

A Systematic Approach to Clustering Whole Trajectories of Mobile Objects in Road Networks

ABSTRACT

With advances in positioning technologies and the proliferation of Wifi/GPS-enabled smart phones, tablets and other handheld devices, we have witnessed an escalation of web-based and mobile location-aware applications with a torrent of location data, such as Google Maps, Apple's FindMyFriends, Yelp, Uber, Lyft, to name a few. As a result, huge amount of location data are being generated constantly, which has opened a promising and challenging analytical workloads to the data engineering community.

EXISTING SYSTEM

We can classify mobile object trajectory-based research, applications and services into three categories based on what information about trajectories is utilized in trajectory analysis. The first category analyzes trajectory data as position points rather than time series of locations and offers algorithms to query and mine point-based location data. The second category focuses on identifying interesting sub trajectories from the datasets of whole trajectories based on density or flow patterns of mobile objects. The third category of trajectory clustering analyzes and mines the whole trajectories of mobile objects. Each trajectory cluster represents a spatial trend in motion or movement behavior of mobile objects, revealing valuable information about potential social connections and common interests of mobile users moving in a road network. Whole trajectory clustering can provide better reference data for transportation planning based on the trajectory patterns and the traffic density in each of the trajectory clusters for more cost-effective road design.

DRAWBACKS

- Low quality clustering results
- Performance is low.

PROPOSED SYSTEM

Most of mobile object trajectory clustering analysis to date has been focused on clustering the location points or sub-trajectories extracted from trajectory data. This paper presents TRACEMOB, a systematic approach to clustering whole trajectories of mobile objects traveling in road networks. TRACEMOB as a whole trajectory clustering framework has three unique features. First, we design a quality measure for the distance between two whole trajectories. By quality we mean that the distance measure can capture the complex characteristics of trajectories as a whole including their varying lengths and their constrained movement in the road network space. Second, we develop an algorithm that transforms whole trajectories in a road network space into multidimensional data points in a Euclidean space while preserving their relative distances in the transformed metric space. This transformation enables us to effectively shift the clustering task for whole mobile object trajectories in the complex road network space to the traditional clustering task for multidimensional data in a Euclidean space. Third, we develop a cluster validation method for evaluating the clustering quality in both the transformed metric space and the road network space.

ADVANTAGES

- Produces higher quality clustering results
- Performance is good.

MODULES

- Simple Grid-Based Distance Function (SGBD)
- Grid Cell Sequence Distance Function (GridCSD)

SYSTEM REQUIREMENTS

H/W System Configuration:-

Processor	- Pentium –III
RAM	- 256 MB (min)

- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

S/W System Configuration:-

- Operating System : Windows95/98/2000/XP
- Application Server : Tomcat5.0/6.X
- Front End : HTML, Jsp
- Scripts : JavaScript.
- Server side Script : Java Server Pages.
- Database : MySQL 5.0
- Database Connectivity : JDBC