



Görüntü İşleme Dersi-MEK
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Ödev 2

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METHOD:

In this assignment, the problem of determining the 3 most similar images to a query image was solved by evaluating the texture similarities of the images.

Firstly, images in RGB color space are transferred to YCbCr color space by using luminance information. Then, the LBP matrix of the resulting image is calculated. In this calculation process, all pixels of the picture are visited. The gray level of the pixels is compared with the neighboring pixels, the center pixel acts as the threshold. Pixels with a value less than the center pixel are labeled 0, and pixels greater than or equal to center pixel are labeled 1. As a result of this comparison, a binary number is assigned to each pixel. 0-1 changes in the calculated binary number are checked. If the number of changes is more than 2, it is shown with a determined fixed value since uniform distribution is not achieved. If it is less than two, the decimal equivalent of the number should be calculated.

The histogram showing the frequency of occurring colors in the calculated Uniform-LBP matrix is calculated. Frequency of each color is divided by the total color count to normalize the histogram to the 0-1 range.

Normalized histograms are calculated and saved as matrixes for all the images in train directory. To test the similarity, the distance between normalized histogram of the query image and saved train histograms are calculated. Manhattan distance is used for this calculation. 3 Images with the minimum distances are more similar to query image.

APPLICATION:

a) Test Directory:

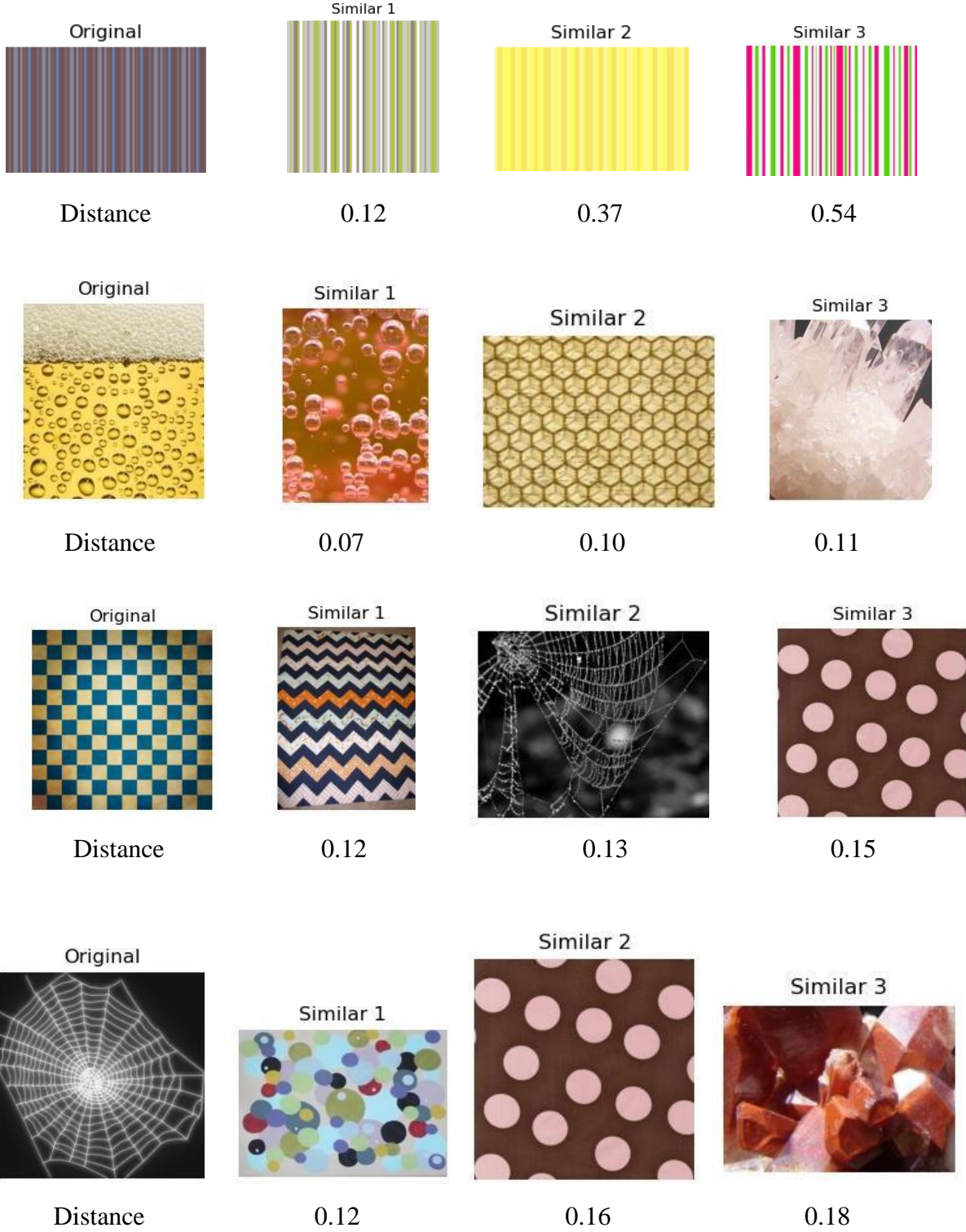
Bu bölümde test directory'si altındaki her resim için benzerleri bulunmaya çalışılmıştır.

