Week11: CS 6301 - Machine Learning Lab

Date: 30.05.22

Spot question

Color quantization finds a small number of representative colors within a given a picture. Each pixel yields one 3-dimensional pattern in the RGB color space. Using k-means we can cluster all the pixels of an image into k clusters and assign each pixel the color represented by its nearest cluster center. Thereby, an image containing millions of colors can be compressed to an image containing k different colors only.

(a) Implement the k-means algorithm.

(b) Load an image of your choice, treat each pixel as an individual 3-dimensional data point and cluster into k clusters (use low-resolution images to avoid long computation times).

(c) Assign each pixel the color value of its nearest cluster center.

(d) Visualize the result.