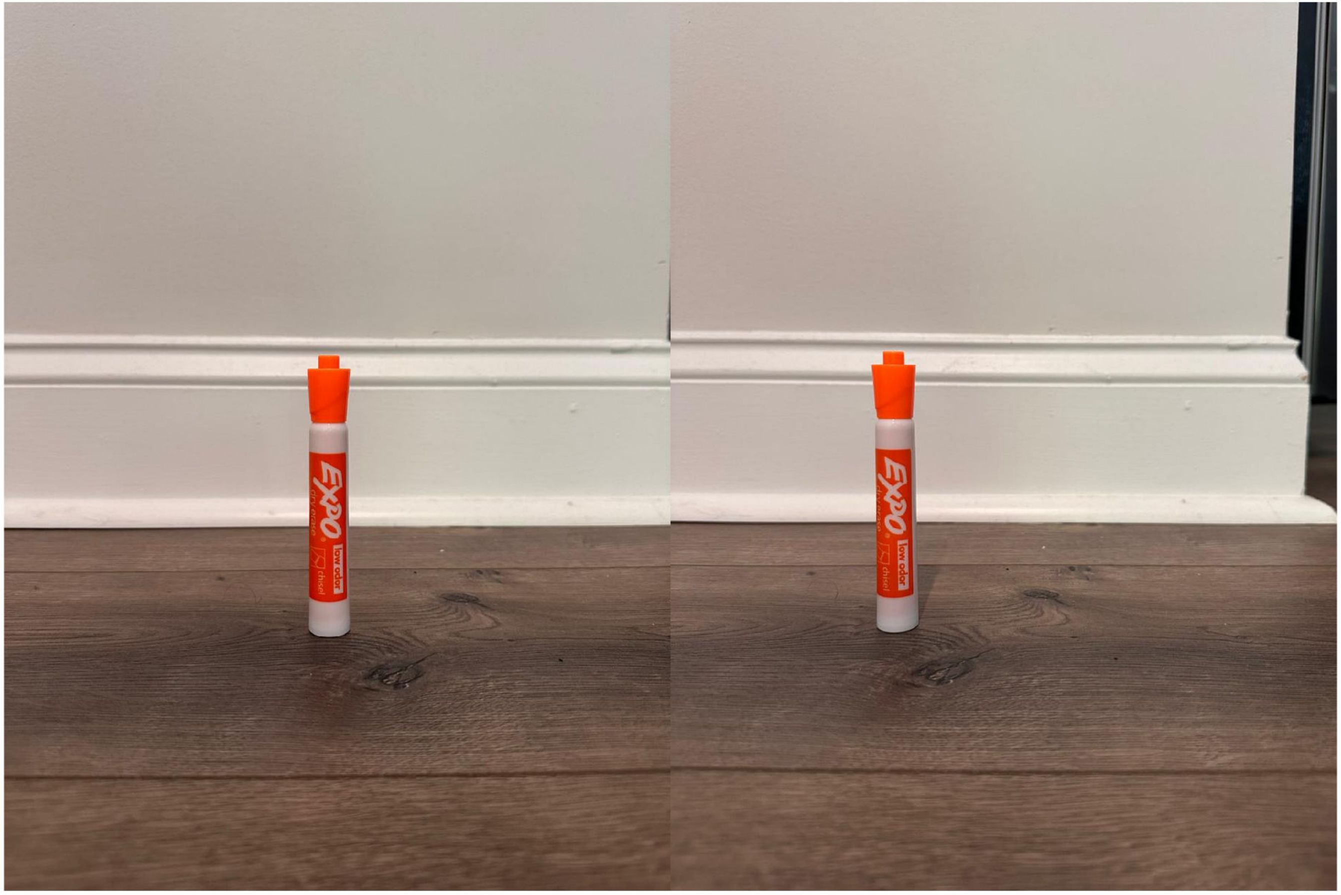
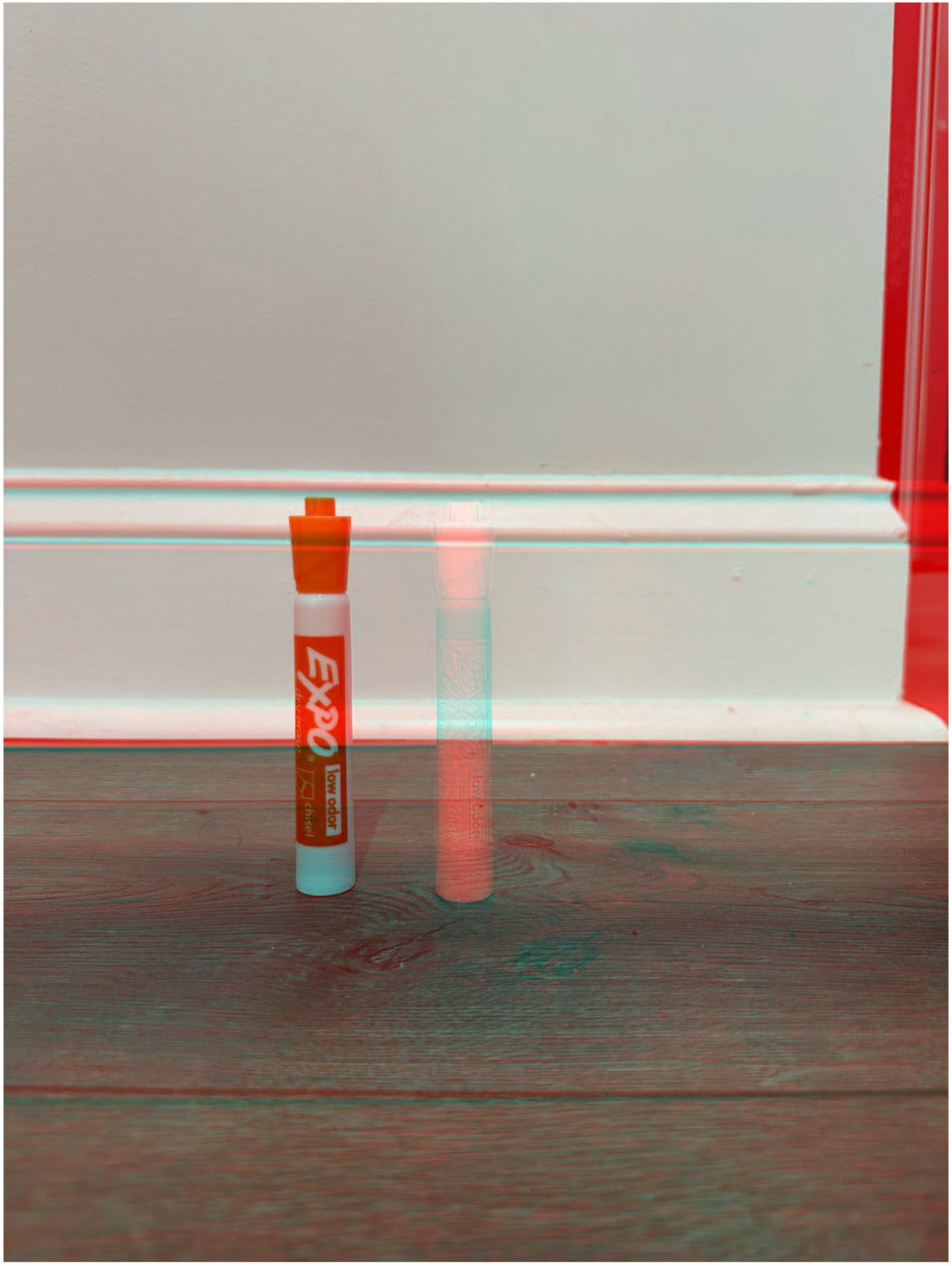
```
I1 = imread("/Users/Harsh/Documents/GSU_Spring/ComputerVision/
Harsh_Assignment_3/Q3/image1.jpeg");
I2 = imread("/Users/Harsh/Documents/GSU_Spring/ComputerVision/
Harsh_Assignment_3/Q3/image2.jpeg");

% Convert to grayscale.
