

CSCI 5561: Assignment #2

Registration

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1.



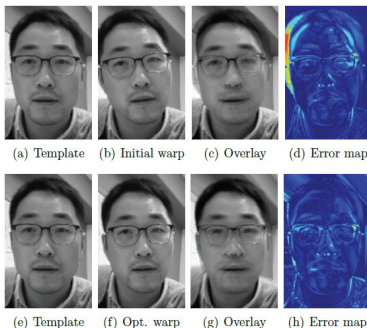
The above image provides sift matching based technique to find local descriptors (SIFT features) between the two input images. This is achieved via nearest neighbor matching combined with the ratio test.

2. The SIFT produced by the above function produces noisy features which are then filtered by applying RANSAC method and outputs an affine matrix A such that it performs following transformation $\text{image_2} = A * \text{image_1}$.

3.



The input image is warped to output domain using the affine transform A



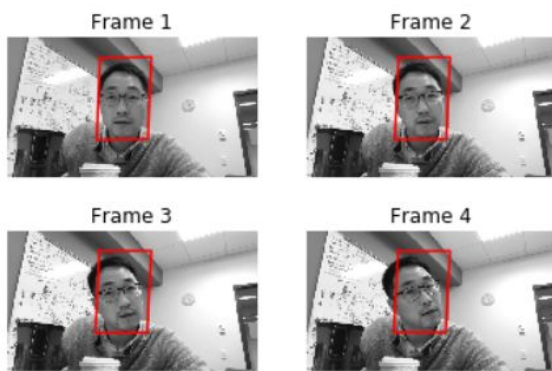
4.

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Inverse Compositional Image Alignment is applied on the image to derive a refined Affine transform matrix. The gradient for the template image is calculated which is then used with computed Jacobian matrix to get steepest descent images for each pixel in the template. This is further utilised to compute the Hessian matrix. All this information is then iteratively used in combination with image warping to get refined Affine Transform.



5.

To track the images in the consecutive frames, the template is updated every time as the warped image of the current frame on to the previous frame image.