Multimedia Information Systems *CSE408, Fall 2021*

HW03 – 100 points, 25 points per item

Image Quality and Image Searching - IQ for MMIS

1. For the four images provided. Do an image search in google or any other image search engine and save the top 5 matches for each case. (Just capture the screen and crop the part with the images—i.e. from the top row of google "Visually Similar Images"). ***Provide a one paragraph discussion on the quality of the semantic matching for the original images.***

2. For the second part, do the following steps (you can use any image editing tool like https://www.xnview.com/en/):

    a) For the **first image**, a new version (using any image editing/processing of your choice) using either:

        - Add white Gaussian noise so that details and textures are masked but somewhat recognizable
        - Blur the image so that small details are not recognizable

    b) For the **second image**, create a new version using either:

        - Lower color saturation by 20%
        - Apply a gamma value of 2.8

    c) For the **third image** create a new version using either:

        - Increase sharpness by a value between 15-25% choosing the one with best visual appearance
        - Apply histogram equalization

    d) For the **fourth image** create a JPEG compressed version of 1/5 the original size using compression and low quality settings.

    e) Redo the image search for the modified images. ***Build a summary table indicating the number of common matches with the original top 4 matches***.

3. For each image write a caption between 4-8 words and do a google search for matching images. Discuss the results when compared to the image search.

4. Find a web site that does auto-tagging (e.g., https://imagga.com/auto-tagging-demo) and generate captions for the four images. Observe the similarity (or lack thereof) with your tagging. Find a website that does semantic distance for sentences (e.g., https://ws4jdemo.appspot.com/) and check how good is the conceptual similarity between human tagging and auto-tagging.

Summarize the results of performance of auto-tagging compared to human tagging using your subjective observations and the objective distance metric.

NOTE: Do not limit yourself to the websites suggested, including google image search, you are encouraged you to try others that may work better.

Submission Instructions

Submit a pdf document with small snapshots of the original images search results, and the items in ***bold-italic-underlined*** text above.