Preface

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Biographical notes: Sapna Tyagi is working as Asst. Professor with Institute of Management Studies, Ghaziabad, UP, India with interests in radio frequency identification system, data warehousing, knowledge discovery, data analysis, decision support, and the automatic extraction of knowledge from RFID data and OLAP. She has more than four years experience in her research area. She is contributing to the research community by various volunteer activities (reviewing, editing).

Ajith Abraham received PhD degree from Monash University, Melbourne Australia and a MS from Nanyang Technological University, Singapore. His research and development experience includes over 17 years in the industry and academia spanning different continents in Australia, America, Asia and Europe. He works in a multi-disciplinary environment involving computational intelligence, network security, sensor networks, e-commerce, web intelligence, web services, computational grids, data mining and applied to various real world problems. He has authored/co-authored over 7000 refereed journal/

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conference papers and book chapters and some of the papers have also won best paper awards at international conferences and also received several citations. He is a senior member of IEEE, IEEE Computer Society, IEE (UK), ACM etc.

Ashraf Darwish received his PhD degree in Computer Science in 2006 from Computer Science Department at Saint Petersburg State University (specialisation in Artificial Intelligence), and joined as Lecturer (currently Assistant Professor) at the Computer Science Department, Faculty of Science, Helwan University in 2006. He is a member of such notable computing associations as the IEEE, ACM, EMS (Egyptian Mathematical Society), QAAP (Quality Assurance and Accreditation Project, Egyptian Supreme Council), Quality Assurance and Accreditation Authority (Egypt), Board of the Russian-Egyptian Association for graduates.

Mohammad Ayoub Khan is working with C-DAC (Ministry of Communication and IT), Govt. of India with interests in radio frequency identification, microcircuit design, and signal processing, NFC, front end VLSI (electronic design automation, circuit optimisation, timing analysis), placement and routing in network-on-chip etc. He has more than seven years' experience in his research area. He has published more than 50 papers in the reputed journals and international IEEE conferences. He is contributing to the research community by various volunteer activities. He has served as Conference chair in various reputed IEEE/Springer international conferences. He is member of professional bodies of IEEE, ACM, ISTE and EURASIP society.

The computational intelligence is relatively young discipline that combines many disciplines like fuzzy systems, neural network, philosophy, neurobiology, evolutionary biology, psychology, economics, political science, sociology, anthropology, control engineering, and many more. The computational intelligence can be looked as a new way to study the old problem of the nature of knowledge and intelligence. However, computational intelligence require more powerful experimental tool. Also, to make efficient and intelligent decisions by machines, we need to acquire and mine knowledge in terms of experience. Another emerging area of Artificial Intelligence and machine learning is with techniques such as artificial neural networks (ANN) and clustering, genetic algorithm (biologically inspired approaches) and Support Vector Machines (statistical approach) is an integral part of computational intelligence. In machine learning a significant research has been devoted to unsupervised learning methods capable of discovering relevant structure in data without human intervention. These emerging areas in computational intelligence offer flexibility, which has been focus of much research in the past decade.

We received several paper submissions, which were all peer-reviewed by 20 professional reviewers. Finally, 6 submissions were accepted for publication in this special issue on '*Trends in Computational Intelligence*'.

The first paper titled 'Neuro-fuzzy integrated system with its different domain applications' presents an interesting system for coronary heart disease. Authors have proposed architecture of a neuro-fuzzy integrated system. Also, an error backpropagation algorithm to adjust the membership functions of each variable and optimise fuzzy rules is developed.

The experimental results have demonstrated that system is suitable for the identification of patients with high/low cardiac risk.

The second accepted paper titled 'Supervised and semi-supervised learning in text classification using enhanced KNN algorithm: a comparative study of supervised and semi-supervised classification in text categorisation' has presented very nice application of semi-supervised learning in text classification. Authors have experimented by assigning different weights to the features in different classes based on the concept of variance. Authors have found that supervised classifier is marginally better than semi-supervised. Therefore, semi-supervised learning may be applied in cases where very limited training data is available.

The third paper titled 'An Intelligent routing approach using genetic algorithms for quality graded network' presents an efficient routing technique in general network. Authors have proposed an algorithm using genetic algorithm for a grade-based two-level node selection method. Authors have saved the data learnt from the topology.

The fourth paper titled 'Particle swarm optimisation with differential mutation' has applied first mutation operator adopted from Differential Evolution (DE) algorithm decreasing inertia weight (PSO-DMLB). Also, authors have applied proposed algorithm on well-known benchmark unconstrained functions that show the effectiveness.

The fifth paper titled '*gNIDS*: rule-based network intrusion detection system using genetic algorithms' has presented a detection of intrusions in computer networks. For effectiveness, authors have applied genetic algorithm along with machine learning technique to identify harmful attack types. The experimental result shows that proposed method is efficient with respect to good detection rate and low false positives.

The last paper titled 'Particle swarm optimisation for power quality improvement of a 12-pulse rectifier-chopper fed LCI-synchronous motor drive' investigates about optimisation of passive filter for power quality improvement of a 12-pulse rectifier-chopper fed load commutated inverter (LCI) based synchronous motor (SM) drive. Authors have simulated the proposed design in MATLAB-SIMULINK environment for three varieties of loads on LCI-SM drive. The experimental results show considerable improvement in the power quality at the input AC mains of the LCI-SM drives.

We would like to thanks the authors who submitted their excellent research works to this special issue titled '*Trends in Computational Intelligence*' and all the reviewers who offered their time and provided numerous useful comments to make the submitted research works much better. Further, this special issue could not have been published without a publisher. We wish to thank the Editor-in-Chief Prof. Johan Potgieter, Dr. M.A. Dorgham, Dana Mitchell, Liz Harris, and Richard Dick Sharp of Inderscience for their efforts and support.