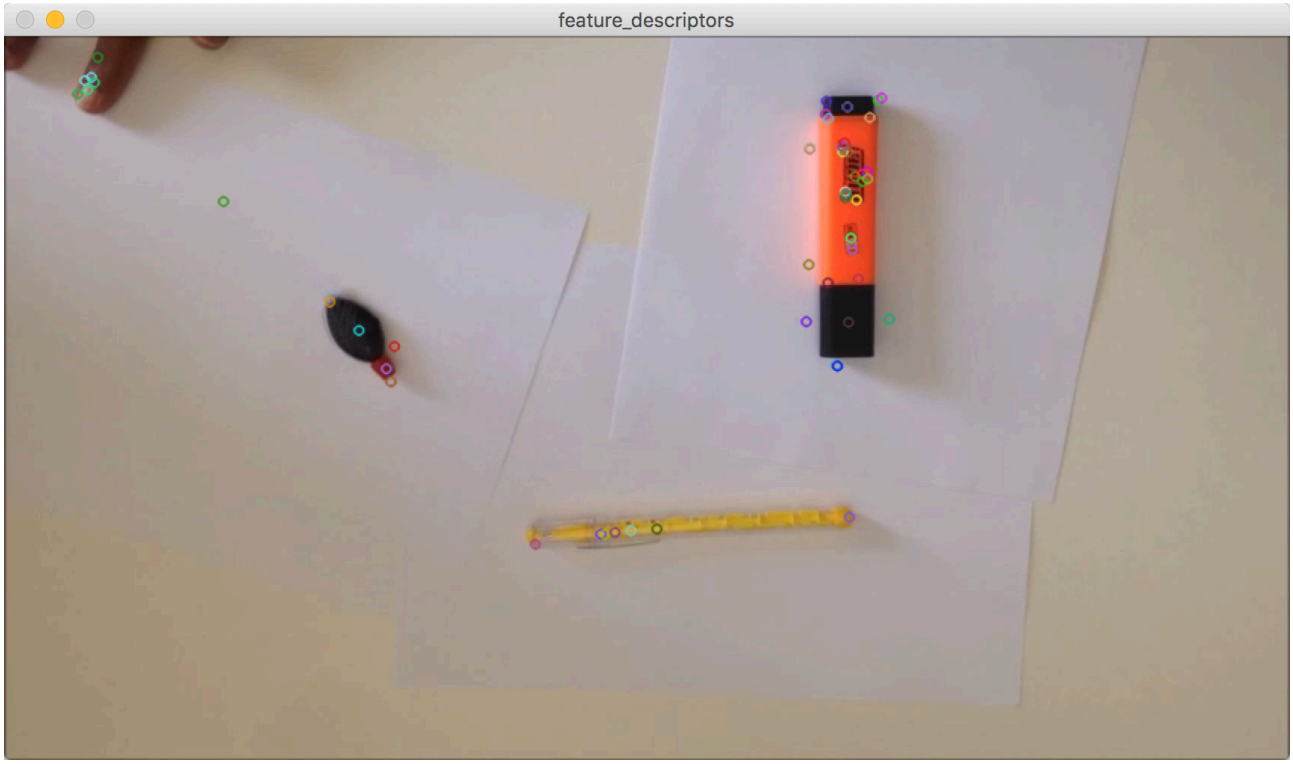
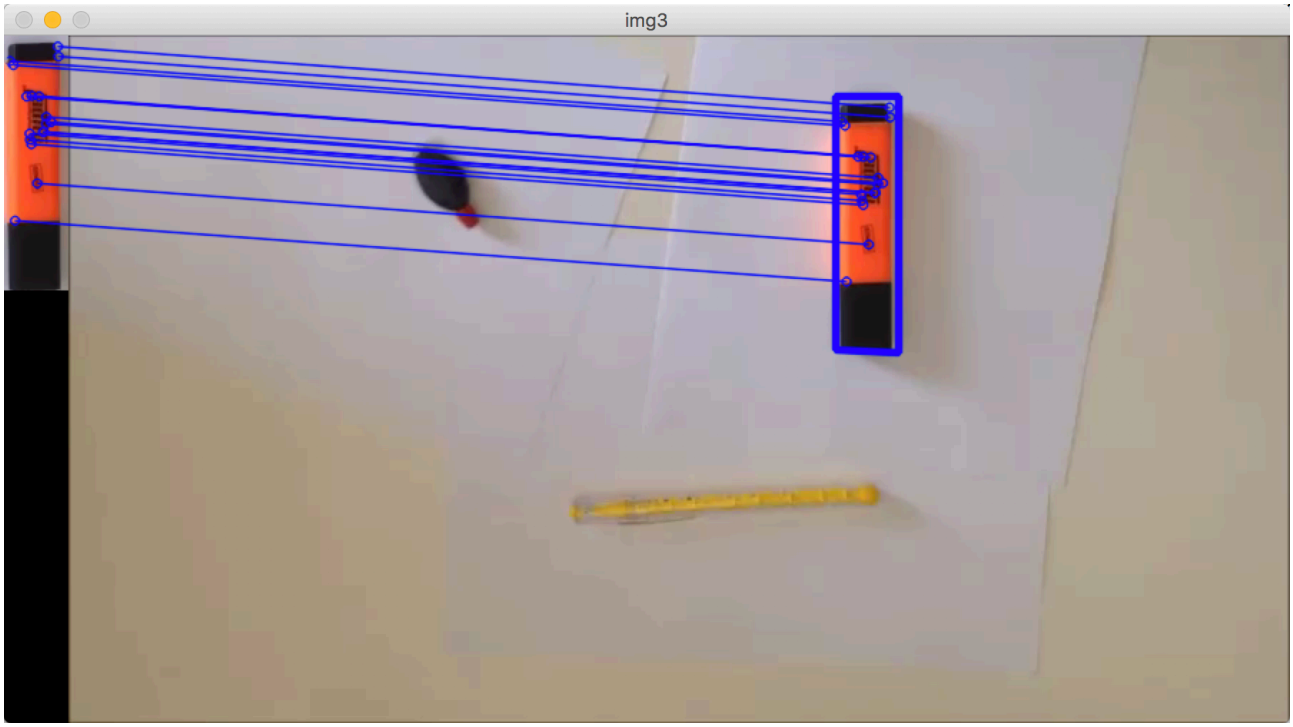
There are four main parts of this project: feature extraction, feature matching, object tracking and object trajectory.

