

COS429

Computer Vision

Homework No.3

Due: 11:59pm, Tuesday, October 14, 2008

This programming assignment is concerned with the application of k-means clustering to image segmentation.

The data for this assignment can be found in the directory:

<http://www.cs.princeton.edu/courses/archive/fall08/cos429/hw3/scmixedveg.jpg>

This is the vegetable color image used to illustrate k-means in the book.

Implement the algorithm in matlab, and use it to segment the image into $k = 5$, $k = 10$, and $k = 20$ parts, using first color only (i.e., using three-dimensional feature vectors recording the R , G , and B values at each pixel), then color and position (i.e., using five-dimensional vectors recording R, G, B , but also the position (x, y) of each pixel). Display the result by printing, for each experiment, the k regions as so many images, with pixels that are not part of the region of interest left blank.

Submission: Please submit the matlab code and segmentation images to Blackboard (<https://blackboard.princeton.edu/>).