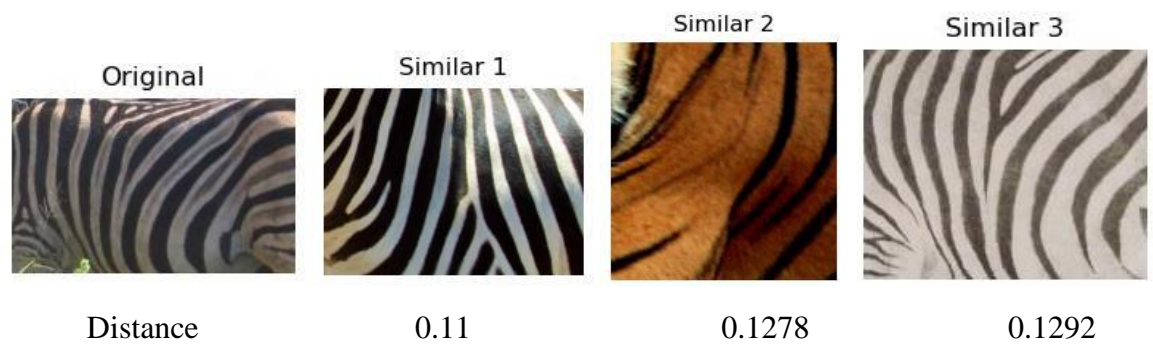
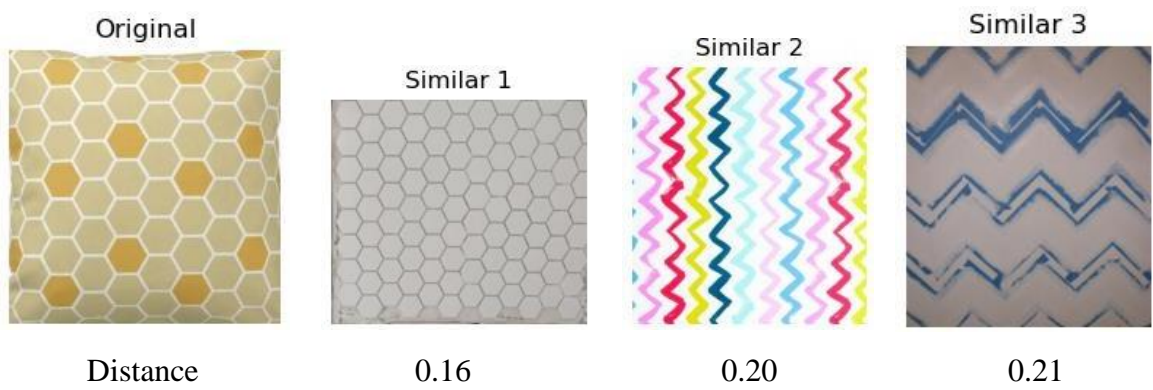
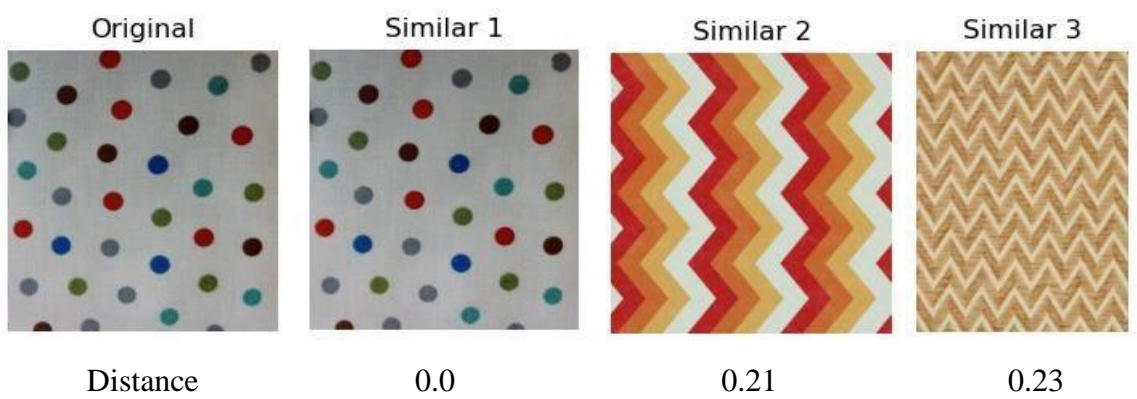
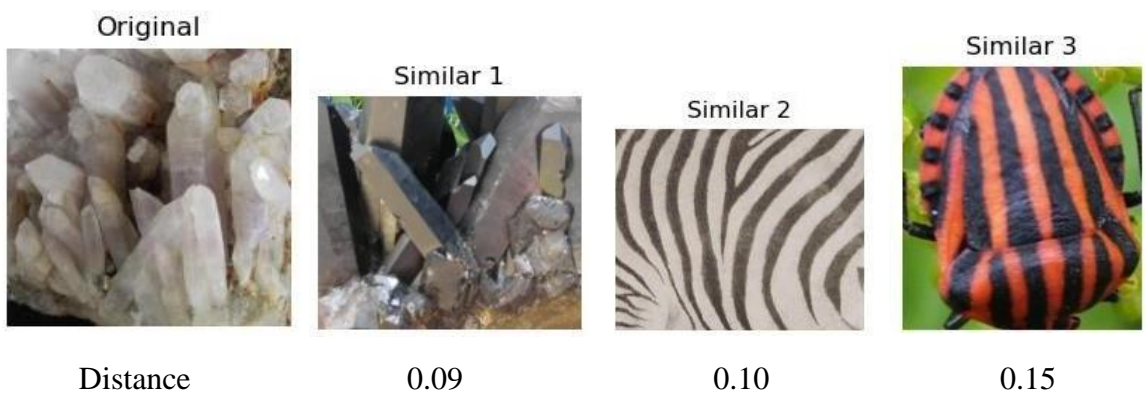
	Banded	Bubbly	Chequered	Cobwebbed	Crystalline	Dotted	Honeycombed	Stripped	Zigzagged
Doğru Bulma Oranı	2/3	1/3	0	1/3	3/3	1/3	2/3	3/3	2/3

