COMPUTER VISION (Winter 2021-22)

Assignment-I

Total Marks: 5 Marks

Deadline: Feb 3, 2022

Q1) Implement Equations 3 & 5 of the attached paper on the k-means clustered image (k=85) of the attached image. The clustered image already has optimal 85 colors, thanks to k-means, so there is no need to reduce the number of colors, as the paper suggests in Sections 3.1 & 3.2. Implement it in the RGB color space, not L*a*b.

[1.25 + 1.25 = 2.5 marks]

NOTE: The outputs are the two saliency maps stored in the **PNG** format.

Q2) Implement a variant of Otsu's algorithm in which we minimize the sum of Total-Sum-of-Squares (TSS) instead of the weighted sum of variances.

[1 mark]

NOTE: The outputs are the binary mask (stored in **PNG** format) and a **CSV** file showing all the 256 sum-of-TSS values and the corresponding threshold values. Highlight the optimal threshold in the csv file. Use the attached image.

Q3) Write a program to develop a tight bounding circle (red-colored) around the person in the attached video using the background subtraction method of subtracting the median (pixel-level) of frames.

[1.5 mark]

NOTE: The output appears like the original video [in **AVI (or MP4)** format] only but with a tight bounding circle around the person.