Congestion Analysis

By

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Problem Statement

Aim: Developing less congestion paths for long distanced trains on shared railway networks

Pain Points: Obtaining a good paths will be difficult when there is congestion due to planned and unplanned events.

Goals

- To analyze and quantify the congestion on the railway block sections
- To identify available long distanced train windows and create paths on a shared rail network
- To compute the shortest paths and subsequent second & third shortest paths.

Dataset

- In this work, we focus on the six GQD routes of Indian Railways that connect New Delhi, Mumbai, Chennai, and Kolkata.
- At every node, 2 routes have high overlap.
- 2 Diagonals also overlap: NGP-SEGM (routes 2, 4)

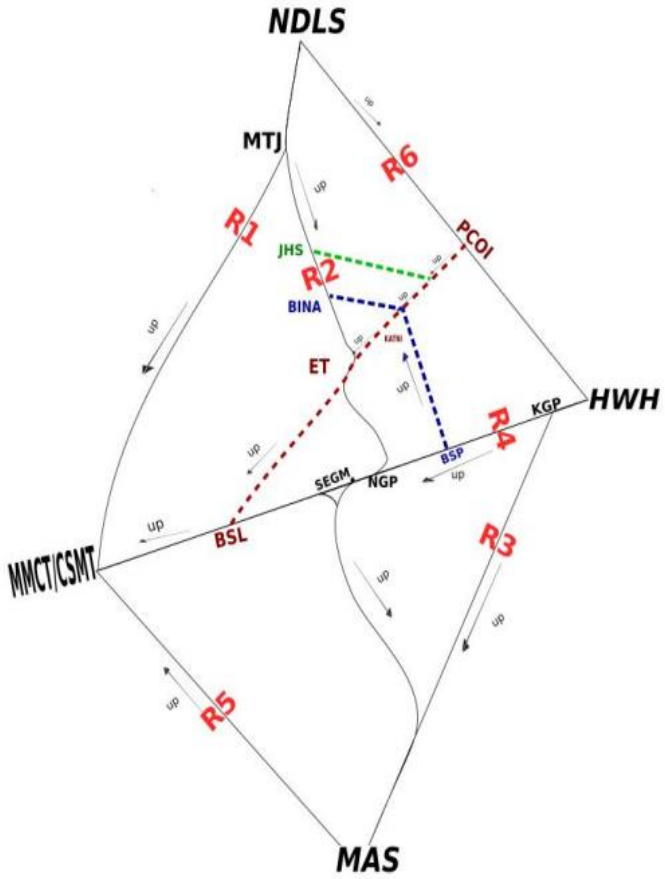
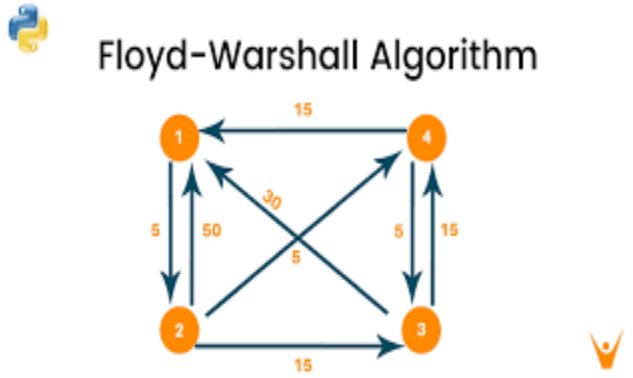


Fig.4 GQD routes of Indian Railways under consideration

Floyd-Warshall Algorithm

- This algorithm is used to find the shortest path between all pairs of nodes in a weighted graph.
- In the case of trains, this algorithm would calculate the shortest distance between all train stations.
- It works by maintaining a matrix of shortest distances between nodes and updating the matrix as it explores the graph.



THANK YOU