I1gray = im2gray(I1);
I2gray = im2gray(I2);
```

```
figure
imshowpair(I1,I2,"montage")
title("I1 (left); I2 (right)")
```

I1 (left); I2 (right)



```
figure
imshow(stereoAnaglyph(I1,I2))
title("Composite Image (Red - Left Image, Cyan - Right Image)")
```

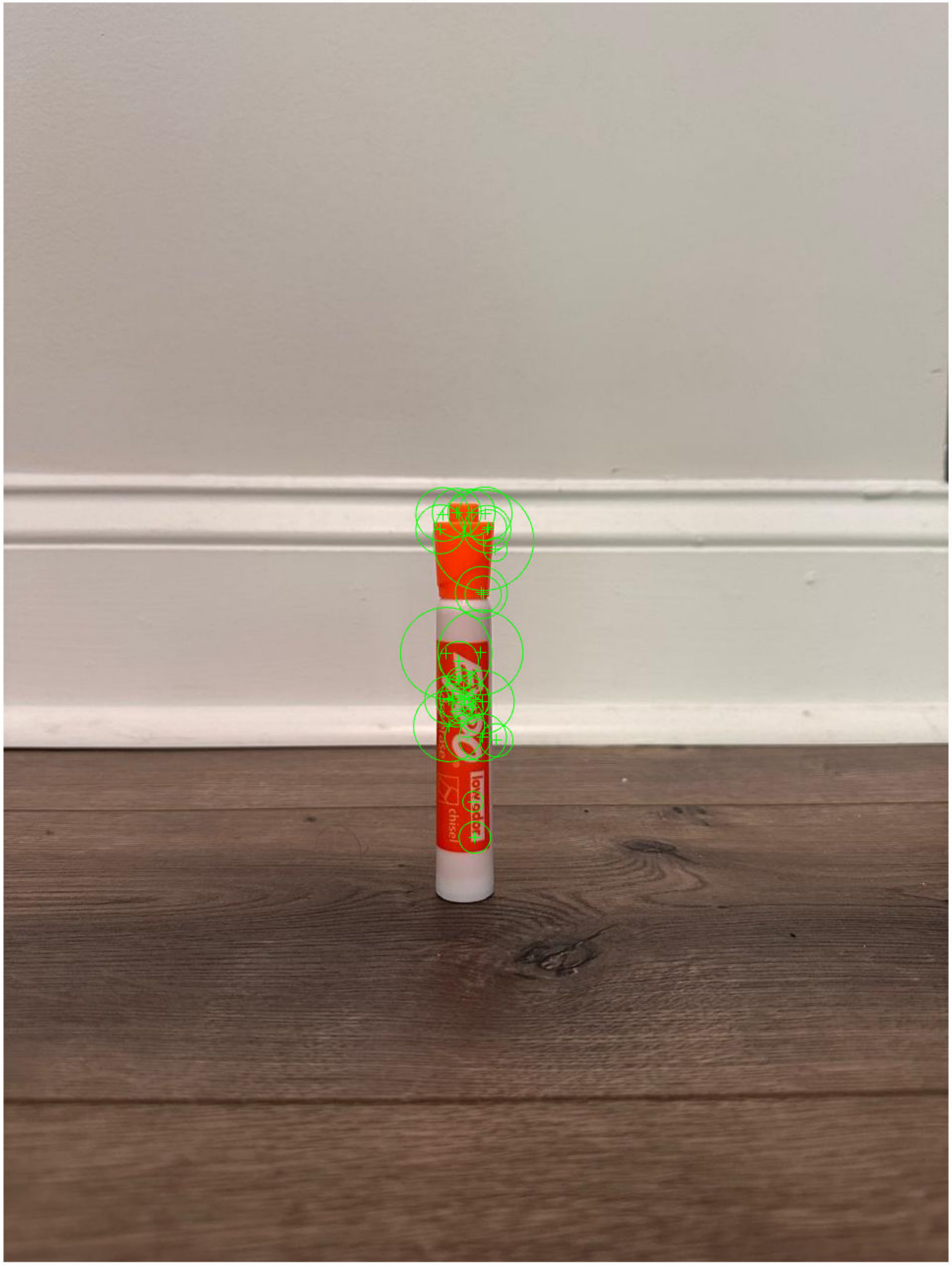


Composite Image (Red - Left Image, Cyan - Right Image)

```
% collect interest points
blobs1 = detectSURFFeatures(I1gray,MetricThreshold=2000);
blobs2 = detectSURFFeatures(I2gray,MetricThreshold=2000);
```

```
