Special Issue on Recent Advances in Data Mining and Data Management

# Guest Editorial

This special issue comprises of 12 selected best papers from the International Workshop on Computer Science for Environmental Engineering and EcoInformatics (CSEEE 2011). The conferences received 860 paper submissions from 15 countries and regions, of which 450 were selected for presentation after a rigorous review process. From these 450 research papers, through two rounds of reviewing, the guest editors selected 12 as the best papers on the "Data Mining and Data Management" track of the Conference. The candidates of the Special Issue are all the authors, whose papers have been accepted and presented at the CSEEE 2011, with the contents not been published elsewhere before.

2011 International Workshop on Computer Science for Environmental Engineering and EcoInformatics will continue the excellent tradition of gathering world-class scientists, engineers and educators engaged in the fields of Computer Science and Environmental Biotechnology to meet and present their latest activities. CSEEE 2011 held on July 29-31, 2011, Kunming, China. This conference is sponsored by International Association for Scientific and High Technology, and is in cooperation with Yunnan University, and it is technical co-sponsored by Kunming University of Science and Technology.

"WS-DAI-DM: An Interface Specification for Data Mining in Grid Environments", by Yan Zhang, Luoming Meng, Honghui Li, Alexander Woehrer and Peter Brezany, proposes the WS-DAI-DM interface specification and related issues of providing the consistent web service interfaces to extract useful and hidden knowledge/patterns from distributed data resources in Grid environments. An application scenario about how end-users can access data mining services in Grid environments conveniently via the proposed mechanism is described in detail.

"An Ensemble Data Mining and FLANN Combining Short-term Load Forecasting System for Abnormal Days", by Ming Li and Junli Gao, proposes an ensemble decision tree and functional link neural network combining method for identifying the relationships between the power loads and the variables that influence the power loads especially in the abnormal days. The strategy improved the accuracy of the short time load forecasting of abnormal days while ensuring the overall prediction accuracy compared to the current using one in Anhui Province.

"Incremental Learning for Dynamic Collaborative Filtering", by Shuli Han, Yujiu Yang and Wenhuang Liu, proposes an incremental learning framework based on Weighted NMF. Empirical studies show that the IWNMF scheme for different dynamic scenarios greatly lower the computational cost without degrading the prediction accuracy.

"Symbolic Representation for Rough Set Attribute Reduction Using Ordered Binary Decision Diagrams", by Qianjin Wei and Gu Tian-long, proposes a novel knowledge representation to represent the discernibility matrix using ordered binary decision diagrams (OBDD). Experimental results show that OBDD model has better storage performance, improves the attribute reduction for those information systems with more objects and attributes, and provides the foundation for seeking new efficient algorithm of attribute reduction.

"Emerging Patterns and Classification Algorithms for DNA Sequence", by Xiaoyun Chen and Jinhua Chen, proposes a classification algorithm, which is called FESP, for DNA sequences based on frequently emerging sequence patterns in the framework of associative classification algorithm. This method can work on sequences with different lengths or the case of existing base deletion and shows good performance.

"A New Similarity Measure Based on Adjusted Euclidean Distance for Memory-based Collaborative Filtering", by Huifeng Sun, Yong Peng, Junliang Chen, Chuanchang Liu and Yuzhuo Sun, proposes a new similarity measure named adjusted Euclidean distance (AED) method, which unifies all Euclidean distances between vectors in different dimensional vector spaces, for Memory-based collaborative filtering (CF). Experimental results demonstrate that the AED improves the accuracy of prediction and recommendation.

"Advertisement Data Management and Application Design in WBCs", by Zhanlin Ji, Ivan Ganchev and M´airt´ın O'Droma, proposes the advertisement data management and the corresponding intelligent application design & implementation for wireless billboard channel in the emerging ubiquitous consumer wireless world. The algorithms and application runs at the application enabler sub-layer of a WBC service provider (WBC-SP)'s node for broadcasting wireless services to mobile terminals.

"Real-time Encrypted Traffic Identification Using Machine Learning", by Chengjie Gu, Shunyi Zhang and Yanfei Sun, proposes real-time encrypted traffic identification method using machine learning to overcome the drawback of the previous identification scheme to meet the requirements of the encrypted network applications. The method can classify online encrypted network traffic with high accuracy.

"Novel Learning Algorithm for System Model of Traditional Chinese Drug Fumigation", by Ping Zhang, Xiaohong Hao, Hengjie Li and Weitao Xu, proposes a novel learning algorithm which is combined Ying learning algorithm with fuzzy neural network in traditional Chinese drug fumigation fume to cure Lumbar Intervertebral Disc. It not only reveals pathological mechanism but automatically adjusts controller to improve the efficiency of appliances.

"Identity Attributes Mining, Metrics Composition and Information Fusion Implementation Using Fuzzy Inference System", by Jackson Phiri, Tie Jun Zhao and Jameson Mbale, proposes the identity attributes mining from electronic application forms and questionnaires. The generated statistical information is then used to compose an identity attribute


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metrics model using term weight from text mining technique and entropy from information theory. An information fusion technique is then implemented using the composed metrics and Sugeno-Style Fuzzy Inference System in a multimode authentication system.

"Selection of the Suitable Parameter Value for ISOMAP", by Jing Li and Chao Sha, proposes an efficient and robust method to select a suitable neighborhood size for the ISOMAP algorithm based on the decrement of the sum of all the shortest path distances, which requires only running the former part of ISOMAP (shortest path computation) incrementally and thus is less time-consuming than those methods based on residual variance.

"Accelerometer Based Gesture Recognition Using Fusion Features and SVM", by Zhenyu He, proposes a gesture recognition system based on single tri-axis accelerometer mounted on a cell phone is proposed. The experimental results show that gesture-based interaction can be used as a novel human computer interaction for mobile device and consumer electronics.

We wish to thank the Kunming University of Science and Technology for providing the venue to host the conference. We would like to take this opportunity to thank the authors for the efforts they put in the preparation of the manuscripts and for their valuable contributions. We wish to express our deepest gratitude to the program committee members for their help in selecting papers for this issue and especially the referees of the extended versions of the selected papers for their thorough reviews under a tight time schedule. Last, but not least, our thanks go to the Editorial Board of the Journal of Software for the exceptional effort they did throughout this process.

In closing, we sincerely hope that you will enjoy reading this special issue.

**Guest Editors**

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**Tianlong Gu** was born in Shanxi, China, on 1st October 1964. He received the Bachelor Degree from Taiyuan University of Technology in 1984, received Master Degree from Xidian University in 1986 and received his Ph.D. degree from Zhejiang University in 1996. From 1998 to 2002, he was a postdoctoral research fellow and visiting professor within Murdoch University and Curtin University of Technology, Australia. He has published more than 130 papers, and authored 6 books. His main research interests include formal method, knowledge engineering and mobile computing.He is a full professor in school of computer science & engineering at Guilin University of Electronic Technology, Guilin, China, and Ph.D. supervisor in school of computer science & technology at Xidian University, Xian, China.

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