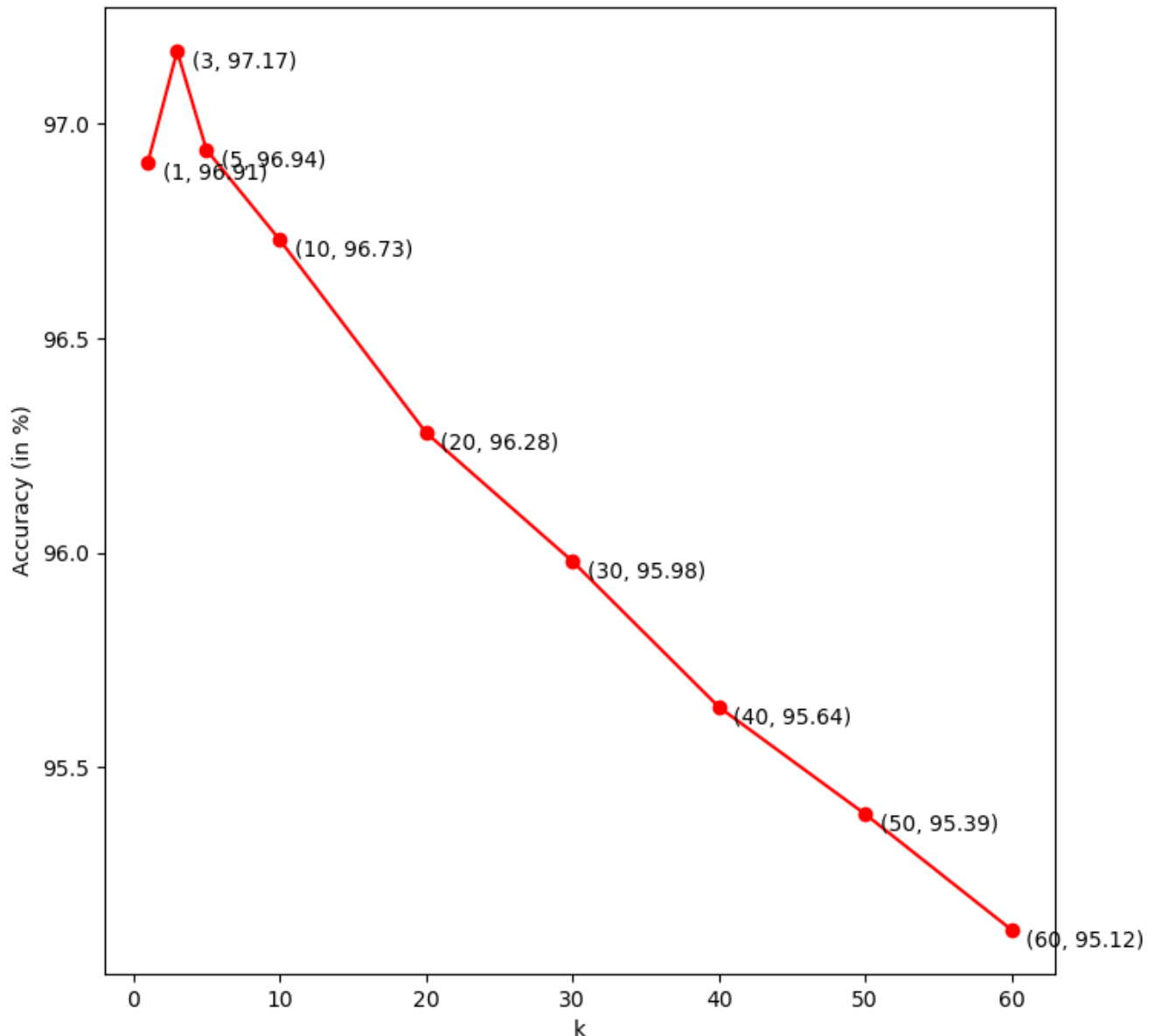Name – **Nischay Girish Gowda**