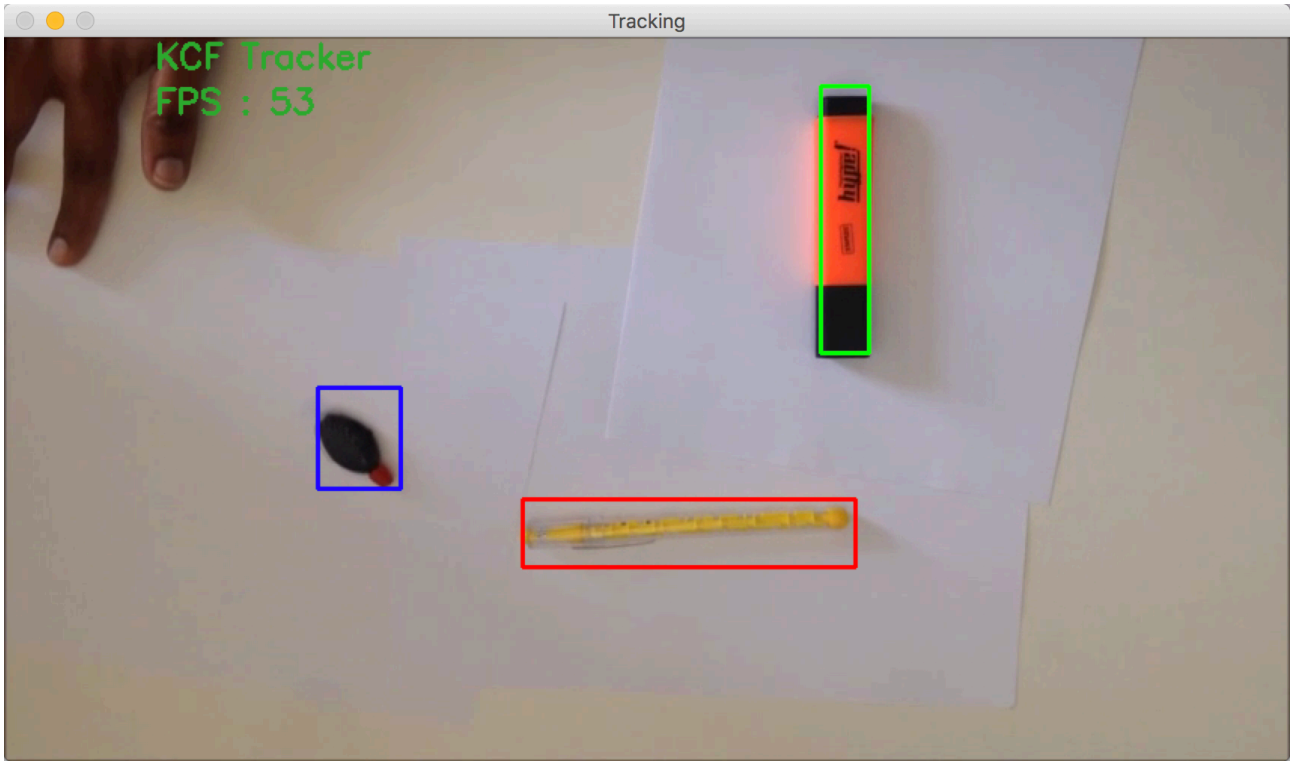
Feature extraction: by applying SIFT function given by openCV, extract key points.



