

ECE 5367 – 001: Image Processing

Project 4

List of Assumptions:

- The image of the playing card should have a dark, plain background
- The image should be of high resolution (at least 1080p)
- There should not be any glare
- The camera should have been parallel to the image when taking the image
- The playing card should be under uniform illumination
- The playing card should be Bicycle format
- The camera should be at a distance of 10-15 inches away from the playing card
- Following Python Libraries must be installed: pickle, tensorflow, cv2, numpy, matplotlib, pathlib

Script Usage Guide:

The script prompt users with 4 options:

- Option 1 : Open the camera and wait for the user to press enter. Processes the Last frame shown.
- Option 2 : Prompt user to input path to read one image
- Option 3 : Prompt user to read all the images in a folder
- Option 4 : Exit the Script

Description of contributions of each member:

Joseph Palacios : Write code for cropping the number and suit of the playing card

Worked on Template Matching but the results were not optimal

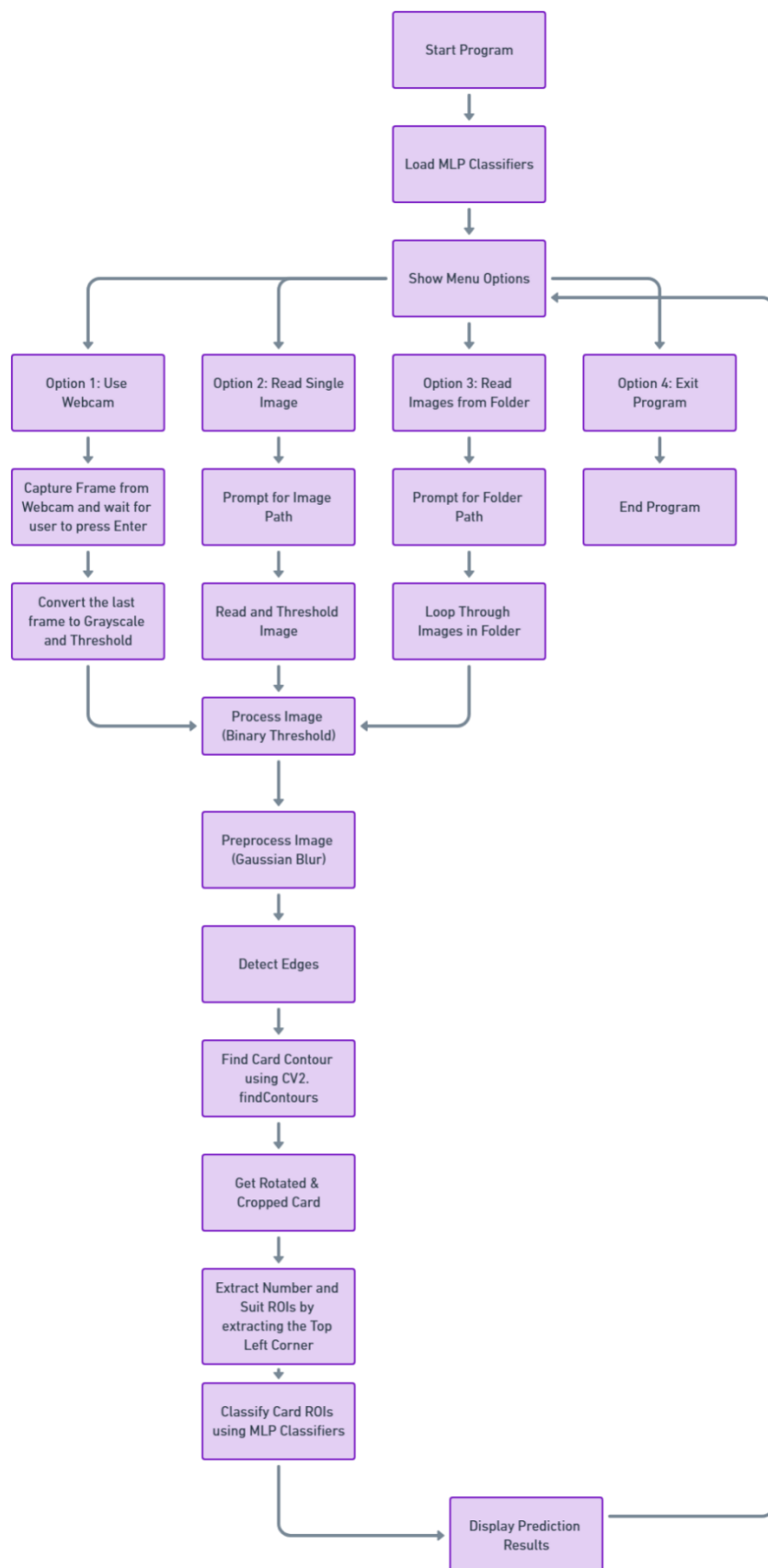
Generate dataset for MLP classification model training

