Introductory Editorial

B. Nagaraj¹ · Danilo Pelusi² · Joy I.-Z. Che³

Published online: 3 April 2017

© Springer Science+Business Media New York 2017

Communication devices have become a vital part of our lives, especially wireless personal communication. The increasing demand for higher service quality has ushered in a new era of technological innovation. Due to the nonlinear nature of the environment, major changes to the current system are needed. Over the past decade, soft computing has emerged as a potential candidate for solving intricate global optimization problems, which are difficult to solve by traditional methods. In the current scenario, image processing, signal processing, industrial optimization, and control system and power system applications present myriad complexities that must be unraveled by researchers, who are using soft computing tools to solve these problems. Popular soft computing techniques for global optimization include genetic algorithms (GA), differential evolution (DE), ant colony optimization (ACO), particle swarm optimization (PSO), artificial bee colony (ABC), and the firefly algorithm (FFA). These methods have been successfully applied to a wide range of benchmark and real-world application problems. In wireless communication, soft computing will play a major role in uncertainty management, optimization, and prediction, and may also be used in classification. Machine learning algorithms such as artificial neural networks learn by experience and predict the output for the betterment of the system. Uncertainties arising due to incomplete modeling and measurements are handled using fuzzy logic, either in a standalone manner or in conjunction with optimization and prediction algorithms. The synergistic integration of different soft computing tools is best

✉ B. Nagaraj
nagarajice@gmail.com; nagaraj@kce.ac.in

Danilo Pelusi
dpelusi@unite.it

Joy I.-Z. Che
jchen@mail.dyu.edu.tw

¹ Karpagam Innovation Centre, Karpagam College of Engineering, Coimbatore, Tamilnadu 641 032, India

² Department of Communication Engineering, University of Teramo, Teramo, Italy

³ Department of Communication Engineering, Dayeh University, Changhua, Taiwan

demonstrated in solving problems related to communication and mobility in wireless networks. This special issue explores many strategies and solutions for real-world practical issues in wireless personal communication.

Prof. B. Nagaraj Professor and Head of the Electronics and Telecommunication Engineering Department/Karpagam Innovation Centre at Karpagam College of Engineering, Coimbatore, India, he received his M.E. and Ph.D. degrees from Anna University and Karpagam University in 2004 and 2010, respectively. In 2005 he joined the Kamaraj College of Engineering in India as a lecturer, and worked there in various positions for 12 years (till May 2013). His technical expertise and research interests include control systems, automation, soft computing, and high-speed signal processing. He received the Best Researcher Award from Karunya University for the best research paper of the year in 2010. He is the author or co-author of more than 48 refereed publications in journals and conferences. He has filed for five Patents and published in the Indian Patent Journal. He is a member of various professional bodies including IEEE, SREE, MAENG, IACSIT, ISTE, and IETE. He is a reviewer for such reputed journals as Elsevier, Wiley, and Inderscience, and has been a guest editor for special issues of Hindawi, Elsevier, Inderscience, and Springer.

Prof. Danilo Pelosi Teacher in the Faculties of Communication Sciences and Bioscience and Agro-Food and Environmental Technology, his research interests lie in coding theory and artificial intelligence. He is also interested in signal processing, pattern recognition, fuzzy logic, neural networks, and genetic algorithms. Assistant Professor in Computer Science from 2009 to 2012 at the University of Teramo, he involved himself in the research and development of control systems optimization and database management systems for the astronomical observatory Collurania "V. Cerulli" of Teramo. Reviewer of international journals and conferences, he is a member of the editorial boards of *The Journal of Universal Computer Science*; the *International Journal of Advances in Telecommunications, Electrotechnics, Signals and Systems*; *Engineering, Technology & Applied Science Research*; and the *Science Journal of Circuits, Systems and Signal Processing*. He was a member of the Ph.D. board in Epistemology of Informatics and Social Changes (University of Teramo) and administrator of the

e-learning platform e-RID of the University of Teramo from 2009 to 2012; he has a Ph.D. in Computational Astrophysics and a degree in physics from the University of Bologna.

Prof. Joy I.-Z. Chen was born in Taichung, Taiwan. He received his B.Sc. degree in Electronics Engineering from the National Taiwan Technical University, Taipei, Taiwan, and the M.Sc. degree in Electrical Engineering from Dayeh University, Changhua, Taiwan, in 1985 and 1995, respectively. In 2001, he received his Ph.D. degree in Electrical Engineering from the National Defense University, Tao-Yuan, Taiwan. He is currently a full professor in the Department of Communication Engineering, Dayeh University, Changhua, Taiwan. Prior to joining Dayeh University, he worked as a technical manager at Control Data Company (Taiwan branch) from September 1985 to September 1996. His research interests include wireless communications, spread-spectrum techniques, MIMO and OFDM systems, and wireless sensor networks. Dr. Chen has published a large number of papers in SCI/EI journals addressing the physical layer for wireless communication systems. He also made contributions to the development many applications for IoT (Internet of Things) technology and

owns various patents authorized by the Taiwan Intellectual Property Office (TIPO). In addition, Dr. Chen has served in many important positions in international conferences.