Assignment-3

Scaling

1. Resize an image with varying scaling factors (e.g., 0.1x, 0.2x, 0.5x, 1.2x, 2.5x) using OpenCV. Evaluate the visual quality of the resized image and compare them with the original image.
   Dynamic Assignment: Do it for a set of images in a folder and save the scaled images into an output folder.
2. Resize an image using different interpolation methods (e.g., **cv2.INTER_NEAREST**, **cv2.INTER_LINEAR**, **cv2.INTER_CUBIC**, **cv2.INTER_LANCZOS4**). Measure and compare the processing time for each method.
   Dynamic Assignment: Do it for a set of images in a folder and save the interpolated images into an output folder.
3. Resize images with and without preserving the aspect ratio. Evaluate the visual differences between the two sets of scaled images and analyse how aspect ratio preservation affects the overall perception.

Rotation

4. Rotate a given image at different angles (e.g., 30 degrees, 60 degrees, 90 degrees) using OpenCV. Assess the visual quality and potential loss of information. Compare the results to determine the optimal rotation angle for minimal distortion.
   Dynamic Assignment: Do it for a set of images in a folder and save the rotated images into an output folder.
5. Develop a Python program using OpenCV that allows users to input a rotation angle interactively. Rotate the image in real-time based on user input, providing immediate visual feedback.
   Dynamic Assignment: Do it for a set of images in a folder and save the rotated images into an output folder.
6. Create a batch processing script that rotates a set of images at varying angles using OpenCV. Measure the processing time and compare it with rotating each image individually.