

Assignment-2

Deadline: 1st Feb 2023

1. Let $G = (V, E)$ be the complete weighted undirected graph of the given dataset where vertex set V denotes the points and edge set E is the weighted edges between every pair of points. The weight of an edge (u, v) is the Euclidean distance between points u and v . Compute the minimum spanning tree (MST) using prim's on graph G .
2. Let the first round of minimum spanning tree (MST) of G , is denoted as T_1 . Then the consecutive MSTs are computed by removing the edges of the MSTs computed in the previous rounds, i.e MST T_i of the graph $G = \left(V, E \setminus \bigcup_{j=1}^{i-1} E_j \right)$ is constructed where $2 \leq i \leq t$ and E_j denotes the edges of j^{th} round MST T_j . Then t -round of MST neighborhood graph is defined as $G^t = \left(V, \bigcup_{j=1}^t E_j \right)$. Compute and display the t -round of MST -neighborhood. Show the time duration (in second) to compute MST-neighborhood graph.
3. Compute the shortest path from data point-1 to all other points of the dataset. Show the time duration (in second) to compute the shortest paths.