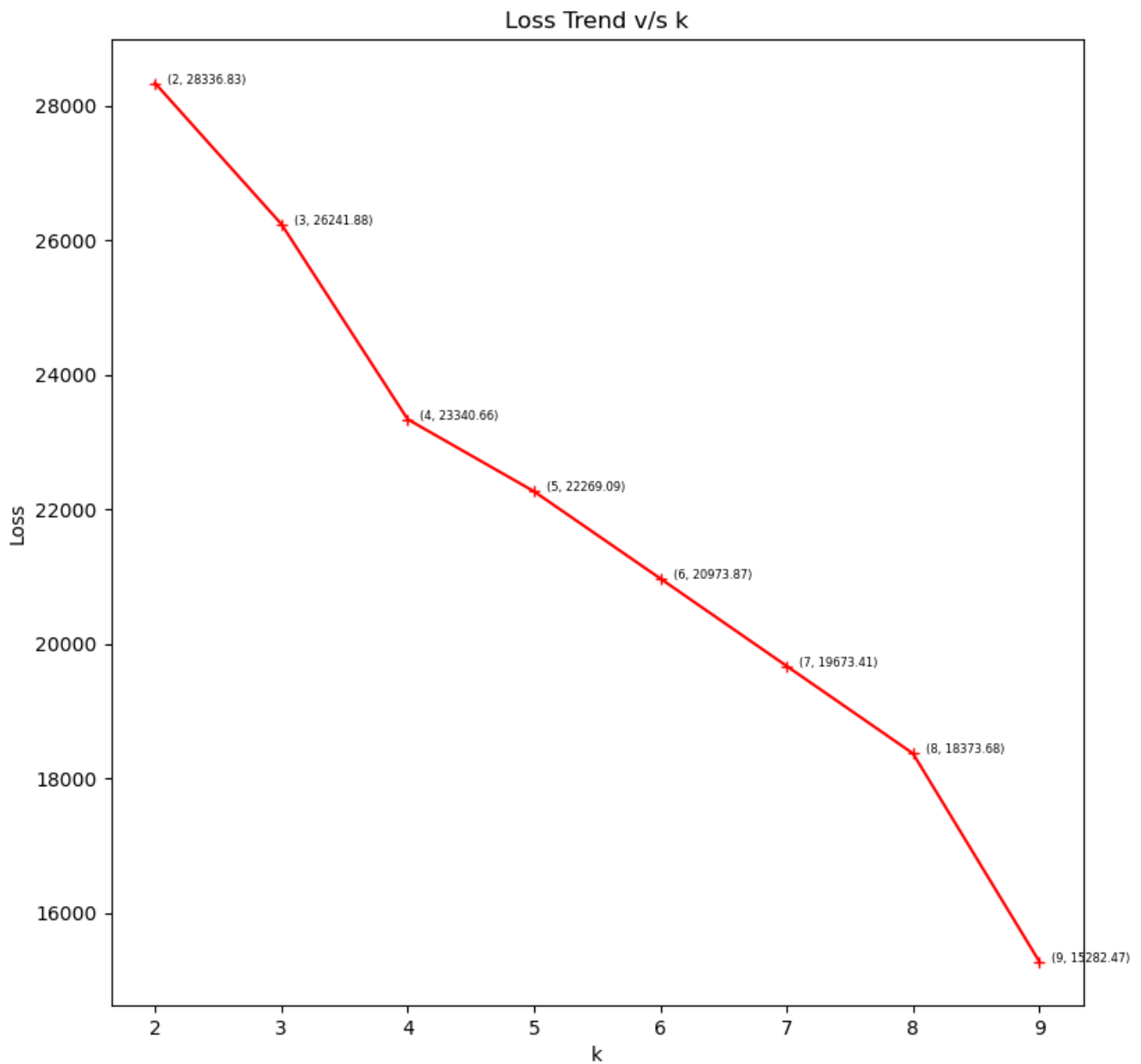Subject – **CSE 575 SML Fall 2022**

