K-Means Clustering

Algorithm steps for K-means Clustering.

step 0: prepare everyhing
K <-- get from user.
pointSet <-- get from input file

step 1: Randomly partition pointSet into K groups, each point
is labeled with the label of the group it belongs to

step 2: 2.1: Display the 2-D array of pixels with their labels
2.2: For each group, gi,
compute the centroid of gi, (ci(x), ci(y)), where
ci(x)= sum of x's of all points gi= {(x, y)} in gi
divides by number of points in gi
ci(y)= sum of y's of all points gi= {(x, y)} in gi
divides by number of points in gi

repeat step 2 until all groups's centroid are computed

step 3: for each point, p, in the input pointSet
compute the centroid distance, di(p,ci), from
p to the centroids of each group gi, i = 1 to K

min_i <-- determine which group, gi, that di(p,ci) is minimum

if min_i is not the same as p's old label
change p's label to min_i

repeat step 3 until all points in pointSet are checked.

step 4: repeat step 2 to step 3 as long as there is a point that changes its label.