Special Issue on Artificial Intelligence Applications for E-services

Guest Editorial

Nowadays, various services can be digitalized and can be achieved by users via various digital carriers. For illustration, e-learning, e-banking, online shopping and even e-government, more and more traditional applications are becoming electronic service. To realize user requirements and behaviors of service-oriented age is a getting important issue. For examples, AI applications for e-Service Content Design, AI applications for E-learning, AI applications for Digital Content Design, AI applications for Learning Behavior Analysis, AI applications for E-finance, AI applications for Search Engine, AI applications for Knowledge Management, AI applications for Personalization e-service Recommender, Case Study of E-Service applications Practices and Business Model for E-Service Applications.

In this special issue, we invited some papers from AIAE (Artificial Intelligence Applications for E-services) 2009. All of these papers have been reviewed with second round and were recommended to contain 30% more new material to be accepted and published in this Special Issue.

The first paper "A Bibliometric Study of Search Engine Literature in the SSCI Database" investigates the publishing trends in the period 1995-2009 of search engine in the social sciences citation index (SSCI) database. Wen-Jen Yu and Shrane Koung Chou show that (1) the quantity of recent research on search engine study is expanding remarkably; (2) the frequency indices of author productivity appear to abide by Lotka's Law; (3) most research papers on search engine study are generated by multiple authors; and (4) applications of search engine study are most frequent in research areas such as information science, information systems of computer science, and interdisciplinary applications of computer science.

Next paper, "Maximizing Read Accuracy by Using Genetic Algorithms to Locate RFID Reader Antennas at the Portals" uses the GA approach to find the optimum solutions for the portal reader antennas placement problem. Chi-Chung Lee apply the GA approach and perform the experiments to validate the performance of the GA approach. The results showed that 60% of the results of the GA approach were in the optimum solution set of the exhaustion approach, and that the execution time of the GA approach is only 30% of that needed by the exhaustion approach.

In the paper "Applying Reinforcement Learning for the AI in a Tank-Battle Game", Yung-Ping Fang and I-Hsien Ting apply reinforcement learning, which is an unsupervised machine learning method in Artificial Intelligence to provide the non-player-characters (NPCs) in digital games more human-like qualities. The authors simulate a Tank-battle computer game and use the methodology of reinforcement learning for the NPCs (the tanks) to make this game become more interesting due to the enhanced interactions with the more intelligent NPCs.

News classification exists improper categories on Chinese webpage portals. This paper "An Automated Error Detection for News Webpages of Chinese Portal" demonstrates experiment in YAHOO news. Deng-Yiv Chiu, Chi-Chung Lee and Ya-Chen Pan integrate genetic algorithms and multi-class support vector machine classifiers to construct an automated classification error detection approach for Chinese news classification. A genetic algorithm is utilized to select four feature thresholds used to obtain representative features/words of each class. The multi-class SVM classifier is then trained to construct an appropriate classifier to aid automated classification error detection.

Paper "People Recognition for Entering and Leaving a Video Surveillance Area" proposes a people recognition method for moving people of entering and leaving a video surveillance area employing the spatial-based feature of single-pedestrian image in conjunction with color vector. The spatial-based features are employed for its different location from variant parts of the human body. Da-Jinn Wang Chao-Ho (Thou-Ho) Chen, and Chien-Tsung Lee peopose a histogram-based framework is used to describe the color vector of variant parts of the moving people. This method is able to track and identify the moving people successfully in different outdoor environment based on variance of samples. A series of experimental results illustrate that this method can track and identify automatically while the moving people enter or leave a video surveillance area.

Cybercrime is a worsening problem in modern world. Ecrime may lead to financial problem and personal information loss. This paper "Attacking and defending perspective of e-Crime behavior and psychology: A systemic dynamic simulation approach" refines the crime theories and proposes new methods of predicting e-crime should be further developed. Deng-Yiv Chiu, Chen-Shu Wang and Tien-Tsun Chung constructed a system dynamic simulation model from both e-crime attacking and defending side respectively. Various decision variables that related to behavior and psychology perspectives of victim and offender were added to proposed model. The actual ecrime data of Taiwan from Year 2000 to 2008 is applied in this model.

Chih-Kun Ke and Mei-Yu Wu developed a prototype system was developed to demonstrate the effectiveness of providing knowledge to help students solve learning problem(s). The paper "Adaptive Support for Student Learning in an e-Portfolio Platform by Knowledge Discovery and Case-based Reasoning" uses Information Retrieval technique to extract and analyze key concepts from the student's previous e-portfolio records. Various context-knowledge views were constructed based on discovered knowledge rules.

We selected one paper integrating assessment method to estimate learner's ability and cluster learners in collaborative learning environment. Wen-Chih Chang, Te-Hua Wang and Mao-Fan Li propose "Learning Ability

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Clustering in Collaborative Learning". In this paper, the authors integrate K-means clustering method and IRT forecasting process to solve the grouping issue in collaborative learning. With a better grouping solution, teachers then can adjust the learning materials adaptively and teach students according to the learning aptitude.

In "Feature Selection via Correlation Coefficient Clustering", Hui-Huang Hsu and Cheng-Wei Hsieh propose a novel method using correlation coefficient clustering in removing similar/redundant features. The collected features are grouped into clusters by measuring their correlation coefficient values. The most class-dependent feature in each cluster is retained while others in the same cluster are removed. Thus, the most class-related and mutually unrelated features are identified. The proposed method was applied to two datasets: the disordered protein dataset and the Arrhythmia (ARR) dataset.

Finally, in paper "An Item Selection Strategy Based on Association Rules and Genetic Algorithms", Ming-Hsiung Ying, Shao-Hsuan Huang, and Luen-Ruei Wu propose a novel item selection strategy implemented by computer and is based on assessment theory, association rule, genetic algorithms and a revised Bloom taxonomy. The proposed strategy ensures that test is high quality.

We hope that the readers of this Special Issue enjoy reading and finding it useful in Artificial Intelligence Applications for E-services research. We would like to thank all the authors who worked hard to add and prepare substantial materials to the conference versions. Also, we would like to thank the Editor In Chief, Kassem Saleh for his patience throughout this process.

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Deng-Yiv Chiu received the B.A. from Averett College, Virginia, USA in 1988, M.S. from University of Maryland, USA in 1990. He received the Ph.D. in Computer Science from Illinois Institute of Technology, USA in 1994. After working as an assistant professor at Dept. of Math and Computer Science, Chicago State University, USA and as a system analyst at John Deere, Inc., USA, he has been an associate professor/ full professor at Chung Hua University, HsinChu, Taiwan since 1996. His research interests include machine learning, information retrieval, and their applications to knowledge management and finance.

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Wen-Chih Chang received the B.S.B., M.S., and Ph.D. degrees from the Department of Computer Science and Information Engineering of Tamkang University. His research interests include mobile agent, Game based learning, cooperative learning, petri net, web technology and e-learning specifications (ADL SCORM, IMS SS and IMS QTI). He is an assistant professor in Department of Information Management, Chung Hua University, Taiwan.