Pre-process the dataset

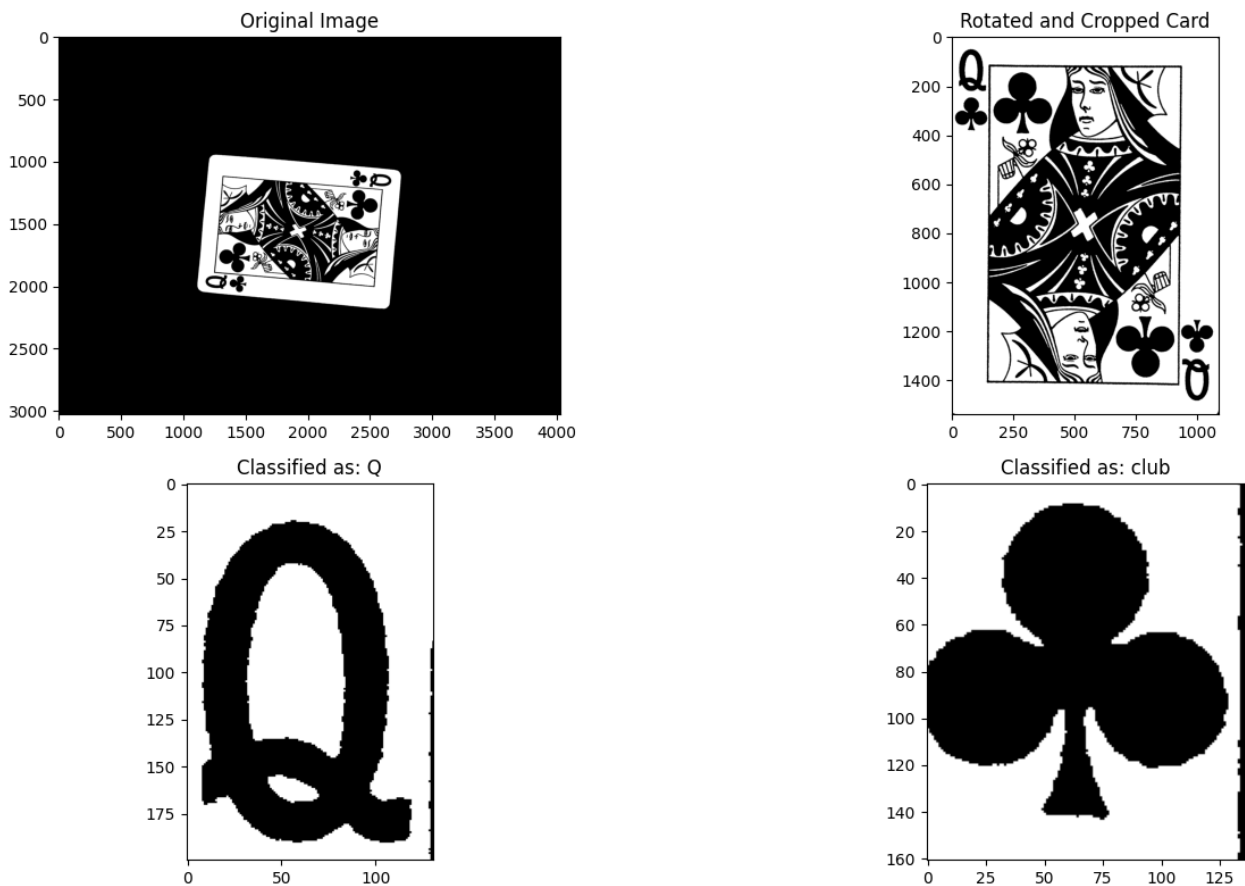
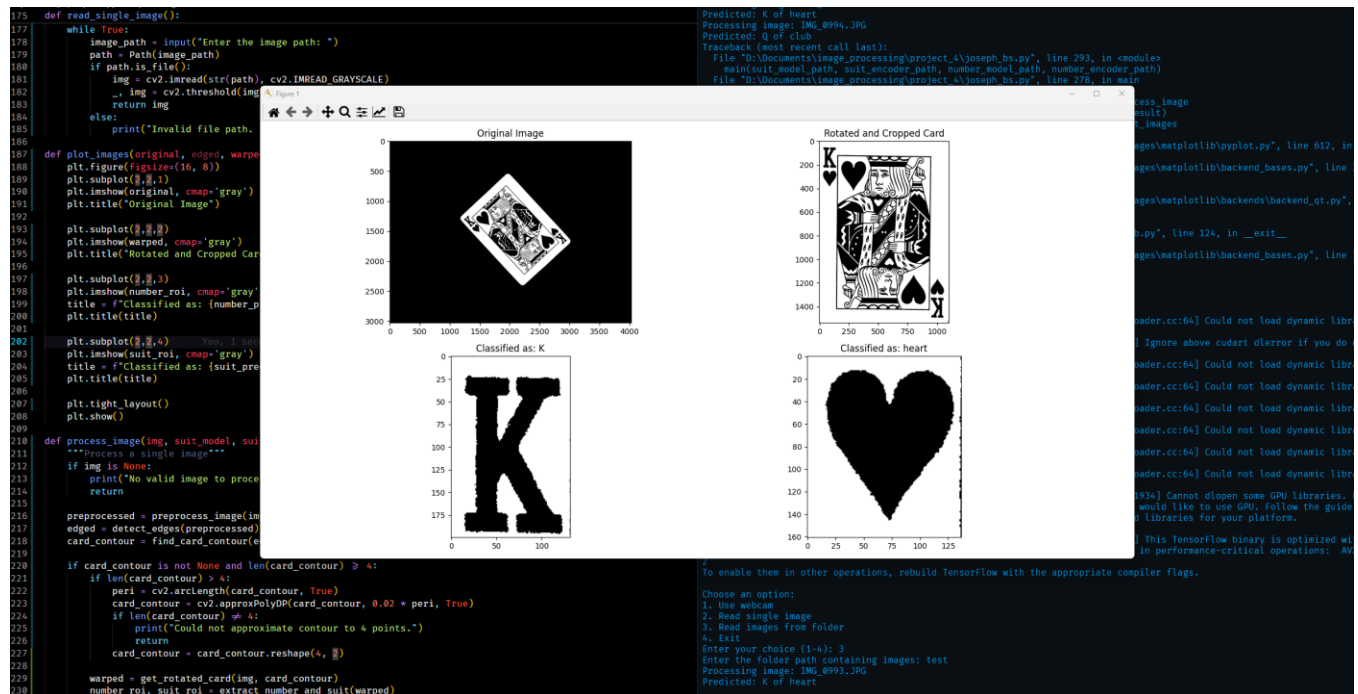
Rishikesh: Write code for training an MLP classifier

