Editorial

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Biographical notes: Ruili Wang received his PhD in Computer Science from Dublin City University and he is a Senior Lecturer in Computer Science at Massey University, New Zealand. His research interests include mathematical modelling, data mining, signal processing, knowledge management and workflow. He is the members of the editorial boards of the International Journal of Business Intelligence and Data Mining, and the International Journal of Modelling, Identification and Control. He is currently supervising five PhD students and holding several research grants.

W.L. Xu received a BE in Manufacturing Engineering and an ME in Mechanical Engineering from Southeast University, China, 1982 and 1985, respectively and a PhD in Mechatronics and Robotics from Beijing University of Aeronautics and Astronautics, China, in 1988. He is a Professor in Mechatronics at the Institute of Technology and Engineering, Massey University, Auckland, New Zealand. Prior to joining Massey in 1999, he worked at the City University of Hong Kong, University of Stuttgart, Germany and Southeast University, China. His current research interests include chewing robotics, orthopaedic robotics and diagnostic biosensor. He is a fellow of IPENZ (Institution of Professional Engineers of New Zealand). He is a senior member of IEEE and serves as an Associate Editor for *IEEE Transactions on Industrial Electronics* and Regional Editor for *International Journal of Intelligent Systems Technologies and Applications*.

Intelligent decision support systems have become increasingly popular in many fields. New generation systems now outperform the previous systems by adopting innovative AI techniques. The goal of this Special Issue is to provide a snapshot of the current

research activities and progress in intelligent decision support systems in business and education in Australasia. The emphasis of this special issue is on publishing papers that demonstrate original and non-trivial works in all areas of intelligent decision support systems with applications in business and education.

This Special Issue gathers some research results related to various aspects of intelligent decision support systems, such as decision making under uncertainty, data mining for financial markets, multiagents in E-business and affective tutoring systems.

The first nine papers mainly focus on intelligent decision support systems and their applications in business. Fan and Deer investigated evidential reasoning in multicriteria decision making under uncertainty. They introduced a two-level transferable belief model to the reasoning process and a general interval-based Dempster-Shafer belief structure to secure reasoning under the same frame of discernment. Lin and Cao proposed the in-depth data mining technologies to overcome the disadvantages of current data mining methods. They implemented a decision-support system with robust genetic algorithms. Also, by integrating the expert experience and domain knowledge constraints into the proposed system, the performance of stock-rule pairs, to generate alert signals and to decide the stock numbers for the various investments, has been significantly improved. Chen and Cao put forward a novel three-layer integrated framework composed of Analysis, Synthesis and Investment to integrate multidimensional event factors in investment decision. Schild and Zeleznikow identified similarities and differences between discretionary decision making in legal tasks and concluded how (and whether to) to develop software to model discretionary tasks and where applicable decide upon appropriate inferring techniques. Zhang, Zhou and Wang studied the trust in multiagent systems, especially in agent-mediated E-commence. Obviously, the trust plays an important role in determining who and how to interact in open and dynamic environments. They developed an improved trust model based on the Confidence-Reputation model proposed by Ramchurn et al. Zhang and Zhou proposed a novel matchmaking algorithm by incorporating the track records of agents in accomplishing previously delegated tasks. Zheng and He reviewed the research conducted in Support Vector Machines (SVM), which is one of the important AI techniques used in decision support systems. Xu, Wang, Marsland and Rayudu developed an efficient algorithm for mining frequent closed itemsets in dynamic databases. Hawking, Foster and Stein presented a survey to identify Business Intelligence (BI) implementation patterns. Their paper gives an integrated and evolutionary picture of how BI solutions are adopted in Australian companies.

This Special Issue also includes two papers related to education. Gao, Zhang and Hawryszkiewycz developed a high level timed Petri Net based approach used to provide some kinds of adaptation for learning activities. Alexander, Sarrafzadeh and Hill conducted an observational study of human tutors and to learn how human tutors adapt to the affective state of students. This knowledge can then be used to implement the tutoring strategies of an affective tutoring system, which is a critical foundation of intelligent tutoring systems.

Finally, we would like to thank all authors who contributed to this Special Issue for their timely submission and revision. Moreover, we would like to thank all anonymous reviewers for their critical suggestions on improving these papers. We would also like to thank the staff in Inderscience for their support.

Last but not the least, our sincere thanks go to Editor-in-Chief Dr. M.A. Dorgham for his approval of this Special Issue.