



VIT-AP
UNIVERSITY

LAB ASSIGNMENT - 4

TITLE- Write a program for Geometric transformations that shows image rotation, scaling, and translation

COURSE CODE: CSE4047
COURSE NAME : COMPUTER VISION

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Date: 27-08-2024

Google Drive : [Link](#)

Steps:

- **Load the Image:**

Read an image into MATLAB using the `imread` function.

- **Rotate the Image:**

Use the `imrotate` function to rotate the image by a specified angle.

- **Scale the Image:**

Use the `imresize` function to resize the image by a specified scaling factor.

- **Translate the Image:**

Define a translation matrix to shift the image in the x and y directions.

Use the `affine2d` and `imwarp` functions to apply the translation to the image.

- **Display the Images:**

- Display the original image, rotated image, scaled image, and translated image using the `imshow` function for visual comparison.

Code:

```
originalImage = imread('3dBoxBg.jpg');

figure;
imshow(originalImage);
title('Original Image');

angle = 45;
rotatedImage = imrotate(originalImage, angle);

figure;
imshow(rotatedImage);
title(['Rotated Image by ', num2str(angle), ' Degrees']);

scaleFactor = 1.5;
scaledImage = imresize(originalImage, scaleFactor);

figure;
imshow(scaledImage);
title(['Scaled Image with Factor ', num2str(scaleFactor)]);

translationX = 50;
translationY = 30;
```

```
translationMatrix = [1 0 0; 0 1 0; translationX translationY 1];







tform_translate = affine2d(translationMatrix);
translatedImage = imwarp(originalImage, tform_translate);

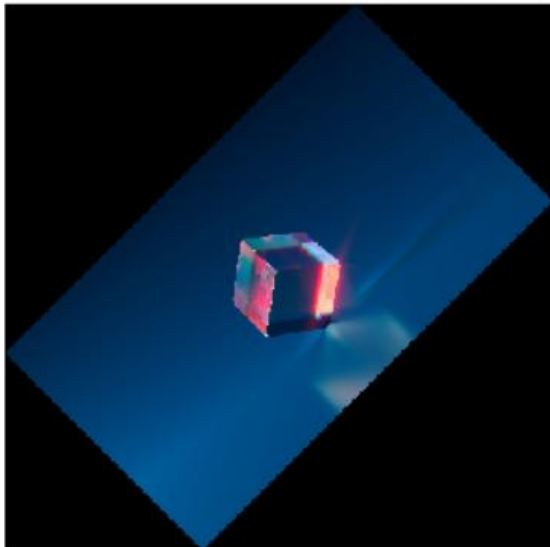
figure;
imshow(translatedImage);
title(['Translated Image (', num2str(translationX), 'px, ', num2str(translationY),
'px)']);
```


Output:

Original Image      



Rotated Image by      



Scaled Image with Factor      



Translated Image (50p) 