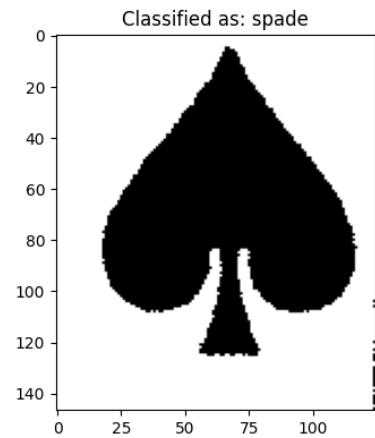
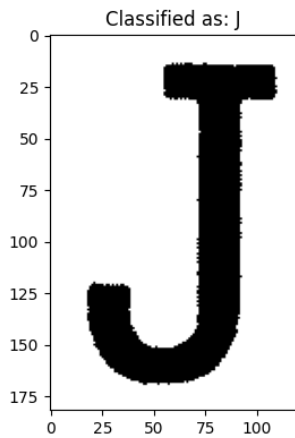
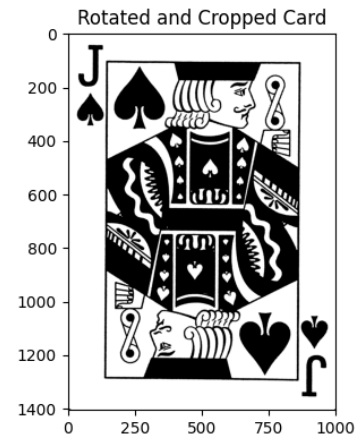
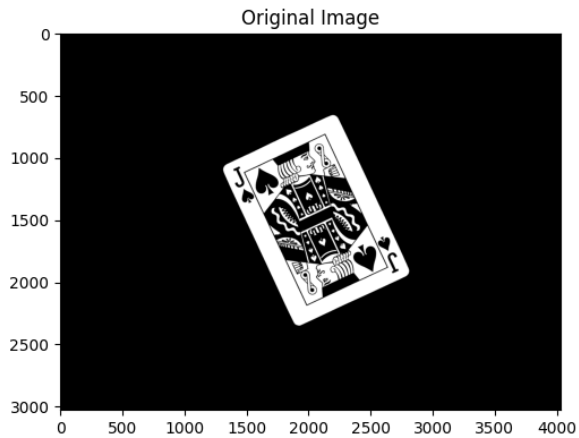
Write code for implementing classifier to classify card number and suit

Algorithm Pipeline:



Subset of results:





List of References:

https://docs.opencv.org/4.x/d0/dce/classcv_1_1ml_1_1ANN_MLP.html

https://docs.opencv.org/3.4/d4/d73/tutorial_py_contours_begin.html

<https://notebook.community/mbeyeler/opencv-machine-learning/notebooks/09.02-Implementing-a-Multi-Layer-Perceptron-in-OpenCV>