Guest Editorial Preface

Special Issue on Advances in Intelligent Computing for Data Analysis

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Data analysis is an important yet extensive process with great potential to help researchers focus on the most important information in the data they have collected. Out of many techniques, intelligent computing is one of the major aspects to handle the process of data analysis. To be intelligent, a system that is in a changing environment should have the ability to learn. If the system can learn and adapt to such changes, the system designer need not foresee and provide solutions for all possible situations. Intelligent computing involves neural network, fuzzy logic, machine learning etc. These different methods are used to solve many of the diversified engineering problems. This issue focuses on the key research problems emerging at the junction of methods of intelligent computing and data analysis, serves as a broad forum for rapid dissemination of the latest advancements in the area. The major goal of this special issue is to bring together the researchers in intelligent based computing and data analytics to illustrate pressing needs, demonstrates challenging research issues and showcase the state–of-the-art of data analysis research, development and applications. The issue will be helpful to promote original research articles on theoretical, experimental and practical aspects intelligent computing approaches.

This issue is a collection of several diversified articles. A comparative study of infomax, extended infomax and multi-user kurtosis algorithms has been conducted by Swain et. al. for a blind source. They derived MUK algorithm with stochastic gradient update iteratively using MUK cost function abided by a Gram-Schmidt orthogonalization to project onto the criterion constraint. The algorithms are tested based on BSS and certain relevant parameters such as cross-correlation coefficient and Kurtosis are determined. Their study indicates that the extended infomax algorithm shows superior characteristic when compared to the others. Along with the proposed method, a case study is also presented for deconvolution of different signals using infomax and extended infomax. They concluded that the Kurtosis and correlation coefficient values are the most favorable for the Extended Infomax algorithm, when compared with the others.

Barik et. al. has proposed a modification towards visual cryptography by converting the message in the form of printable ASCII character based numerical encoding pattern in a binary Host image. The encoding of the message is represented as ASCII numeric and a texture of that numeric is arranged to form a binary host image. Then N numbers of shares build up but after stacking all the shares the decoding of the message will be achieved by converting ASCII numeric to the secret. Decoding of the message is performed simultaneously using visual perception and ASCII chart but a major factor has been noticed that still the proposed method does not require computation for decode rather

just a mapping of the numeric texture of ASCII code into corresponding text as the secret message. The proposed method embeds the ASCII numeric as object texture in a black and white image which is made up of straight line and noticed that the line can be scaled to larger extent to satisfy fidelity criteria. With comparison to other method the proposed method is equivalent in all dimensions in terms of security and contrast parameter.

An efficient approach called Node-Marking Conditioned Slicing (NMCS) algorithm to calculate conditioned slices for programs containing multiple procedures is developed by Sahu and Mohapatra. After constructing the system dependence graph (SDG), nodes satisfying condition, specified in slicing criterion, are marked. The slices are also found out during the marking process using marked nodes only. After constructing SDG, the NMCS algorithm chooses nodes that satisfy a given condition by the process of marking and unmarking. The algorithm also finds out conditioned slices for every variable at every statement during the process. NMCS algorithm employs a stack to save call context of a method. After the comparison with other methods and testing with various test cases, the proposed algorithm is found to be efficient.

Bihari and Tripathy have developed one method to calculate the actual contribution of individual author in a particular paper. Prime objective of this paper is to discover the most influenced actor in the network. For that they discussed the arithmetic, geometric and harmonic counting for finding actual contribution of the individual author of an article and then eigenvector centrality is used for scientific evaluation and for discovering the prominent author in the network. To do that, they set the initial impact of every node as the total share credit of individual from all papers and the collaboration weight is the correlation coefficient based on a normalized citation count by different counting methods.

Since the data are often vague in nature and complexity in handling their distributions and the hidden relations, there is a need for the tools that can cope with the lack of information, complexity, and imprecision. Among such tools, the intelligent computing techniques have been proved to be very effective. The methods of intelligent computing are quite powerful in handling the problems of data analysis. In this special issue, the diversifications and applicability of intelligent based methods have proved in solving majority of complex problems. As guest editors, we hope that spectrum of research works covered under this special issue will be of value for whole host of readers/researchers working in the domain of data analysis and related areas. We are grateful to our authors who have contributed their valued research to this special issue and always supported us during the reviewing of the articles. The technical standards and quality of published articles in this special issue is based on the strength and expertise of the reviewer board members who have been grossly involved in providing high quality reviews for the submitted papers. Our special thanks go to the Editor-in-Chief of the International Journal of Rough Sets and Data Analysis (IJRSDA), Dr. Nilanjan Dey for all his continued guidance and input on the policies of the journal as well as for his volunteered significant time despite of his busy schedules.

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