Guest editorial

Special issue of knowledge and data mining for recent and advanced applications using emerging technologies

The aim of this proposal is to present an advanced growth of network and computer technology has ushered in a new Internet era characterized by knowledge and information. A new generation of technologies and approaches is vital to an effective and refined use of information treasures for them to be a valuable knowledge source. Generally, data mining is the core part of knowledge discovery. Its approaches and techniques have enormous application value and space in the digital library. Data mining technology can assist people to develop enormous amount of information in depth, extract the inherent connection of the heterogeneous information to endorse the digital library. The information detonation has led to the emergence of data mining and knowledge discovery as a rapid-growing field of research in computer science. Intelligent tools are required to extract useful knowledge from the enormous amount of data generated daily by governments, businesses and industry.

The seven papers in this special issue cover a range of aspects of theoretical and practical research development on knowledge and data mining. Further, electronic media have fueled the insist for data mining and knowledge discovery tools to discover subtle relationships and patterns in data for applications like market segmentation, customer profiling, fraud detection, credit risk analysis and assessment of retail promotions. In organizations, with the progress of information technology and extensive diffusion of database systems, great volumes of data are produced and collected by organizations. This spectacular expansion of data has produced a vital requirement for new analysis approaches which can astutely and automatically transform the processed data into useful knowledge and information. Hence, data mining and knowledge discovery have increased in significance and economic value. Knowledge discovery indicates to the overall process of discovering valuable knowledge from data. Moreover, the data mining indicates to the extraction of patterns from data. On the basis of the types of knowledge which can be discovered in databases, data mining methods can be generally structured into numerous groups, such as classification, clustering, data visualization, dependency analysis and text mining.

The first paper is "*A regression-based algorithm for frequent itemsets mining*" introduced a design/methodology/approach regression pattern (RP) model, in which the regression model and FIM method will be combined to solve the existing problems. Using a survey data of computer technology and software professional qualification examination, the multiple linear regression models is selected to mine associations between items.

In "*Global Search in Single-solution-based Metaheuristics*", worked on different starting points in initial step, searching locally in neighborhood of each solution, construct a global search in search space for the single-solution algorithm. To find a global optimum, it is provided for single-solution-based algorithms by searching different regions of the search space.

In "*A Novel Speech Emotion Recognition Model using Mean Update of Particle Swarm and Whale optimization-based Deep Belief Network*", proposed a new SER model that incorporates both gender and emotion recognition. Certain features are extracted and subjected for classification of emotions. For this, this paper uses deep belief network DBN model. Moreover, the MUPW algorithm is used for finding the optimal weight of DBN model.

In "*LFOPI Controller: A Fractional Order PI Controller Based Load Frequency Control in Two Area Multi-Source Interconnected Power System*", adopted lion algorithm (LA) for the LFC of two area multi-source interconnected power systems. The LA calculates the optimal

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gains of the fractional order PI (FOPI) controller and hence the proposed LA-based FOPI controller (LFOPI) is developed.

In "*Characterisation of Path Loss Model for Wireless Communication Channel Modelling*", a new path loss model is developed for the 28 GHz and 38 GHz frequency bands. Measurements for the indoor line-of-sight (LOS) and non-line-of-sight (NLOS) scenarios were taken every meter over a separation distance of 23 m between the TX and RX antenna locations to compare the well-known and the new large-scale generic path loss models.

In "*Distributed Elephant herding optimization for grid-based privacy association rule mining*", designed and developed a distributed elephant herding optimization for grid-based privacy association rule mining from the database. The proposed method of rule generation is processed as two steps: in the first step, the rules are generated using apriori algorithm, which is the effective association rule mining algorithm. In general, the extraction of the association rules from the input database is based on confidence and support that is replaced with new terms, such as probability-based confidence and holo-entropy.

The final paper is "*Recognizing Ragas of Carnatic Genre using Advanced Intelligence: A Classification System for Indian Music*", proposed an efficient raga identification system through which music of Carnatic genre can be effectively recognized. This paper also proposes an adaptive classifier based on NN in which the feature set is used for learning. The adaptive classifier exploits advanced metaheuristic-based learning algorithm to get the knowledge of the extracted feature set. Since the learning algorithm plays a crucial role in defining the precision of the raga recognition, this model prefers to use the grey wolf optimization (GWO).

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