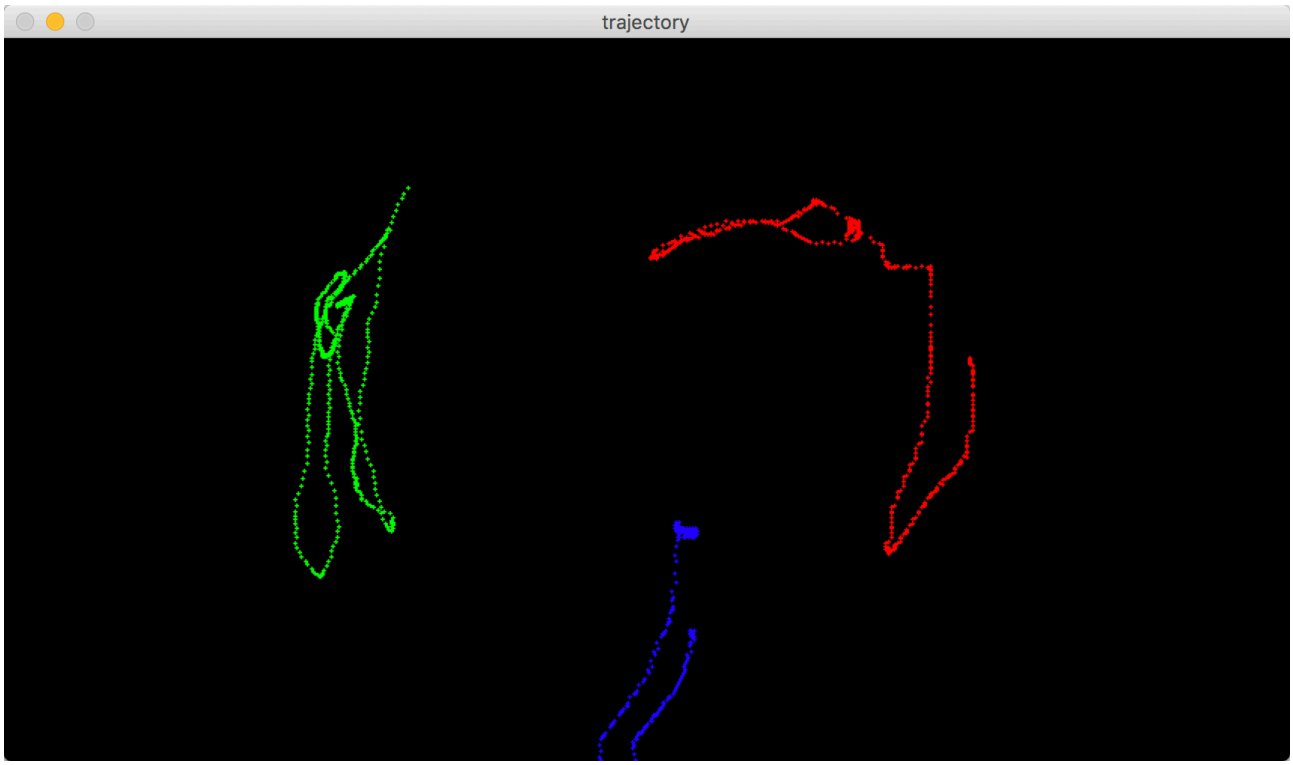
Feature matching: select field of interest by applying openCV built-in selectROI function, get all key points by applying openCV built-in SIFT detector, applying RANSAC algorithm and draw a rectangle box on the field of interest, draw matches between two sets of key points.



Object tracking: same as before, select the field of interest by selectROI function and the apply the different openCV built-in tracker. (KCF was chosen since it performs best)
FPS has also been calculated to prove the tracker can work at least in 10 fps.



Object trajectory: since the program can achieve object tracking, the trajectory can be computed and recorded. The trajectory will be recorded as a white line on a black background.



(argv[1] can be either feature_descriptors, matching, tracking or trajectory)
(argv[2] will be the video name in current directory)
(argv[3] can be 1-3 indicate the number of objects interested)