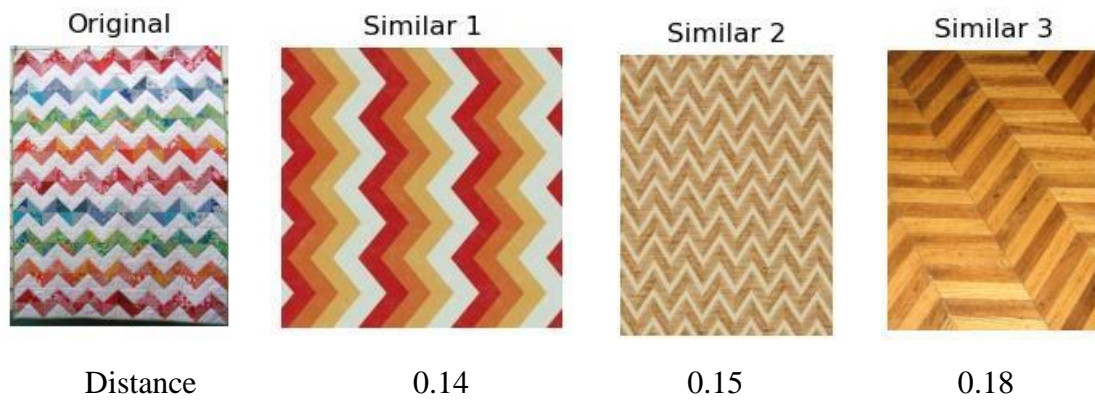
Average : %55

b) TestRaporaEklenecek Directory:

Bu bölümde testRaporaEklenecek directory'sindeki her resim için en benzer 3'er resmi bulunmuştur. Benzer resimlerin sorgu resmine mesafesini altında belirtilmiştir.







RESULT:

Texture information is one of the main distinguishing features in visual data. Utilizing the similarity of texture features in images that are self-consistent and have significant periodic changes increases the success rate of the algorithm.

Texture information can also provide insight for the content of the image. Color distribution of the image in histogram can help when classifying image based on content.