



SUPERIOR UNIVERSITY

Name: Ahmad Omer

Class: BS-AI

Section: 4-A

Roll No: BSAIM-F23-021

Task: 05

Project Report: OpenCV

This document explains the functionality of the given OpenCV code, which involves reading, displaying, saving, and processing images using the OpenCV library in Python.

1. Importing Required Libraries

- OpenCV (`cv2`) is used for image processing operations such as reading, displaying, and modifying images.
- The `os` module is used for interacting with the operating system, such as changing directories and listing files.
- NumPy (`numpy`) provides support for handling numerical computations related to image processing.
- Matplotlib (`matplotlib.pyplot`) is a visualization library that can be used to display images.
- The Python Imaging Library (PIL) is used for opening, manipulating, and saving images in various formats.

2. Reading and Displaying an Image

- The code reads an image file (`BMW.jpg`) using OpenCV's `cv2.imread()` function.
- It loads the image in color mode and displays it using `cv2.imshow()`.
- The program waits for a brief period (1000 milliseconds) before closing the image window using `cv2.destroyAllWindows()`.

3. Reading an Image from a Specific Path

- The program reads an image from a specified file path and assigns it to a window.
- The `cv2.imshow()` function displays the image in a named window.
- After a brief delay, the window is closed to ensure smooth execution.

4. Saving an Image to a Directory

- The program changes the working directory to a specified folder using `os.chdir()`.
- It reads an image file and saves it in the directory using `cv2.imwrite()`.
- The directory contents are printed before and after saving to confirm that the file has been successfully written.

5. Blending Two Images

- The program reads two image files (`BMW.jpg` and `AMG.jpg`).
- Since images might have different dimensions, `cv2.resize()` is used to match the size of the second image to the first one.
- The `cv2.addWeighted()` function is used to blend the images with specified weight values.
- The final blended image is displayed in a window, and the program waits briefly before closing the display.

Conclusion

This code demonstrates fundamental image-processing techniques using OpenCV, such as reading, displaying, saving, and blending images. These techniques are widely used in computer vision applications, including object detection, image enhancement, and real-time processing.