Hue filtration and colour matching

(a) Write a program for filtering pixels of colours represented by a band of electromagnetic waves specified by their wavelengths in nanometer (e.g. 450-470 nm) using the CIE-chromaticity chart provided by an attached file . Test your program with a set of such bands and provide at least three outputs demonstrating the pixels with colours close to yellow, green and violate. 30

(b) Form a normalized histogram in the wavelength of space (360-830 nm) for a colour image and display it. Provide outputs for 5 colour images from the set of input images. 20

(c) Define a distance measure between two images by computing the Euclidean distance between two normalized histograms. Given a set of images (provided in a separate directory named 'colour'), implement k-means clustering algorithm using the above distance. Show your results at different values of k such as 2, 3, and 4. 50

You may implement your programs in OpenCV/MATLAB language with necessary user's interfaces and visualization of your results and input.

Please provide a documentation for compiling and running the programs in a README file. The whole project should be submitted in a single tar or zip file.

Bonus marks: For well-organized documentation, coding, and demonstration of results. 20