

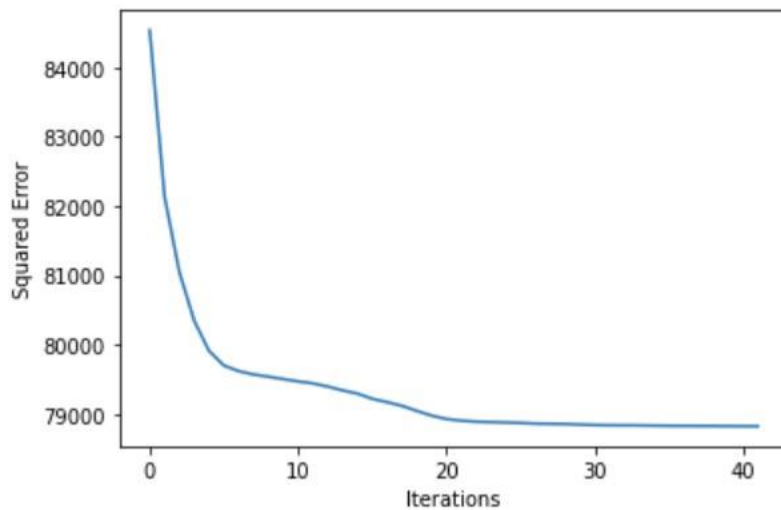
CSE 512 Spring 2021 – Machine Learning – Homework 5

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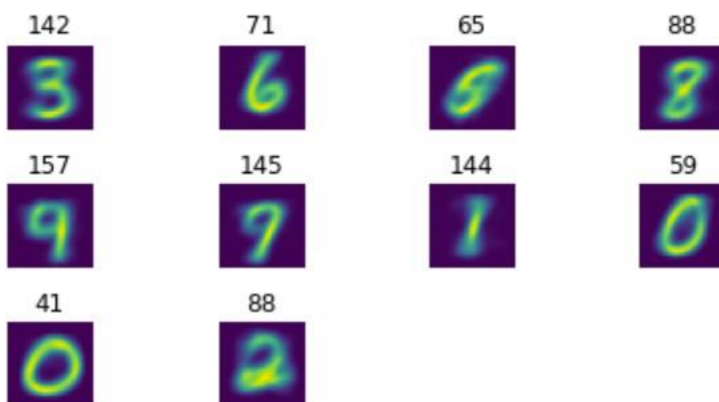
1.2)



Final SSD is : 78821.81764411743

1.3)

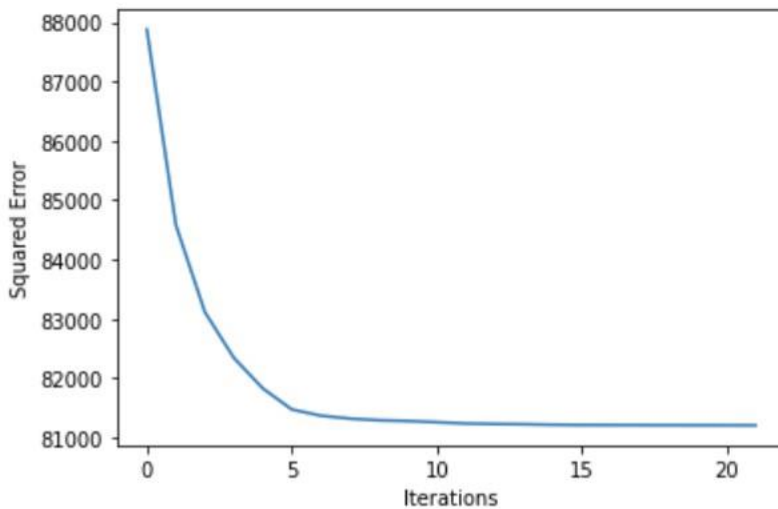
a)



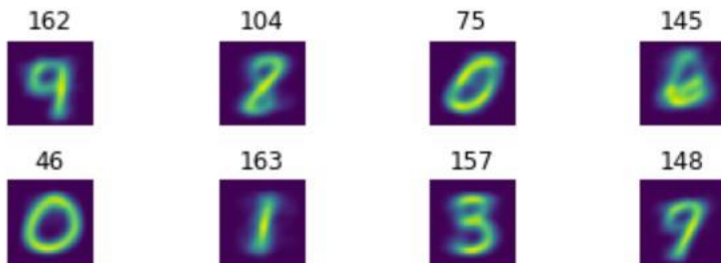
b) Clustering does not make sense perfectly. As we see the centroids identified miss a few digits. No, not all assigned images belong to the correct centroid.

1.4)

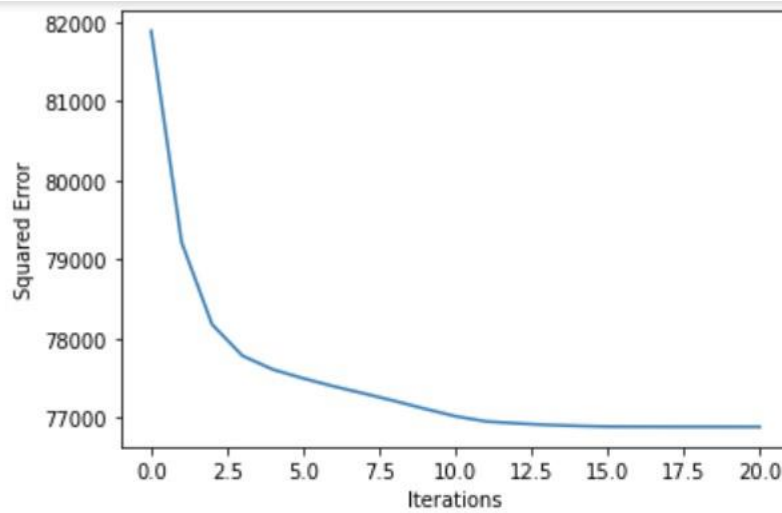
For $k=8$. Reducing the number of clusters less than the number of digits misclassifies data and increases SSD.



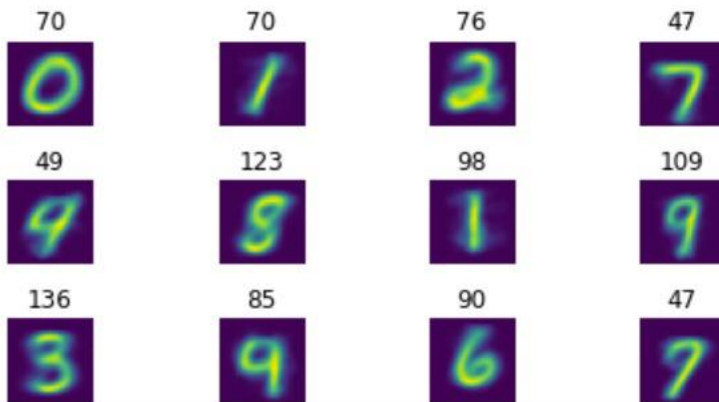
Final SSD is : 81208.28586323604



For k=12, It decreases the SSD value but still not perfect centroids obtained.



Final SSD is : 76879.22792115182



2.2)

Cluster values used for

cam_04 = 2

cam_10 = 4

cam_16 = 4

cam_24 = 4