figure
imshow(I1)
hold on
plot(selectStrongest(blobs1,30))
title("Thirty Strongest SURF Features In I1")
```

Thirty Strongest SURF Features In I1



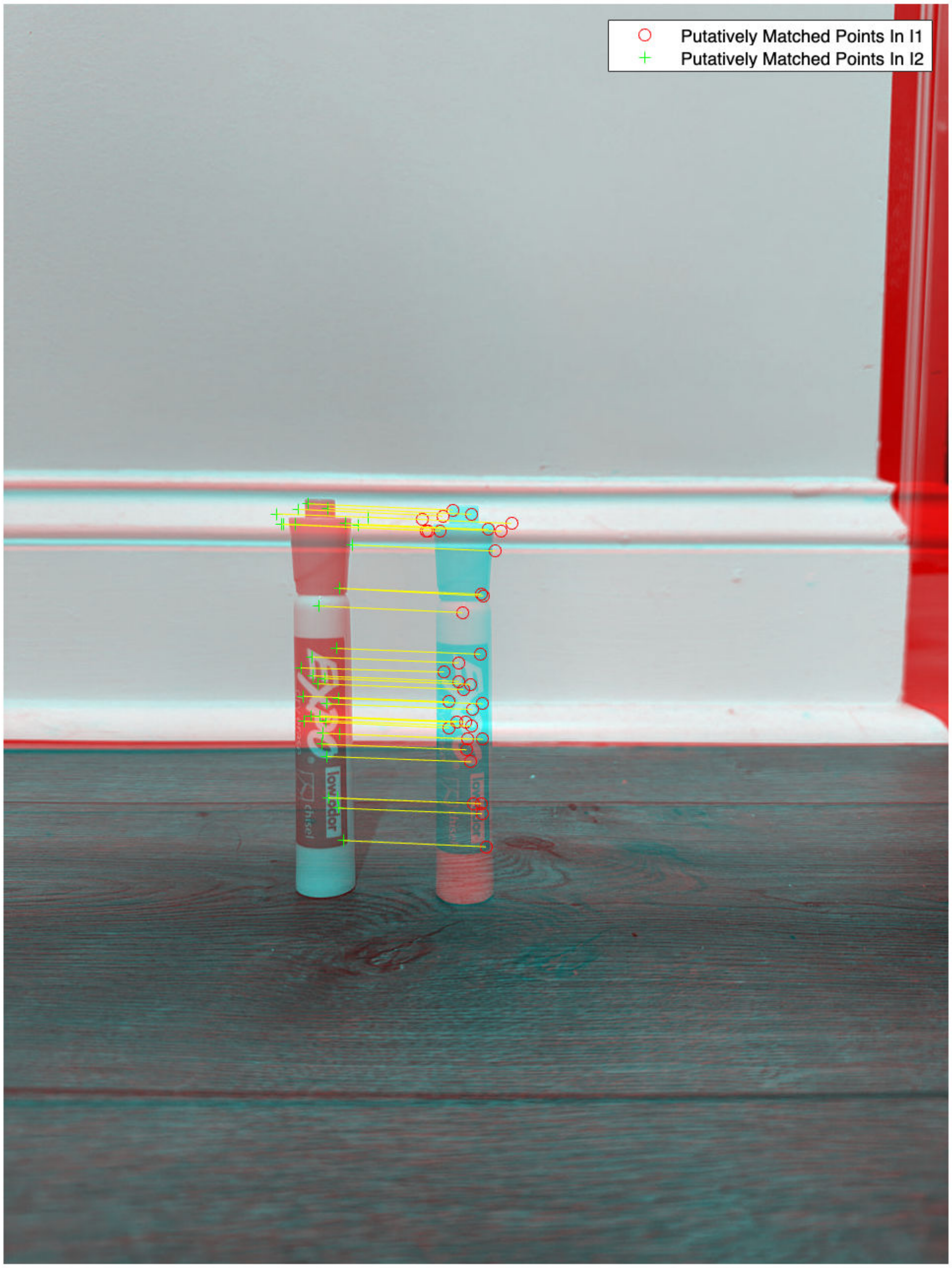
```
figure
imshow(I2)
hold on
plot(selectStrongest(blobs2,30))
title("Thirty Strongest SURF Features In I2")
```

```
% extract features
[features1,validBlobs1] = extractFeatures(I1gray,blobs1);
[features2,validBlobs2] = extractFeatures(I2gray,blobs2);
```

```
indexPairs = matchFeatures(features1,features2,Metric="SAD", ...
