

## Special Issue on Research Findings in Software Technology and Applications

## Guest Editorial

In present era, information has become an important factor in productivity and strategic resources for social development. Information technology is the world's most advanced productive forces. Because of information technology development over the past 50 years, the transformation of society is enormous. Information technology will continue to change human society in the 21st century. As with previous industrial revolution, information revolution stems from major innovation in science and technology, promotes the tremendous progress to productive forces, and promotes the new stage of civilization. The information technology progresses swiftly and violently, and is leading the entire economic system rapid renewal, all-round upsurge. Information technology and its applications are developing rapidly, and has become main essential engines for the world's scientific and technological progress and human society advance. IT (Information Technology) is the general term for various technologies used to manage and process information. It mainly applied the computer science and communications technology to design, development, installation and implementation of information systems and application software. It is also often referred to as Information and Communications Technology (ICT). Its rapid development is supported by two big supporting-heaven pillars that are the computer science technology and the communication engineering technology.

In order to expand and promote information technology and its application, academic exchange and mutual cooperation among researchers, developers, applications, administrators, educators and learners in the field of worldwide. The International Association of Information Technology and Applications (IITAA) have been successfully held the 2009 International Forum on Information Technology and Applications (IFITA 2009), and the 2009 International Forum on Computer Science-Technology and Applications (IFITA 2009). Many scholars participated actively in the academic exchange activities, and presented their research results. Some researches and findings in Software Technology and Applications are selected here:

**“Research on RFID Integration Middleware for Enterprise Information System”** Considering the requirements of RFID middleware and business process integration with enterprise information systems, an integration framework for RFID middleware based on business process rule and data stream technologies are introduced.

**“Test Sequence Generation for Distributed Software System”** considers the test case generation for distributed software (a test case contains one or more test sequences).

In **“Research on Algorithm and Model for Indefinite Multi-objective Decision Making”**, Firstly construct a range pole plan and introduce the policy-maker risk-preference weight. Then with three tuples (Limit low similarity, Risk degree, Risk-preference value) reflect the risk-degree existing in the decision-making process. At last, construct the risk-weighted similarity measure operator (RWSMO) to measure the risk balance similarity's size between each of decision schemes and the range pole plan.

**“Study on Pricing Model of Online Auction under Competitive Strategy”** Firstly gives the overview of the online auction pricing mechanism and introduces the e-commerce auction market and its characteristics on the one hand. On the other hand, it discusses the factors affecting the price of online auctions from three aspects, the information flow, the business objectives and the risk factors.

**“Constrained Optimal Controller Design of Aerial Robotics Based on Invariant Sets”** An explicit optimal controller for hybrid systems based on multi-parametric quadratic programming (mp-QP) is proposed.

**“The Application of Fuzzy Neural Network in Fault Self-diagnosis System of Automatic Transmission”** According to the design procedure of fault self-diagnosis system and features of automatic transmission system, the list of relation and mapping between fault symptoms and fault causes are made in this paper. Applying the approach of fault self-diagnosis based on fuzzy neural network, fault diagnosis of the automatic transmission electronic control system is realized. The structure of fuzzy neural network and its corresponding learning method and pretreating strategy about the training samples are introduced in this paper.

**“Fuzzy Random Dependent-Chance Programming Models of Loan Portfolio”** Proposes two fuzzy random dependent-chance programming models of loan portfolio, one is minimize the mean chance of a bad outcome under the certain expected return rate, one is maximize the mean chance of the prospective return rate under the certain expected return rate. Hybrid intelligent algorithms are employed to solve the models.

**“Research on Target Detection and Automatic Extraction of Region of Interest in Infrared Serial Images”** A new stepwise approaching and recurring threshold search algorithm based on two-dimensional maximum entropy principle was proposed by studying recurring formulation optimized of two-dimensional maximum entropy in order to realize to detect target and extract ROI of serial images under complex background. The algorithm above realizes automatic extraction of ROI in Infrared serial images.

**“Approximation Algorithm and Scheme for RNA Maximum Weighted Stacking”** the general problem of pseudoknotted RNA structure prediction, maximum weighted stacking problem is presented based on stacking actions, and its polynomial time approximation algorithm with  $O(n \log n)$  time and  $O(n)$  space and polynomial time approximation scheme are given.

“**Research on Spatial Data Line Generalization Algorithm in Map Generalization**” introduced the curve fit algorithm about line generalization in map generalization, then analysed it in detail.

“**Personality’s Influence on the Relationship between Online Word-of-mouth and Consumers’ Trust in Shopping Website**”, did a survey on 162 college students, with an aim to find out the role of consumers’ personality in their trust in the website as far as the online word-of-mouth is concerned. All the data collected are analyzed by SPSS 15.0 and LISREL. It shows that there is a significant difference between the introverted consumers and the extroverted consumers viewing their attitude towards online word-of-mouth.

It is our hope that the readers of this Special Issue could find and would enjoy something, such as the academic ideas, methods and enlightening from the papers in this Special Issue.

#### Guest Editors:

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**Zhou Qihai** (1947-) is a Full Professor (from 1995), Doctor’s (and Master’s) tutor and a head of Information Technology Application Research Institute, School of Economic Information Engineering, Southwestern University of Finance and Economics (SWUFE), China. He graduated in 1982 from Lanzhou University, China; has been working in SWUFE since 1982, successively hold posts from teaching assistant (1982-1987), lecturer (1987-1991), vice professor (1991-1995, promoted anomaly in 1991), professor (1995-today, promoted anomaly in 1995); and got the titles of both “Outstanding experts (enjoyed government subsidies) with outstanding contributions of Sichuan province, China” (summa cum laude of Sichuan province government, 1996) and “One hundred academic and managerial leading heads of China informationalization” (summa cum laude about this domain in China, 2006). He has published 46 academic books and over 212 academic papers; and is President of IITAA (International Information Technology & Applications Association), Chair or Organizing Chair of some important international conferences. His research interests are in algorithm research, computational geometry, isomorphic

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