Mining Mobility Relationship from Location Traces

Zhenhui Li
Penn State University
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Abstract:
With the rapid development of sensor, GPS, and computer technologies, massive amounts of spatial and temporal data have been collected from smart phones carried by people, sensors tags attached to animals, and GPS tracking systems on vehicles. Knowledge acquired from such data has profound applications, such as in human mobility understanding, smart transportation, urban planning, and ecological and environmental studies. However, automatic discovery of semantic, useful, and hidden patterns from noisy, complex, and massive moving object data remains a major research challenge. In this talk, I will focus on mining the mobility relationships based on the moving objects’ interactions in space and time. In particular, I will discuss our recent research results on finding attraction/avoidance relationships, follower/leader relationships, and friend/non-friend relationships. I will present novel data mining techniques to detect those relationships and show the interesting patterns discovered in the real human and animal movement data. I will also illustrate the research challenges and exciting future directions in the area of mobility data mining.

Bio:
Zhenhui (Jessie) Li is an Assistant Professor in College of Information Sciences and Technology at Penn State University. Her research interest lies in data mining, database systems, and machine learning. She has been working on designing effective and scalable methods for mining various kinds of complex patterns from dynamic and noisy moving object data. She has 25 publications in book chapters, journals, and major conferences such as KDD, VLDB, and ICDM. She received the B.Eng degree in Computer Science from Shanghai Jiao Tong University in 2007, and Ph.D degree in Computer Science from University of Illinois at Urbana-Champaign in 2012.