ECEn 631
HW 5
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Task 1

See Video

OpenCV calcOpticalFlowPyrLK function is easy to use and quite robust to find corresponding points. Since it is trying to find corresponding feature points from even down sampled image, some false positives may appear on completely unexpected locations. I found that the smaller baseline is, the better calcOpticalFlowPyrLK does to find correspondences.

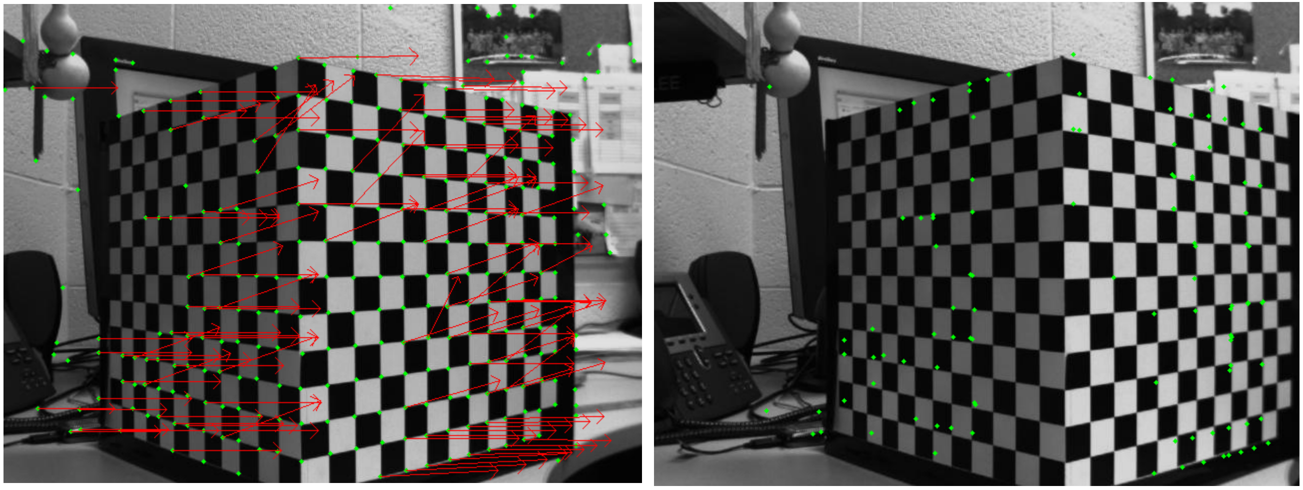
Task 2

See Video

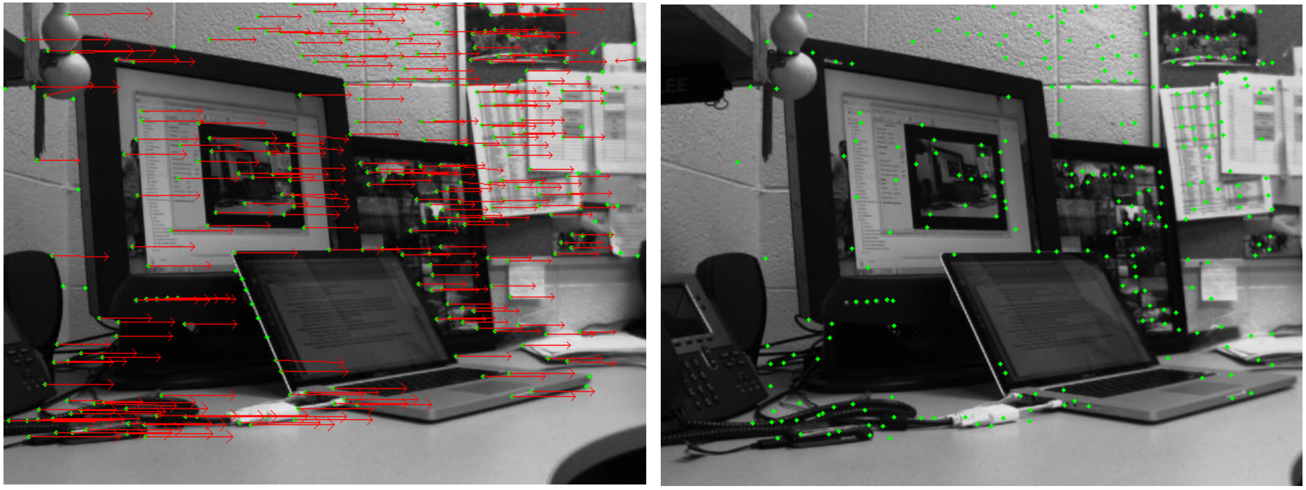
Template matching doesn’t seem to be as robust as calcOpticalFlowPyrLK function and it is understandable because calcOpticalFlowPyrLK goes through several levels trying to find good correspondence whereas template matching only goes through one level. However, one advantage of template matching is that user can set the size of search window so that false positives don’t appear way far away from the original feature points. Like calcOpticalFlowPyrLK, the smaller baseline movement is, the better result template matching gets.

Task 3

Parallel cube – 107 feature points survived out of 300

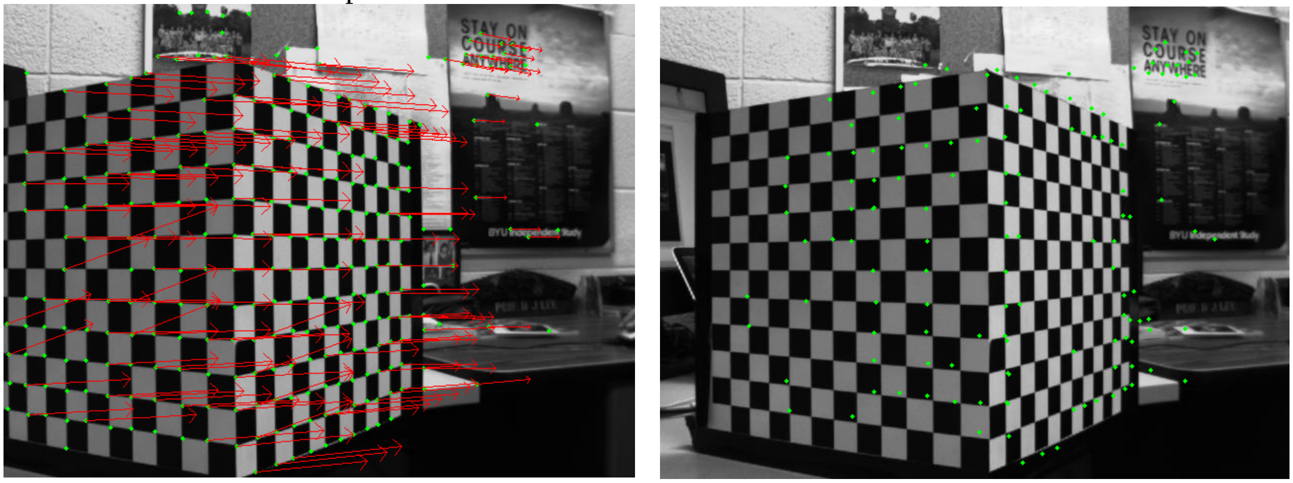


Parallel real – 267 feature points left out of 300



Template matching does much better without chessboard pattern because on chessboard pattern too many features are so similar that it is easy to find false positives.

Turned cube – 137 feature points left out of 300



Turned real – 280 feature points left out of 300