Intelligent Computing in Multidisciplinary Engineering Applications

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The special issue aims to develop intelligent computing paradigm in engineering applications. The growing requirement of automation has paved a much wider acceptance of machine learning as a basic approach for intelligent system building. Advances in theories, concepts (mathematical as well as physical) and methodologies of artificial intelligence, soft computing and machine learning are the key focus areas in this special issue. Papers were called from researchers across the globe on the above-mentioned theme. Submissions are accepted from all branches of engineering, mainly Computer Science and Engineering and Electronics and Electrical Engineering. Good-quality works are found to be in the domain of data engineering and pattern recognitions. After a rigorous review process, only 38 papers are shortlisted for this special issue.

The research articles in this issue are comprised of emerging techniques and applications of intelligent computing to the areas of computer security, image processing, antenna design, cloud computing, etc. Intelligent techniques and machine learning algorithms have been used to solve various issues in engineering applications in the domain of Computer Science, and Electronics and Electrical Engineering. Readers of this special issue will find it very interesting and useful for their research, and further improvements of suggested future scope in each article can be taken up. All 38 articles are worth reading and provide ample information for further research. Authors have presented the concept, and simulation models are appropriately designed with results

discussion. To give a first-hand information editors have picked up randomly few articles here as example. The article “Privacy-preserving classification rule mining for balancing data utility and knowledge privacy using adapted binary firefly algorithm” addresses the problem of classification rule hiding by projecting a novel method based on data distortion approach. To select the best possible way of altering the instances and then selecting the optimal instances which reduces the loss of non-sensitive classification rules, a computational intelligence technique binary firefly algorithm is adapted with necessary changes. In “Image Steganography Capacity Improvement Using Cohort Intelligence and Modified Multi-Random Start Local Search Methods,” two steganographic techniques have been proposed, which use JPEG compression on grayscale image to hide secret text. The proposed work also presents two novel optimization algorithms applied on steganography which are based on the concept of cohort intelligence (CI) with cognitive computing (CC) and multi-random start local search (MRSLS) algorithm. A novel evolutionary computing tool known as flower pollination algorithm (FPA) to linear array synthesis problem of antenna design was applied in the paper “On the Linear Antenna Array Synthesis Techniques for Sum and Difference Patterns Using Flower Pollination Algorithm.” In the paper titled “A Simulation Study of Adaptive Force Controller for Medical Robotic Liver Ultrasound Guidance,” a simulation framework has been developed to test the robotic force controller using four ultrasound image sequences of the liver. In “Advanced Topological Map Matching Algorithm Based on D–S Theory” it was proposed an advanced topological map matching algorithm based on the Dempster–Shafer (D–S) theory to improve the application for the high-density road network. An optimization method based on trajectory shape matching is also proposed to filter the candidate point set to enhance the algorithm accuracy. The results established that the data cleaning can eliminate the invalid data up to more than 5% of the collected data, where using the four factors can guarantee the basic demand of the data matching, while the D–S theory and shape matching can effectively improve the

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matching accuracy. In addition to the above there are many other articles which may be very useful to researchers.

It is hoped that this Special Issue will provide researchers and practicing professionals in the globe with valuable information which can be incorporated in the design of new intelligent systems in various engineering application areas, mainly in computing and data engineering.

The Editors offer thanks to the authors who responded spontaneously to the invitation to submit quality works for review and inclusion in this Special Issue. Special thanks are due to the referees for their meticulous reviews and for their

role in improving the presentations and the discussions in the papers. We profusely thank our guest editors Ajit Abraham, USA, A Louise Perkins, USA, and Jaume Anguera, Spain, for their valuable timely inputs to make this special issue possible.

The efforts of the entire AJSE Staff, especially Dr. Bassam El Ali, Editor-in-Chief (Managing Editor), and Mr. Mohammad Tanweer Alam, assistant to Managing Editor, and the Springer Publisher in the production of this Special Issue are highly appreciated and gratefully acknowledged.