Assignment II

COMPUTER VISION

CSE 344/CSE 544/ECE 344/ECE 544

NOTE: You are free to use any resource/library/language

1) Develop the saliency quality measurement system as described in the Section III-B of the attached research paper. **[2 marks]**

[Input: Two saliency maps for every image in a dataset. While one saliency map is DL-based, the another one is non-DL-base. Output: the two quality scores of each saliency map and your assessment on which is better, DL-based or non-DL-based. Back your assessment based on some kind of statistical analysis.]

2) Develop an image grouping system in the following manner. Use the modified way of LBP coding as described below and the usual SPP method for feature aggregation to compute image-level features for images in the dataset. Use these image-level features to group them into k groups using fuzzy c-means clustering. **[1 mark]**

LBP modification: Assign 1 or 0 in your LBP codes depending on the value of round(min(N,C)/max(N,C)), where N is the neighboring pixel and C is the central pixel.

[Input: an image dataset folder and k. Output: Grouping of images into k sub-folders. Sub-folder names are Cluster1, Cluster2, and so on]

Q3) Develop a image-level feature extraction system in the following manner. Use a dataset to develop a BoW model of k words using HoG features. Output the image-level feature derived using such a model for any image. **[1 mark]**

[Input: an image dataset, k, and an image. Output: the feature vector of the image.]

Q4) Develop a system to search for k-nearest images in a dataset for a search image using Shi-Thomsi corners and LBP patch-level features around the corners detected. **[1 mark]**

[Input: an image dataset, k, and a search image. Output: the k-nearest neighbors of the image.]