

# Guest Editorial Preface

## Special Issue on Design of Reliable, Secure and Intelligent Systems for Healthcare Applications

Pradeep Kumar Singh, Department of CSE, ABES Engineering College, Ghaziabad, India

Rajiv Kumar, Jaypee University of Information Technology, Wanknaghat, Solan, India

Ashutosh Sharma, School of Electronics and Electrical Engineering, Lovely Professional University Punjab, India

### INTRODUCTION

In recent years, the integrity of the several applications to the computer network makes the human being more social and dependable on the remote healthcare and E-healthcare services. This may be due to the services of social networks and media, but the major factors are the high-performance computation, secure reliable network infrastructure and innovation in biomedical sciences. The multimedia data of a critical patient is transferred from remote locations to the experts over the smart and reliable network. However, multimedia data of a patient is constituted of large number of bytes because health data keeps updating continuously. Therefore, emerging technologies such as big data, cloud computing, artificial intelligence play a key role in the data management. The other major issue in the healthcare data management is the data confidentiality, therefore security and privacy schemes to the healthcare data are also required.

### OBJECTIVE OF THE SPECIAL ISSUE

The objective of this published special issue is to concentrate on all the aspects and future research directions on healthcare services in context to reliable computer networks, healthcare data management and security & privacy.

We have received total 32 submissions for this special issue across the globe and after rigorous review process, only 05 manuscripts have been accepted for publication in this special issue. Details of all accepted manuscripts are as follows:

First paper is based on the “Future Perspective of Blockchain Technology” authored by Riya Sapra and Parneeta Dhaliwal. The work done by authors is focused on the basic framework of Blockchain model with the discussion of challenges being occurred in the implementation. In addition to this, various real-time applications have been explored using Blockchain technology for the medical applications specifically. In the medical applications, the security aspects are discussed using Blockchain technology which facilitates the ease of access of individual’s personal medical data. The analysis on the medical data using Blockchain technology has provided reliable and secure solution for medical data.

Second paper is based on topic of “Secure IoT-based Mutual Authentication for Healthcare Applications in Wireless Sensor Networks using ECC” authored by Deepti Singh, Bijendra Kumar, Samayveer Singh, and Satish Chand. In this paper, an efficient method using Elliptic Curve Cryptography (ECC) is proposed. In addition to Burrows-Abadi-Needham (BAN) logic, the authors advocate the use of random oracle model to enhance the security analysis of the scheme, resulting

in the needed safety while reducing computation and communication overheads. Finally, simulation is done to deploy AVISPA (Automated Validation of Internet Security Protocols and Applications) scheme which resists the passive and active attacks such as man-in-the-middle attack.

Third paper is based on the concept of “Knowledge Inferencing using Artificial Bee Colony and Rough Set for the Diagnosis of Hepatitis Disease” authored by Kauser Ahmed P & D. P. Acharjya. In this paper, the artificial bee colony and rough set method is being hybridized. In the initial phase, an artificial bee colony is employed to identify the chief features in the hepatitis dataset chosen for this study. In the next phase, the main features are analyzed via rough set generating rules. The proposed model is also applied to diagnose a disease with empirical validation, together with a comparative study.

Fourth article is titled as “Using Transfer Learning & Hierarchical Classifier to Diagnose Melanoma from Dermoscopic Images” authored by Priti Bansal, Sumit Gupta, Ritesh Srivastava & Saksham Agarwal. In this paper, a novel model is proposed to extract features of Convolutional Neural Network (CNN) with transfer learning, a hierarchical classifier comprising Random Forest (RF), K-Nearest Neighbor (K-NN) and Adaboost. In this paper, experimental results are presented to support the effectiveness of the proposed model as a better classifier to diagnose the medical images for melanoma.

The last paper is based on the “Fully Automatic Detection and Segmentation Approach for Juxta-Pleural Nodules from CT Images” authored by Vijayalaxmi Mekali and Girijamma H. A. In this paper, a fully automated method is developed to detect and segment Juxta-pleural nodules. In proposed methodology, lung parenchyma is segmented via iterative thresholding algorithm. The Centre Points Based Separation of Connected Lung Lobes algorithm (CPBSCLLA) is proposed for the separation of joined left lung lobe and right lung lobe to improve the nodules risk assessment rate. The validation of the proposed method is performed on LIDC-CT lung images. A fully automated method segment the pleural attached nodules with less computational time and high accuracy when compared with traditional watershed and region growing methods.

Special Issue Submission: Design of Reliable, Secure and Intelligent Systems for Healthcare Applications.

*Pradeep Kumar Singh*

*Rajiv Kumar*

*Ashutosh Sharma*

*Guest Editors*

*IJHISI*

*Pradeep Kumar Singh is a Professor and Head in Department of CSE at ABES Engineering College, Ghaziabad, India. Dr. Singh is life member of CSI, IEI and promoted to Senior Member Grade from CSI and ACM. He is Associate Editor of IJISC Journal Romania and IJAEC, IGI Global, Journal from USA. He has published nearly 100 research papers and authored 12 books from Springer and Elsevier. He has received three sponsored research projects grant of worth Rs 25 Lacs. He has total 780 Google scholar citations, H-index 16 and i-10 Index 25.*

*Rajiv Kumar is working as an Associate Professor at Jaypee University of Information Technology, Wazirpur, Solan, HP, India. He has published 27 papers in various reputed Journals and conferences which include indexing in Scopus & Web of Science. He has total 82 Google scholar citations in this account with H-index: 6 and i-10 index: 1. Dr. Rajiv Kumar is having one sponsored research project, which have been sanctioned from external funding agencies i.e. DST, India. He has edited four special issues in different Journals from IGI, Bentham Science etc.*

*Ashutosh Sharma is working as an Assistant Professor, School of Electronics and Electrical Engineering, Lovely Professional University Punjab, India. His interest includes in various research fields such as reliable and resilient data streams, location based services, ad-hoc and sensor networks. He has published 23 research papers and conferences with 81 Google scholar citations. He serves as an Editor in various journals like IGI, Springer, Elsevier and IEEE.*