

Guest Editorial

Location-aware computing to mobile services recommendation: Theory and practice

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In recent years, many daily web/app services (e.g. Facebook, Twitter, and Foursquare) generate data and traces that are often transparently annotated with location and contextual information. Many core challenges are involved to fully exploit geo-labeled data. The main challenge is to combine ideas and techniques from various research communities, such as recommender systems, data management, geographic information systems, social network analytics, and text mining. We aim to provide a platform to discuss in-depth and collecting feedback about challenges, opportunities, novel techniques, and applications. Finally, we have four papers for this special issue. A summary of these papers is outlined below.

In the paper entitled “**Multi-criteria tensor model consolidating spatial and temporal information for tourism recommendation**”, Minsung Hong and Jason J. Jung propose a multi-criteria tensor model combining spatial and temporal information in the recommender systems. Specifically, the five-order tensor model consists of users, items, multiple ratings, spatial and temporal data, which keeps the latent structure of the interrelations between multi-criteria and spatial/temporal information. Experimental results with a TripAdvisor dataset show that the proposed model outperforms other baselines.

In the paper entitled “**A mobile services recommendation system fuses implicit and explicit user trust relationships**”, Pengcheng Luo, Jilin Zhang,

Jian Wan, Nailiang Zhao, Zujie Ren, Li Zhou and Jing Shen demonstrate a recommendation model that mines the implicit trust relationships from user data and integrates the explicit social information of users. Specifically, the rating prediction model is improved using the traditional SVD model. The implicit trust relationships are mined from the user’s historical data and are then fused with explicit social trust relationships to obtain a crossover data fusion model. The experimental results show that the proposed model improves the user preference prediction accuracy and has higher accuracy for cold-start users compared to their counterparts.

In the paper entitled “**Forest path condition monitoring based on crowd-based trajectory data analysis**”, Francisco Arcas-Tunez and Fernando Terroso-Saenz present a framework coined SAMARITAN for rural-road network monitoring based on Mobile CrowdSensing. Specifically, SAMARITAN analyzes the spatio-temporal trajectories from cyclists extracted from the fitness application Strava to uncover potential obstacles in a target road network. The evaluation results based on a real-world network of forest paths show quite promising results.

In the paper entitled “**Improved location filtering using a context-aware approach**”, Iuon-Chang Lin, Chen-Yang Cheng and Yen-Ting Lin present a recommender system that recommends the route based on mining GPS traces of multiple users. Specifically, the ratings present users’ preferences through the location

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filtering and route filtering algorithm. Experimental results based on actual GPS trajectory data demonstrate the effectiveness of their proposed system.

The Guest Editors would like to express their deep gratitude to all the authors who have submitted their

valuable contributions, and to the numerous and highly qualified anonymous reviewers. We think that the selected contributions, which represent the current state of the art in the field, will be of great interest to the community.