Computer Vision: Lab 3 – Image Operations and Videos using OpenCV

Prerequisites: Python basics, numpy, pandas, matplotlib, OpenCV, etc.

Image operations.

Download the MNIST dataset and perform the following operations on samples taken from its training set.

1. Increase the size of the image by resizing it. Consider the scaling factor, target image dimensions and interpolations. Visualize the resulting images with different aspect ratios.

2. Perform translation, rotation and affine transformation on sample MNIST image data, as given in the link below:

https://docs.opencv.org/4.x/da/d6e/tutorial_py_geometric_transformations.html

3. Perform morphological transformations or erosion, dilation, opening, closing, etc. as given in the link below:

https://docs.opencv.org/4.x/d9/d61/tutorial_py_morphological_ops.html

4. Perform Gaussian Blurring and Median Blurring operations and visualize the results.

Video Operations:

1. Segment out the specific color objects (eg., blue) in live webcam feed. Track the object of interest in the video feed. Use the color conversion method BGR → HSV for segmenting the required color.

Refer to https://docs.opencv.org/4.x/df/d9d/tutorial_py_colorspaces.html