

CSE341 PROJECT REPORT

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1. METHODS (10 POINTS)

Please explain how are you going to implement those functions in assembly language. You may list some key instructions you plan to use, or use pseudocode to illustrate your ideas. This question doesn't require any specific format. Just choose the most comfortable way to demonstrate your ideas to implement the desired functions.

1)Euclidean distance calculator

This function will calculate the Euclidian distance given two data points each in the form of a .word. Then they are saved into the argument registers a2 and a3. Separate each point into its x's and y's saving them into temporary registers. Then using sub, mult, mflo, and add to get the calculated euclidean distance.

2)Distance comparison

This function will one by one grab a data point and compare its Euclidean distances with each centroid calculated with the Euclidean distance function and then print out which cluster it belongs to. Using if statements and labels.

3)Updating the centroid

To update the centroids there will be 4 registers (x1,y1)(x2,y2) that will initially start at zero and will represent the new centroids x's and y's. When a data point is assigned to a cluster it will take that data points x and y and add its value to the proper centroids new x value and y value. When all data points have been checked it create the two new centroids using the 4 registers (sum of the x and y's from the clusters data points)

4)System check and robustness

Then the program will loop until it has found no change in the centroids. Then print the centroids

2. SYSTEM ROBUSTNESS (10 POINTS)

Please try to change the two data points to be chosen as the initial cluster centroids and test if your codes will still give the same clustering results or not. Please list the clustering results for three different combinations of two initial data points. (Each time you can randomly select two data points as the initial centroids.)

The 10 data points used are the ones from the example in the project pdf (A-J)

I chose data points (2,4) and (3,3) for the centroids and the first iteration of clusters produced is Cluster 1: (C,E) and Cluster 2: (A,B,D,F,G,H,I,J)

I chose data points (1,2) and (6,5) for the centroids and the first iteration of clusters produced is Cluster 1: (A,C,D,E,F,G) and Cluster 2: (B,H,I,J)

I chose data points (7,3) and (4,1) for the centroids and the first iteration of clusters produced is Cluster 1: (B,I) and Cluster 2: (A,C,D,E,F,G,H,J)