SOFTWARE TASK

DEADLINE: 31-10-2023

TASK

Develop a user-friendly menu-driven program that allows users to perform various image operations, such as:

1. Input an image
2. Display the image
3. Save the image
4. Convert it to different color formats (RGB, BGR, HSV, Grayscale, etc.)
5. Split image channels (R, G, B)
6. Remove the image background
7. Apply image blurring
8. Exit the program

SUBMISSION

Provide the program's drive link and a video demonstrating the program in action within the following Google Form link:

https://docs.google.com/forms/d/16dxVsFUhQES2wHi2l-ksXO1pRWR6DLdHseqm5yBN-_s/viewform?edit_requested=true

TOPICS

1) Getting started using OpenCV
   a) Loading images of different formats
   b) Displaying images
   c) Basic filtering operations
   d) Saving images
   e) Color Space (cover RGB<->BGR, HSV)
2) OpenCV in Python and NumPy
3) Digression: working with NumPy arrays
4) Essential Operations
   a) Reading and Editing Pixel Values
   b) Retrieving and understanding image dimensions
   c) Working with Regions-of-Interest
   d) Channels: Splitting and merging
   e) Adding, subtracting, and blending images
   f) Overview of mathematical tools (FFT, SVD/PCA)
5) Filtering and morphological operations
   a) Low Pass/smoothing filters
   b) High Pass/edge-detection filters
   c) Adaptive thresholding
   d) Erosion/dilation
   e) Floodfilling

RESOURCES

DOCUMENTATION

https://docs.opencv.org/3.1.0/d6/d00/tutorial_py_root.html#gsc.tab=0

YouTube

https://youtu.be/WQeoO7MI0Bs?si=YMaTXlRvrB8FOvYp

https://youtube.com/playlist?list=PLS1QulWo1RIa7D1O6skqDQ-JZ1GGHKK-K&si=sKwI7kNXkx8jDe1p