Guest Editorial Preface

Special Issue on Innovations in Knowledge Extraction and Generation Using Intelligent Information Retrieval Techniques

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Computational Intelligence is a very broad discipline, where the range of applications is widening, and is merging with other technologic topics with an ever increasing impact. The objective of this special issue is to bring together state-of-the-art research contributions as well as review articles that address recent developments in knowledge generation using computational intelligence so as to improve the decision-making capabilities of our computing devices.

This issue presents the latest developments in the domain of knowledge generation using computational intelligence. The methods used are close to the human's way of reasoning, i.e. it uses inexact and incomplete knowledge, and it is able to produce control actions in an adaptive way. As a scientific discipline, Computational Intelligence (CI) is the theory, design, application and development of biologically and linguistically motivated computational paradigms. Traditionally the three main pillars of CI have been Neural Networks, Fuzzy Systems and Evolutionary Computation. The expression computational intelligence (CI) usually refers to the ability of a computer to learn a specific task from data or experimental observation. This special issue provides a forum for innovative findings in the development of knowledge generation using computational intelligence.

This special issue therefore aims to publish high quality, original, unpublished research papers in the broad area of Knowledge Generation using Innovations in Computational Intelligence. Thus, presenting a platform to bring together researchers, practitioners, developers, environmentalists and users who explore new ideas, techniques, and tools, as well as to exchange their experiences.

We are pleased to present the Special Issue of the *International Journal of Information System Modeling and Design* entitled "Innovations in Knowledge Extraction and Generation Using Intelligent Information Retrieval Techniques" published as volume 12, issue 2. This special issue contains total of five articles. All these papers in this special issue cover a range of aspects of System design for knowledge extraction. Each of these papers has undergone full double blind peer review, prior to being selected for this special issue.

It opens with the research paper on 'A Deep Neural Network Model for Cross-Domain Sentiment Analysis' by Ms. Suman Kumari et.al. The main aim of this paper is to detect the opinion/sentiment expressed from the unstructured text. Most of the existing state-of-the-art methods based on supervised learning, and therefore, a labeled dataset is required to build the model, and it is very difficult task to obtain a labelled dataset for every domain. Cross-domain sentiment analysis is to

develop a model which is trained on labeled dataset of one domain, and the performance is evaluated on another domain. The performance of such cross-domain sentiment analysis is still very limited due to presence of many domain-related terms, and, the sentiment analysis is a domain-dependent problem in which words changes their polarity depending upon the domain. In addition, cross-domain sentiment analysis model suffers with the problem of large number of out-of-the-vocabulary (unseen words) words. In this paper, they propose a deep learning-based approach for cross-domain sentiment analysis. Experimental results show that the proposed approach improves the performance on the benchmark dataset.

The next paper is by Pooja Rani, et al., titled 'A Hybrid Approach for Feature Selection Based on Genetic Algorithm and Recursive Feature Elimination'. It focuses on feature selection in machine learning when applied to real world applications. As the data can have unnecessary and redundant features. These unnecessary features affect the performance of classification systems used in prediction. Selection of important features is the first step in developing any decision support system. In this paper, authors have proposed a hybrid feature selection method GARFE by integrating GA (genetic algorithm) and RFE (recursive feature elimination) algorithms. Efficiency of proposed method is analyzed using support vector machine classifier on the scale of accuracy, sensitivity, specificity, precision, F-measure and execution time parameters. Proposed GARFE method is also compared to eight other feature selection methods. Results demonstrate that proposed GARFE method have increased the performance of classification system by removing irrelevant and redundant features.

Next comes the paper from Vishal Kumar Gaur et al., titled 'Software-Based Testing Kit Using Machine Learning for Diagnosis and Predictive Analytics of COVID-19 Patients'. This research work is focusing on the analytics of dataset extracted which is having assorted attributes and these attributes are processed in the machine learning algorithm so that the prime factor can be recognized. In this research manuscript, the usage of COVID19 dataset is done and trained using supervised learning approach of Artificial Neural Network (ANN) on Levenberg-Marquardt (LM) Algorithm so that the predictions of the test patients' can be done on the key attributes of age, gender, location, and related parameters. The selection of LM based implementation with ANN is done as it is the faster approach as compared to other functions in neural networks.

The next paper is 'A Correlation-Based Feature Selection and Classification Approach for Autism Spectrum Disorder' by Manvi Verma et al. The article discusses classification approach for Autism spectrum disorder (ASD) using feature selection, the authors have taken the standard dataset of 1054 toddlers are taken which consists of two categories of toddlers namely affected by ASD and not affected. The dataset contains 17 features, amongst which 12 features have been selected using correlation-based feature selection and the Random Tree classifier gave the best overall performance with an accuracy of 98.9% with 17 features and 99.7% with the selected feature set. The results thus obtained have been compared with other state of art methods, and the proposed approach outperforms most of them.

Next comes the paper from Mr. Udit Jindal et al., titled 'Deep Learning-Based Knowledge Extraction From Diseased and Healthy Edible Plant Leaves'. The proposed research article presents the own designed convolution neural network for plant disease detection by using open access 'PlantVillage' dataset for three versions that are colored, grayscale and segmented images. The dataset consists of 54,305 total numbers of images and is being used to train a model that will able to detect disease present in edible plants. The proposed neural network achieved the testing accuracy of 99.27%, 98.04% and 99.14% for colored, grayscale and segmented images respectively. Proposed work also presents better precision and recall rates on colored image datasets.

As the official journal of the IGI Global Inc., IJISMD is proud to bring you this special issue. We hope that reading these high quality papers will inspire you to make your own submissions to future conferences and journals, and to support the research community.

We would like to thank all the authors who kindly contributed their papers for this issue, Editorial Reviewer Board and Associate Editors for their timely and constructive reviews for the betterment

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