CSE3018 CONTENT BASED IMAGE AND VIDEO RETRIEVAL LAB
EXERCISE - 4

DATE: 25.02.2021

Implement a CBIR system that uses features derived from Color Auto Correlogram Descriptors.

Database – Minimum 10 images and 2 categories

I. Image Color Auto Correlogram in RGB Color Space

1. Read every image in RGB Color Space
2. Convert the image to Grayscale
3. Generate color auto correlogram for the distance vector D = [1 3] in Horizontal and Vertical directions.
4. Use the count as the feature and you will have 2 (No. of directions) * 2 (No. of D values) * 256 (No. of unique colors) = 1024 features for every image. Export these values to an Excel File. (There will be 20 records in the Excel File, one record corresponding to each image)

Image Name	**H-1-0,0**	**H-1-1,1**	**H-1-2,2**	**…**	**H-1-255,255**	**V-1-0,0**	**…**	**V-1-255,255**	**H-2-0,0**	**H-2-1,1**	**…**	**V-2,255,255**
Image 1												
…												
Image 20												

5. Read a Query Image.
6. Extract similar set of features for the Query Image
7. Compare Query Image Features with features of every image in your datasets, using Chi-Square Distance.
8. Sort the images according to the Ascending Order of the distance.
9. Display the matching images of this format. (Display the color images. Use your answer as an index for the database)

QUERY IMAGE		
Most Similar Image 1	Most Similar Image 2	Most Similar Image 3
Most Similar Image 4	Most Similar Image 5	Most Similar Image 6

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II. Repeat the same procedure, for the same images with the following alternate options
    a. Quantize the image (Use *imquantize* command)
        i. 8 Gray Levels
        ii. 16 Gray Levels
        iii. 32 Gray Levels
        iv. 64 Gray Levels

Show the time taken to complete the program execution in each of the above cases. Provide the Feature Vector Length in each case.

Challenging Task:

1. Do the same exercise on the original color image in RGB plane. (Optional Exercise. Logic is similar to histogram features based CBIR System)

Sl.No.	Method	Feature Vector Length	Time Taken
1	Gray Scale Image with 256 gray levels		
2	Gray Scale Image with 8 gray levels		
3	Gray Scale Image with 16 gray levels		
4	Gray Scale Image with 32 gray levels		
5	Gray Scale Image with 64 gray levels		
6	Color Image with R,G,B, each 256 levels		