

INT3404E - Image Processing : Homeworks 1

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1 Grayscale image

Imagine an image where all the vibrant colors are replaced with different shades of gray, from black (darkest) to white (lightest). That's essentially what converting an image to grayscale does. In a normal image, each pixel has three values representing red (R), green (G), and blue (B) components. But in grayscale, all three channels at a specific location (X, Y coordinates) have the same value, creating a single intensity level for that pixel. The equation helps achieve this:

$$p = 0.299R + 0.587G + 0.114B \quad (1)$$

Where the R, G, B are the values for each of the corresponding channels. Figure 1 shows the result of converting a color image to grayscale.

2 Flip image

Figure 2 is the result of flipping a grayscale image horizontally using OpenCV

3 Rotate image

Figure 3 is the result of rotating the grayscale image by an angle of 45 degrees.



Figure 1: Grayscale image

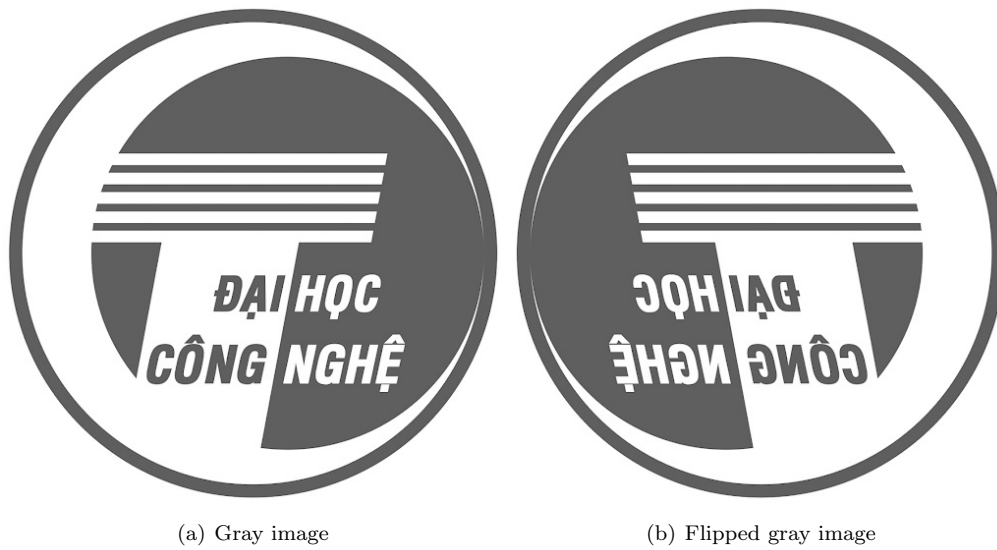


Figure 2: Flip image

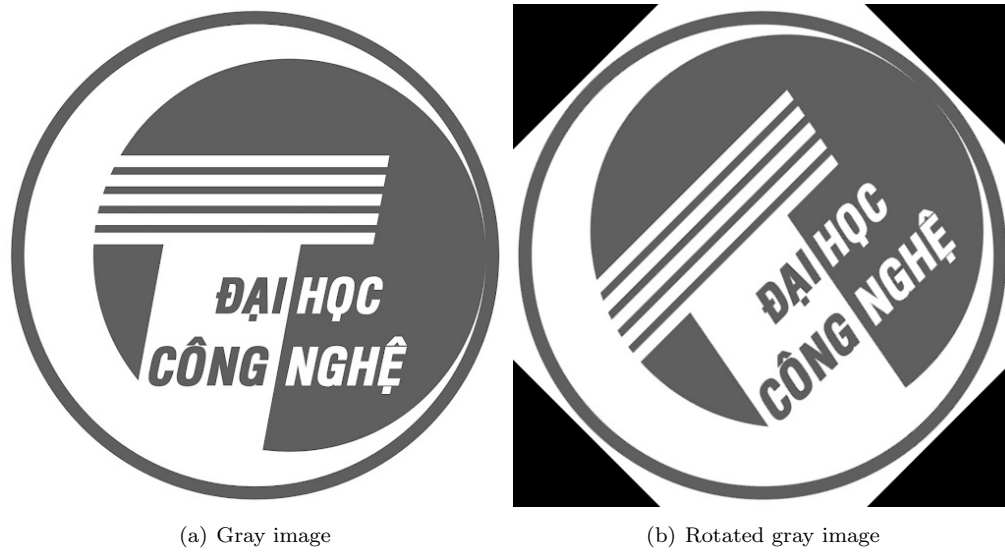


Figure 3: Rotate image