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Homework 2

CSCI 5561
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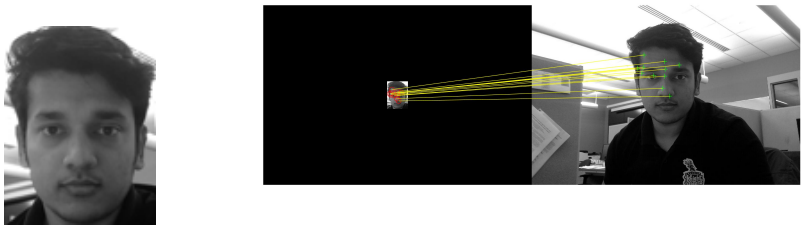
[ALL SYMBOLS USED ARE SAME AS IN LECTURE SLIDES]

Given a template and a set of consecutive images, the task of tracking over frames is done in the following steps.

1) The SIFT Features of the template and the target image (the first frame) is found. For SIFT features, d1/d2 should be lesser than 0.7 and bidirectional consistency check has been done.



(a) (b)

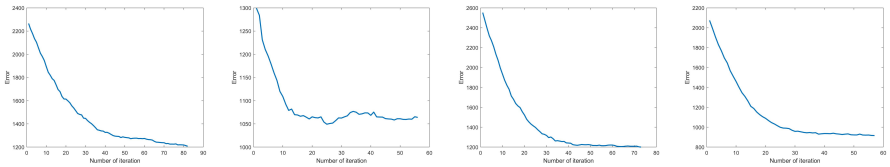
Figure 1: (a) Template Image (b) Matched Features

2) Calculate the affine transformation matrix (A) from the features and remove outlier features using RANSAC with threshold=2 and number of iterations=500.

(3) Warp the target image in template image domain using backward warping.

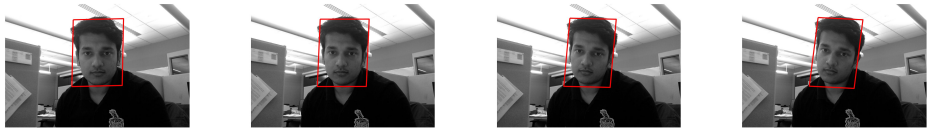
(4) Refine A while Δp is greater than 0.01.

(5)Repeat 4 for all frames and template $\longleftarrow$ WarpImage(I, A, size(template)).



(a) (b) (c) (d)

Figure 2: Plot of error(i.e. norm(I_warped-template)) vs iterations between template and warped images for Frame 1 to 4



(a) (b) (c) (d)

Figure 3: Tracking 4 frames of images