Abstract

Embedding Information technology with Transportation system creates a new era in building Intelligent Transportation System (ITS). An effective Intelligent Transportation System reduces traffic congestion, environmental pollution, fuel consumption and driver in-convenience etc. The widespread adoption of GPS-enabled mobile devices has opened new possibilities of developing an ITS. With advancements in Wireless technologies, GIS and sensors, spatial route search are important class of queries under location based services. In this paper, we introduce a new spatial query called Predictive Skyline query (PSQ) on time dependent road networks. The PSQ is a spatial route search query for future journey schedule which are popular apps under Intelligent Transportation Systems. The algorithm consists of five phases namely PSQuery Initiator (QI), Fuzzy Travel Time Forecaster (FTF), PSQuery Executor and Optimizer (QEO), Traffic Fuzzy Controller (TFC), PSQuery Recorder (QR). The FTF predicts the travel time based on historical data using fuzzy inference rules. The TFC predicts the overall traffic congestion in the user specified spatial region on the scheduled journey date. The experimental evaluation reflects the accuracy of travel time prediction in real road networks and efficiency of algorithm in processing PSQ queries.

S. Borzsonyi, D. Kossmann, and K. Stoker. 2001. The skyline operator. ICDE.


D. Kossmann, F. Rammsak, and S. Rost. 2002. Shooting stars in the sky: An online algorithm for skyline queries. VLDB.


X. Lin, Y. Yuan, W. Wang, and H. Lu. 2005. Stabbing the sky: Efficient skyline computation over sliding windows. ICDE.


M. Sharifzadeh and C. Shahabi. 2006. The spatial skyline queries. VLDB.


- Tiger/Line: ww. census. gov/geo/www/tiger/.

**Index Terms**

Computer Science  
Artificial Intelligence

**Keywords**

Predictive Skyline Queries  
Traffic Congestion  
Fuzzy Controller  
Fuzzy Rules  
Traffic Prediction  
Spatial Databases  
Skyline Queries  
Gis  
Location Based Services  
Gps