  MatchThreshold=5);
```

```
matchedPoints1 = validBlobs1(indexPairs(:,1),:);
matchedPoints2 = validBlobs2(indexPairs(:,2),:);
```

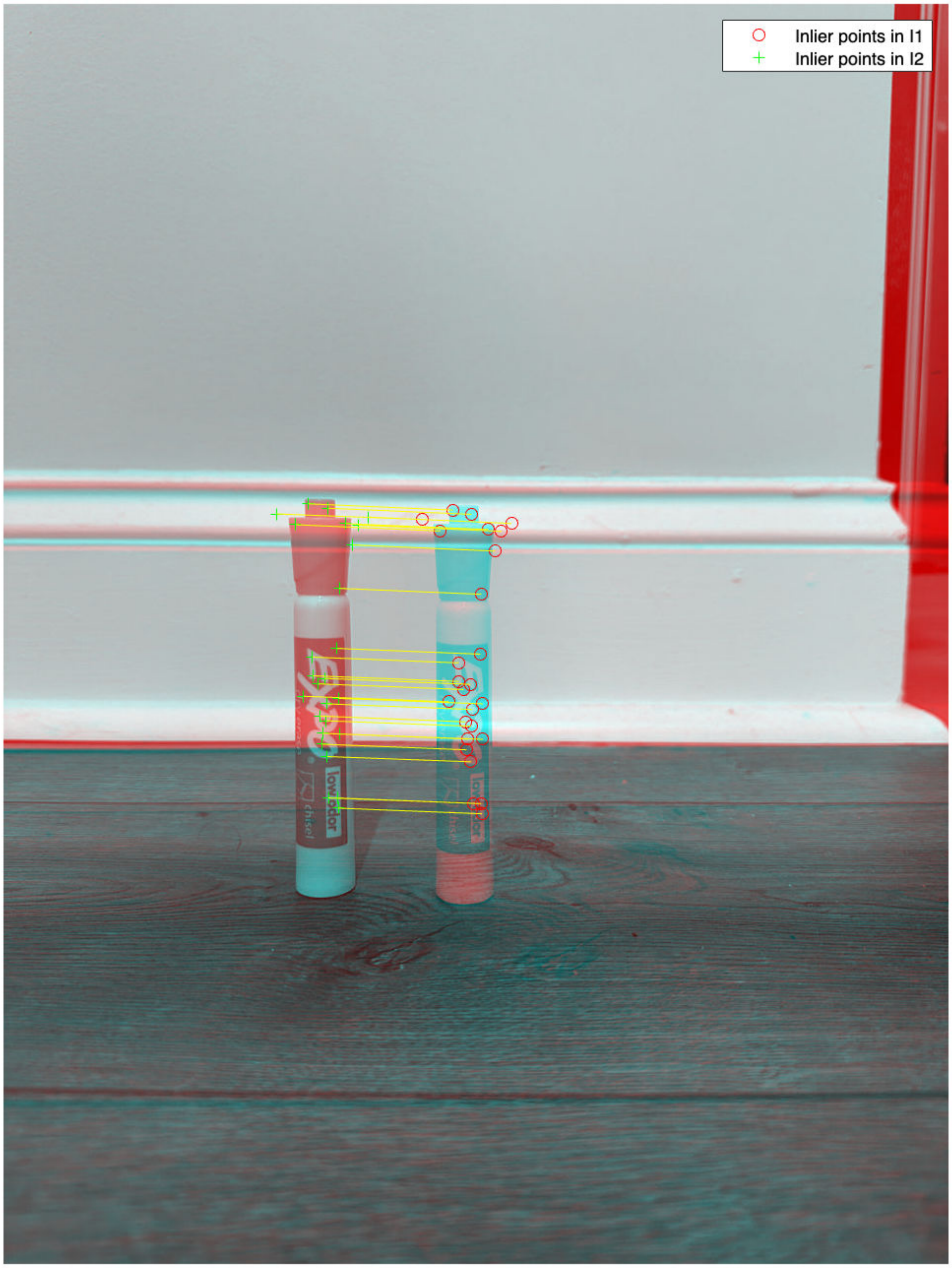
```
% matched points
figure
showMatchedFeatures(I1, I2, matchedPoints1, matchedPoints2)
legend("Putatively Matched Points In I1","Putatively Matched Points In I2")
```


○ Putatively Matched Points In I1
+ Putatively Matched Points In I2

```
Error using error
The message must be specified as either a character vector, string scalar, or a message structure.
```

```
[fMatrix, epipolarInliers, status] = estimateFundamentalMatrix(...
  matchedPoints1, matchedPoints2, 'Method', 'RANSAC', ...
