Guest Editorial Preface

Special Issue on Scalable Computing for Knowledge Discovery

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Scalable computing involves in using a computer system that can adapt to involve in enormous advance computing capabilities. The term scalability is also an essential ingredient for a network, process or business model. Moreover, the easy availability of high-speed networks and powerful computers has led to the emergence of many new and novel computing trends like cluster, grid, data-intensive, cloud, ubiquitous, autonomic, green, peer to peer, workflow, mobile, pervasive, service and many more. The highly scalable storage and computing capabilities can be spread over a wide geographical area and in fact, across many countries and continents. Knowledge discovery is the process of extracting, identifying and understanding meaningful knowledge from the data. This includes data storage and access, scaling algorithms and interpreting the results. Knowledge discovery is an interdisciplinary area of research that covers statistics, data mining, artificial intelligence, machine learning, high performance computing (especially, cloud computing), optimization, sensor network, forecasting and pattern recognition.

The enormous growth of Internet data has created a crucial need for knowledge discovery techniques. The scalable computing system is used by researchers, practitioners and scientists to execute many complex scientific and engineering applications. They are weather forecasting, vehicular communication technology, financial analysis, health and bioscience, predictive analysis, fabrication, simulations and so on. On the other hand, knowledge discovery has a wide range of applications, namely software redesigning, reengineering, reverse engineering, healthcare, business, biological data mining and e-marketing. The integration of scalable computing and knowledge discovery will give a wide-scope interdisciplinary research activities. The main objective of this special issue to provide the recent developments in the field of scalable computing, knowledge discovery and its applications which are contributed by various researchers by developing algorithms, simulations, theories and improved techniques.

Meher, Pande and Panda proposed a fairness algorithm, called time-aware task allocation for cloud computing environment. Their proposed algorithm can be used to provide fairness among the advance reservation and best effort leases. Godboley, Dutta and Mohapatra presented a new approach of energy consumption measurement during the enhancement of branch coverage and modified

condition/decision coverage of Java programs. They have used double refined code transformation for the coverage enhancement.

Tiwari, Mishra, Kumar and Kumar studied various supervised machine learning techniques, namely maximum entropy, Naïve Bayes and support vector machine and implemented these techniques on the Rotten Tomatoes dataset by utilizing n-gram approach. Sahoo, Sahoo, Dash and Mishra presented a work on the resiliency of the software defined networking architecture. The resiliency can be improved by placing the controller in the correct place and choosing the proper routing tree, once the location is known. They have used closeness centrality theorem for selecting the controller location and greedy routing tree for measuring the resiliency of the network.

Sahu, Jena and Verma presented nearest neighbor based outlier detection. They have shown that their method can detect outliers not only in the dense data set but also in sparse dataset in contrast to density based outlier detection. Mishra and Panda proposed four fault tolerant algorithms, namely server-based fault tolerant, client-based fault tolerant, client-server fault tolerant and connection-based fault tolerant for Internet distributed systems. They have compared the proposed algorithms with an existing algorithm in terms of number of failures, load factor and load standard deviation performance measure. Priyadarshini and Panigrahi proposed a new approach, called distributed scalar controller selection scheme with the concentric circular arrangement of camera sensors. Their proposed approach can be used to reduce the number of camera sensors and provide improved coverage of the event region.

As guest editors of scalable computing for knowledge discovery, we hope that variety of research work covered under this special issue such as cloud computing, software engineering, green computing, machine learning, software defined networking, outlier detection, fault tolerance and sensor networks. It has marvelous value for researchers, scientists and practitioners. At the same time, we are also grateful to the authors and co-authors for making their scholarly contributions to this special issue and their patience during crucial revision stages. The technical standard and quality of the published content is based on the strength and expertise of the submitted papers. In response to the call for submissions, scalable computing for knowledge discovery received 27 submissions. Each submission was peer reviewed by up to three international review committee members (from University of California, CSIRO, National University of Science and Technology, IITs, NITs, VSSUT, CVRCE to name a few). After receiving the reviews of the papers, the committee was selected a total of 7 papers for publication in this special issue of IJKDB. We wish to thank all the committee members for their hard work, dedication and timely submission of the reviews without which it would have been difficult to maintain the special issue schedule. We sincerely thank Joshua Herring, Assistant Development Editor from IGI Global for their cooperation and constant support throughout the publication process.

Our special thanks go to the Editor-in-Chief of the International Journal of Knowledge Discovery in Bioinformatics (IJKDB), Dr. George Perry, University of Texas, San Antonio, USA and Dr. Clyde F. Phelix, University of Texas, San Antonio, USA for all his support, efficiency and competence rendered to this special issue.

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