Q1. Handwritten Digits Recognition with K-NN
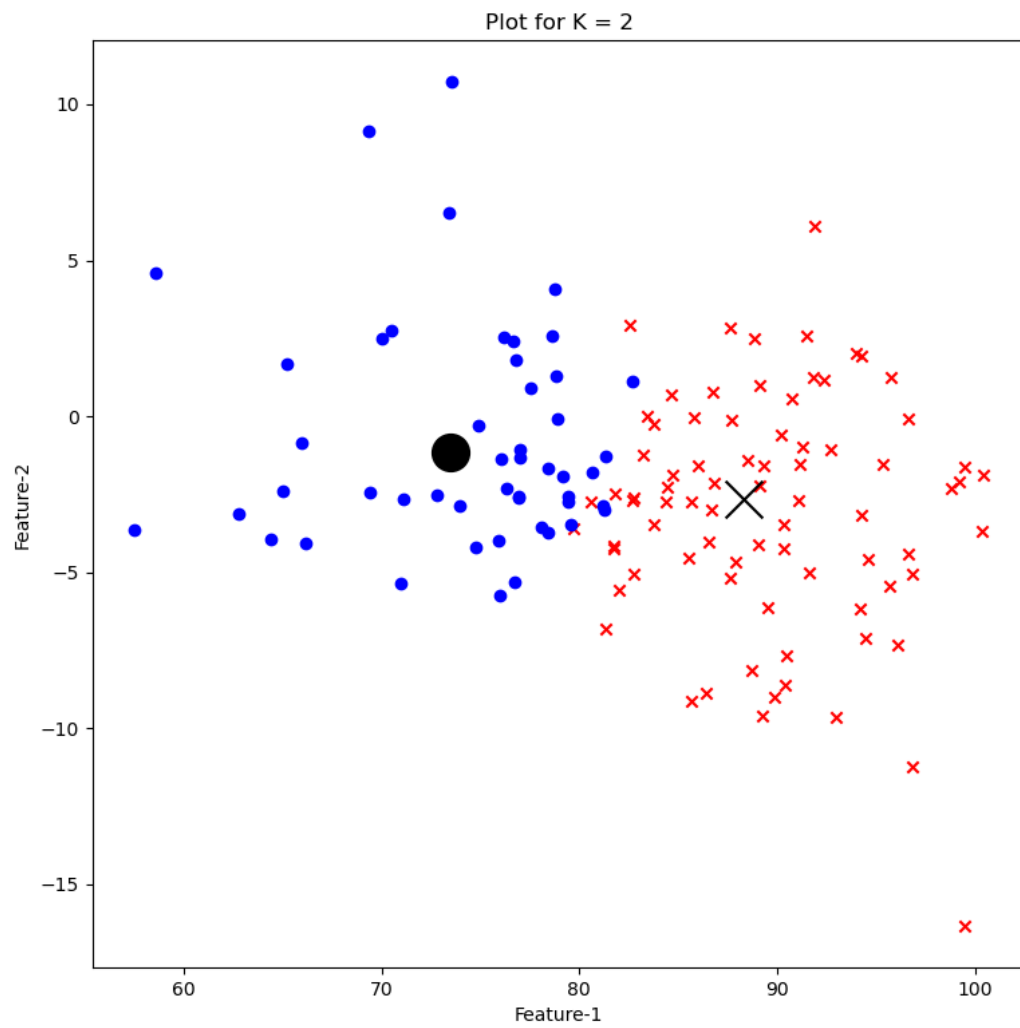
For each K neighbours – Prediction Accuracy