  'NumTrials', 10000, 'DistanceThreshold', 0.1, 'Confidence', 99.99);

if status ~= 0 || isEpipoleInImage(fMatrix, size(I1)) ...
  || isEpipoleInImage(fMatrix', size(I2))
  error(['Either not enough matching points were found or '...
         'the epipoles are inside the images. You may need to '...
         'inspect and improve the quality of detected features ',...
```

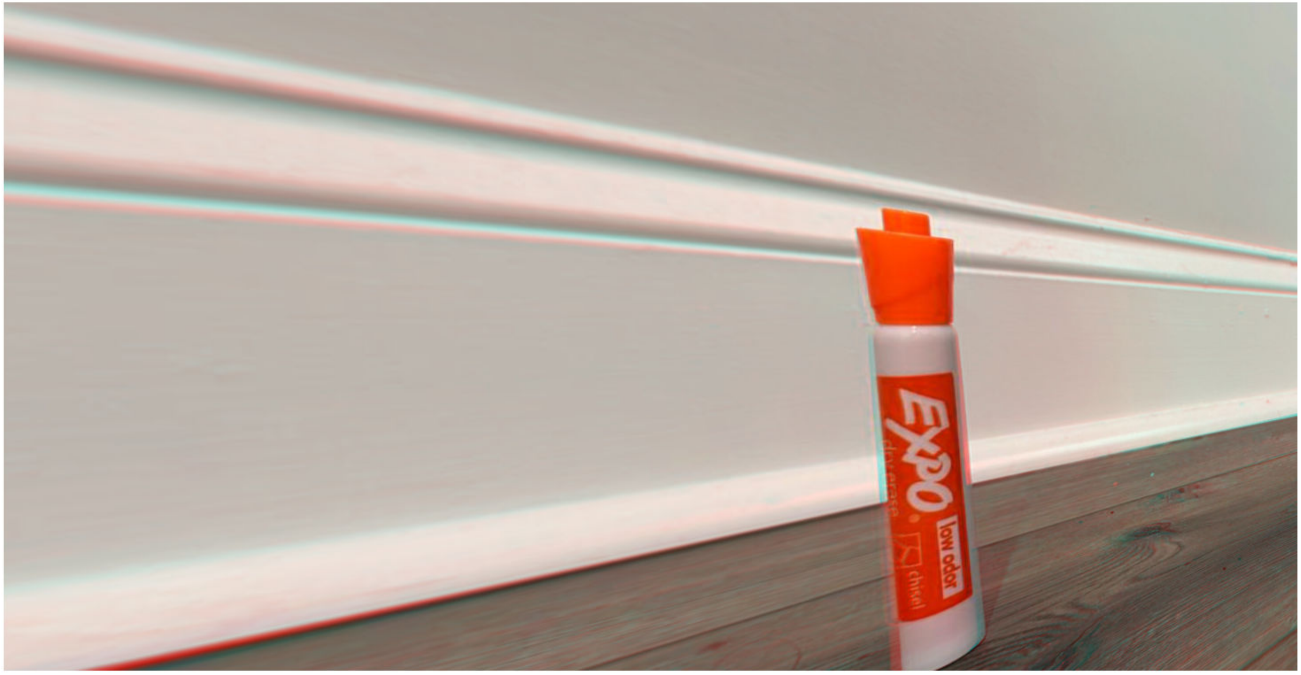
```
          'and/or improve the quality of your images.']);
end

inlierPoints1 = matchedPoints1(epipolarInliers, :);
inlierPoints2 = matchedPoints2(epipolarInliers, :);

figure;
showMatchedFeatures(I1, I2, inlierPoints1, inlierPoints2);
legend('Inlier points in I1', 'Inlier points in I2');
```



```
% rectify images
```

```
[tform1, tform2] = estimateStereoRectification(fMatrix, ...
  inlierPoints1.Location,inlierPoints2.Location,size(I2));
```

```
[I1Rect, I2Rect] = rectifyStereoImages(I1,I2,tform1,tform2);
figure
imshow(stereoAnaglyph(I1Rect,I2Rect))
title("Rectified Stereo Images (Red - Left Image, Cyan - Right Image)")
```



Rectified Stereo Images (Red - Left Image, Cyan - Right Image)

```
% cvexRectifyImages("parkinglot_left.png","parkinglot_right.png");
```