Finding Time Period-Based Most Frequent Path in Big Trajectory Data[1]

Ziyang Chen

Fudan University

13307130148@fudan.edu.cn

December 22, 2014

[1] powered by XeLaTeX

Summary

Overview

- The main task: find *the most frequent*(MFP) during user-specified time periods in large-scale historical trajectory data.
- They refer to this query as *time period-based MFP*(TPMFP).
- Specifically, given a time peroid T, a source v_s and a destination v_d, TPMFP searchs the MFP from v_s to v_d during T.

Overview

- None of the previous work can well reflect people's common sense notion which can be described by the following key properties:
  - *suffix-optimal*
  - *length-insensitive*
  - *bottleneck-free*
- The first task is to give a TPMFP definition that satisfies the above three properties.
- The next task is to find TPMFP over huge amount of trajectory data efficiently.(over $11,000,000$ trajectories.)

Summary

Key Properities

Property (Suffix-Optimal)

Let P^* denote the $v_S - v_d$ MFP. For any vertex $u \in P^*$, the sub-path (suffix) of P^* from u to v_d should be the u–v_d MFP.

Property (Length-Insensitive)

The length of any path should not be a deciding factor of whether it is the $v_s - v_d$ MPF.

Property (Bottleneck-Free)

The MPF P^* should not contain infrequent edges(i.e., bottlenecks).