

**Knowledge and data mining for recent and advanced applications using emerging technologies**

The 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. 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 three papers in this special issue cover a range of aspects of theoretical and practical research development on knowledge discovery and data mining. The proposal is devoted to the approach and skills used for knowledgebase systems or intelligent application development, including all areas of data architecture, data integration and data exchange, prediction, knowledge acquisition, representation, dissemination, codification and discovery techniques, and their technologies. It also focuses on their applications and case studies in industrial, medical and business sectors.

The first paper is: "Fuzzy-based MTD: A Fuzzy decisive approach for moving target detection in multichannel SAR Framework" exploited the Synthetic Aperture Radar (SAR) by receiving signals in the antenna in order to detect the moving targets and estimates the motion parameters of the moving objects. The restriction of the conventional techniques is concerning the deprived power density such that those received signals are fundamental to be transformed into the background ratio. To overcome this problem, the Fractional Fourier Transform is used in the Moving Target Detection (MTD) process.

In "GWLM-NARX: Grey Wolf- Levenberg Marquardt based Neural Network for rainfall prediction" defines the weather forecasting is the trending topic around the globe as it is the method to forecast the threats pretended by tremendous rainfall conditions which lead to damage the human life and properties. These problems can be controls only while the incidence of the worse weather is predicted in advance, and enough warnings can be executed



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in time. Hence, keeping in mind the significance of the rainfall prediction system, an effective rainfall prediction model by exploiting the Nonlinear Auto-Regressive with external input (NARX) model is proposed.

Guest editorial

In “Patch Antenna Design Optimization using Opposition Based Grey Wolf Optimizer” worked on Microstrip patch antenna is exploited for various communication purposes particularly in military and civilian applications. Although numerous methods have been made many attainments in various fields, few systems require additional enhancements to meet few challenges. However, they require application precise enhancement for optimally designing microstrip patch antenna.

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The special issue gives quick introductions to knowledge discovery and data mining ideas with particular emphasis on data analysis. It then covers the concepts and approaches which inspire association, classification, prediction and clustering. These topics are presented with instance, an exploration of the optimal techniques for each problem class, and with pragmatic rules of thumb concerning while to apply each method.

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