- The above plot shows the prediction accuracies with respect to **k - neighbours**.
- The highest accuracy is obtained for clusters of K = 3. Increasing the **k - neighbours** count further resulted in decrease in prediction accuracy.
- So, the trend observed is such that, prediction accuracy decreases as number of **k - neighbours** increases.
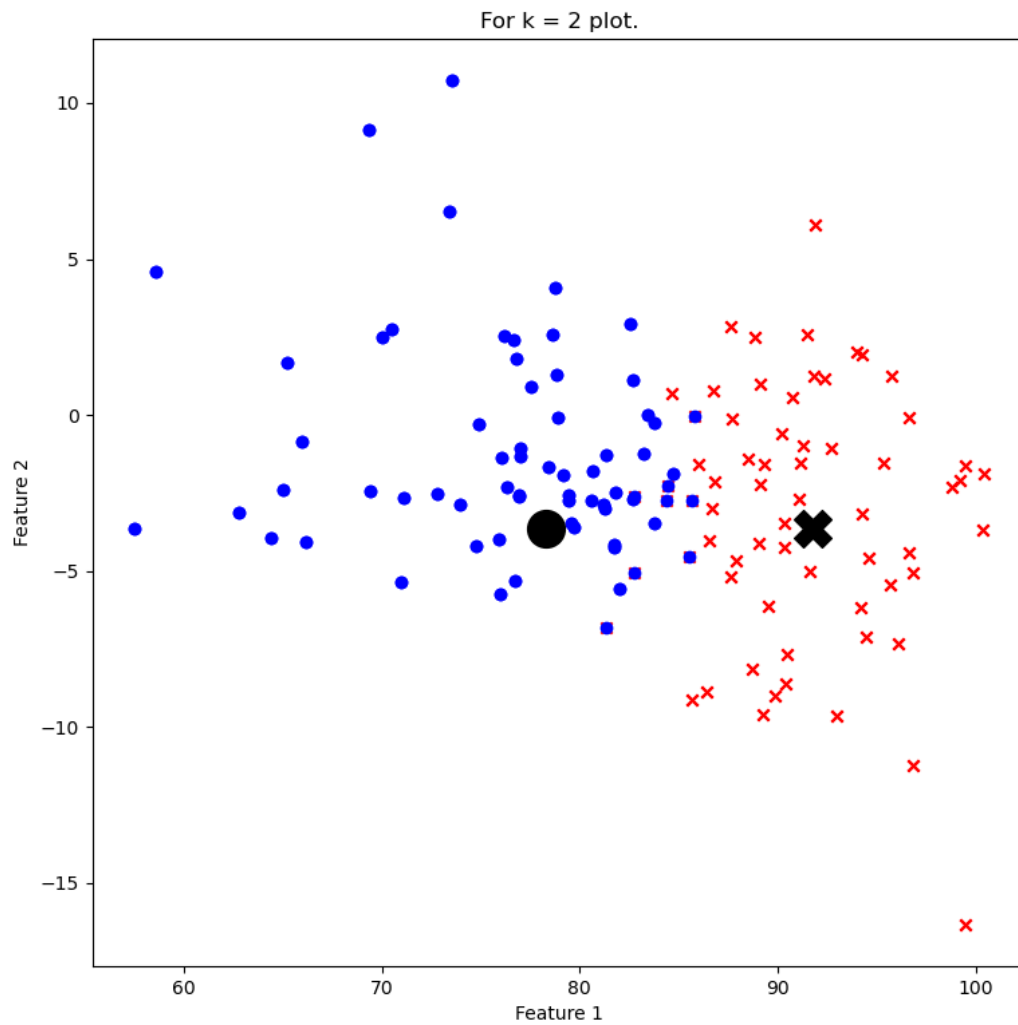
Q2. K-Means Clustering

Loss Trend v/s k

- The above plot shows the prediction accuracies with respect to cluster **K**.
- So, the trend observed is such that, prediction accuracy decreases as number of clusters **K** increases.

Plot for K = 2

- The above plot for K = 2, having clusters in Red(Feature 1) and Blue(Feature 2).

Q3 Gaussian Mixture Model (GMM)

For k = 2 plot.

- The plot of GMM model is very similar to plot for K – Means plot.
- The above plot for **K = 2**, having clusters in Red(Feature 1) and Blue(Feature 2).