Special Issue on Online Social Network Data Processing

Guest Editorial

Web-based social networks have been growing extremely fast in recent years. It has become one of the most important issues of web-based technologies. Meanwhile, data mining and processing techniques have been applied extensively to various research domains including web technology and social networks.

Intelligent Data Processing has attracted much attention from various research communities. Researchers in related fields are facing the challenges of data explosion, which demands enormous manpower for data processing. Artificial intelligence and intelligent systems offer efficient mechanisms that can significantly reduce the costs of processing large volume data and improve data processing quality. Practical applications have been developed in different areas including health informatics, financial data analysis, geographic systems, automated manufacturing processes, etc.

This special issue aims to gather experts and scholars from related fields to present and share their recent research on social networks, data processing and the integration of these two areas. This special issue contains extended versions of the accepted papers from the 14th International Symposium on Knowledge and Systems Sciences, hosted by NIT, Zhejiang University. 10 papers have been invited to the special issue selected from over 44 conference submissions. 4 papers have been accepted after two rounds of review. We are pleased to serve as guest editors for this special issue to bring together researchers, practitioners and users interested in the full spectrum of online social network data processing. This issue reflects the breadth of enterprise services computing topics. There are four papers, each of which is concerned with a specific aspect of the topic and summarised as follows.

Referring to the first paper “A Novel Approach for Customer Segmentation Based on Bi-clustering”, Hu et al present a novel approach to classify customers for an effective Customer Relationship Management. This approach uses the chi-square statistical analysis to select the set of attributes and uses K-means algorithm to quantize the value of each selected attribute. It then classifies the customers into three groups by using DBSCAN algorithm. The efficiency of this approach has been demonstrated on the real data set from an airline company.

To balance the computation performance and the security restrictions in cloud platforms, Ji et al, in the second paper “A Privacy Protection Method Based on CP-ABE and KP-ABE for Cloud Computing”, proposed a hybrid privacy protection solution where privacy information is encrypted based on user attributes and cloud service type. This solution is based on key policy-attribute-based encryption (ABE) and cipher policy-ABE, and has been verified in a real cloud environment.

The third paper is a case study on information service in rural area. This paper proposes a tri-index evaluation method to describe the utilization of information service stations in rural area close to Ningbo city.

Referring to the fourth paper “A Microscopic Simulation Modelling of Vehicle Monitoring Using Kinematic Data Based on GPS and ITS Technologies”, Hao et al present an en-route anti-terrorism security system for commercial vehicle operations (CVO). This system uses kinematic data from Global Positioning Systems (GPS) and Intelligent Transportation Systems (ITS) technologies. The real-time information of the coordinate position and speed of the concerned vehicle as well as the speed of and the gap to the vehicle ahead was considered during the terrorism detection. Two typical cases studies, i.e. container trucks running through a freeway network and a bank-armored vehicle traveling across a metropolitan Central Business District (CBD) area, were conducted to test the performance of the proposed system. Experiment results from the simulations show that the proposed system is capable of being efficient in detecting the strange behaviors of commercial vehicles involved in a possible terrorist attack.

The papers in this issue illustrate some of the current research areas pertinent to social network computing; while, in many ways, also amplifying the many new challenges in real situations, which remain to be addressed.

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Chaoyi Pang is currently a SanJiang Professor Zhejiang University (NIT), a Research Scientist at CSIRO Australia and a senior member of ACM. His research interests lie in algorithm, stream data compression and processing, security/privacy, database, data integration, graph theory and eHealth. His research performance has been evidenced by his leading authorship of a number of patents and research papers in prestigious international journals such as Algorithmica and ACM Transactions on Database Systems (TODS). Dr Pang has been invited to be PCs for more than 40 international reputable conferences. He reviewed journal articles for TODS; IEEE Transactions on Knowledge and Data Engineering; JWWW; IEEE Journal of Computer; Journal of Medical Systems; ICDE conference; ICDT conference, etc.

Ramamohanarao (Rao) Kotagiri received his degrees BE at Andhra University, ME at the Indian Institute of Science, Bangalore and PhD at Monash University. He was awarded the Alexander von Humboldt Fellowship in 1983. He has been at the University Melbourne since 1980 and was appointed a professor in computer science in 1989.

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