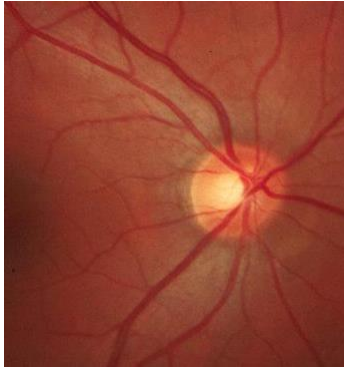


## Control Point Registration

This method allows you to manually select common features in each image to map to the same pixel location.

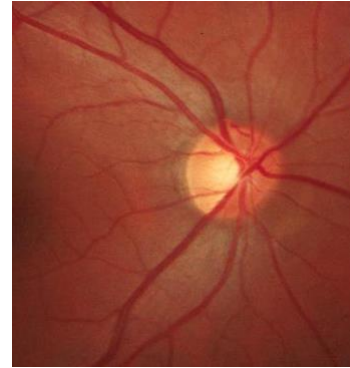
### Input:

Year 1



Reference image: image\_054\_year\_1.png

Year 2



Moving image: image\_054\_year\_2.png

### Workflow:

**Step1** Load input images and convert to grayscale (using function `rgb2gray()`).

**Step2** Manually select pairs of corresponding control points in both images using the Control Point Selection tool using function `cpselect`

```
[movingPoints,fixedPoints] = cpselect(moving_image, reference, 'wait', true)
```

**Step3** Estimate transformation using function

```
tform = fitgeotform2d(movingPoints,fixedPoints,transformationType)
```

**Step4** Create three different output views for the image and transformation.

```
sameAsInput = affineOutputView(size(moving_image),tform,'BoundsStyle','SameAsInput')
```

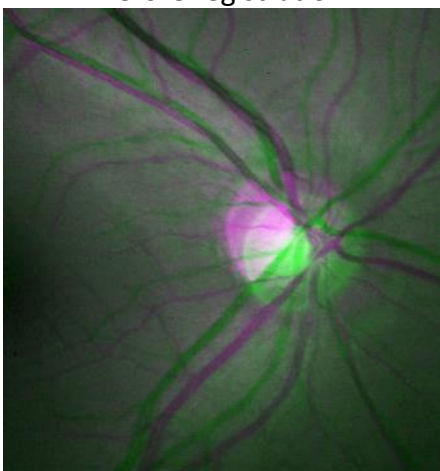
**Step5** Recover the original image by transforming the distorted image using function

```
B = imwarp(moving_image,tform,'OutputView',sameAsInput)
```

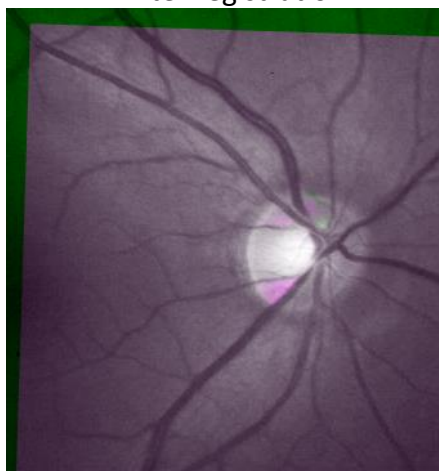
```
imshowpair(reference,B) or imshowpair(reference,B,'diff')
```

### Output:

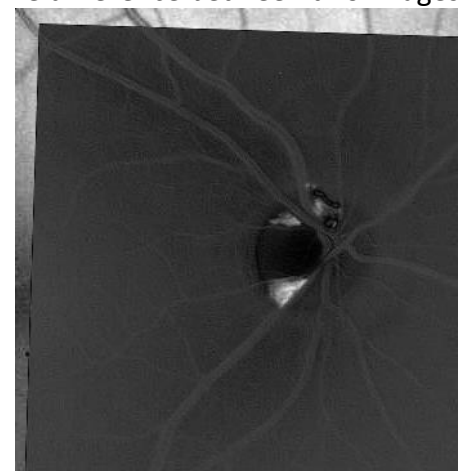
Before registration

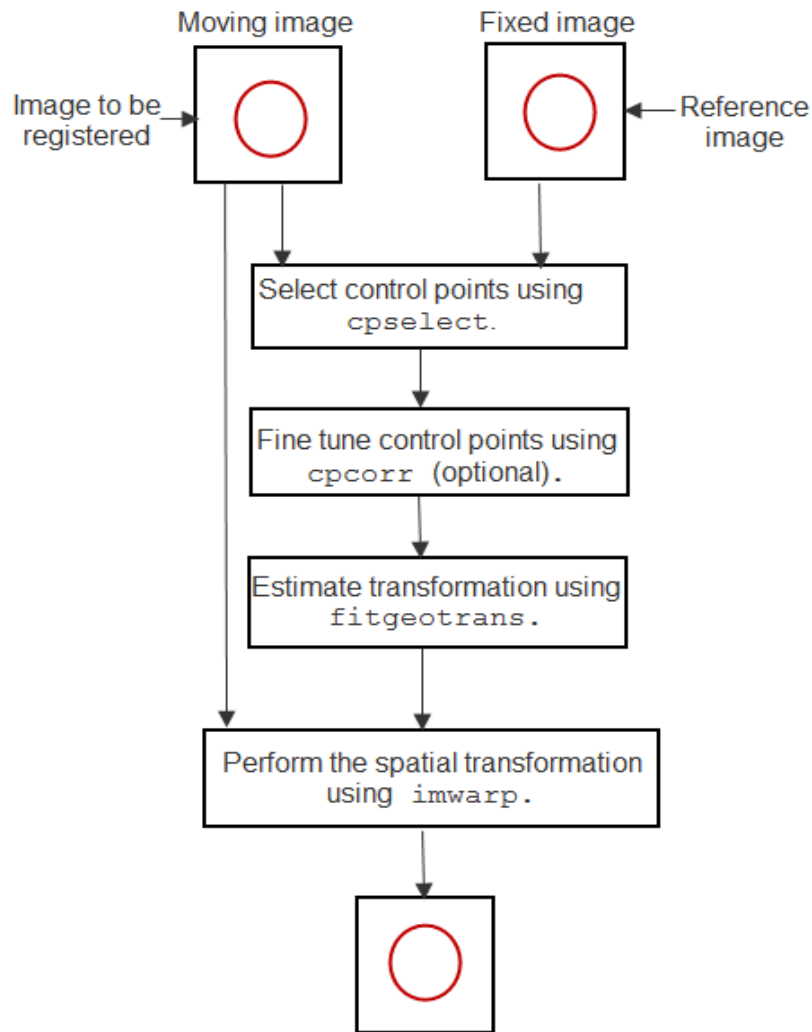


After registration



The difference between two images





MATLAB functions	Example
<code>tform = fitgeotform2d(movingPoints,fixedPoints,transformationType)</code>	<p>Fits a linear geometric transformation of type <code>transformationType</code> to the control point pairs <code>movingPoints</code> and <code>fixedPoints</code>.</p> <p><code>transformationType</code> – Type of linear transformation specified as "similarity"   "reflectivesimilarity"   "affine"   "projective"</p>
<code>imshowpair(A,B,method)</code>	<p>Compare differences between A and B images. Visualization method to display combined images, specified as one of the following values. "falsecolor"   "blend"   "diff"   "montage"</p>