Editorial

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Warm greetings and a happy new year to all our readers!!! We hope the upcoming year brings relief and progress to humanity. BJIT remains committed to delivering on its challenge of consistently showcasing and disseminating novel researches pertaining to computing applications and capable of altering the quality of human life. It is a matter of great privilege for me to unveil before you the thirty ninth issue i.e. Volume 14 Number 01 of the “International Journal of Information Technology” [An Official Journal of Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM), New Delhi] with acronym BJIT. From this volume onwards we have increased our frequency to seven issues an year. The issue is live on the Springer content platform SpringerLink and available to the prospective readers through Springer CS package globally.

Throughout the world, nations have started recognizing that Information Technology (IT) is now acting as a catalyst in speeding up the economic activities in efficient governance, citizens' empowerment, sustainable development and in improving the quality of human life. Recent advancements in IT have touched almost every conceivable area of human life. Its degree of pervasiveness, in day to day life, is rapidly increasing, every new day. On the backdrop of this, BJIT has accepted the challenge to consistently showcase, disseminate and institutionalize the rapidly changing huge knowledgebase globally, with authenticity and accuracy, having special focus on the new researches pertaining to IT applications for improving the quality of day to day life.

Volume 14 Number 01 presents a compilation of fifty papers, chosen out of over 500 manuscripts, that span a broad variety of topics from various emerging areas of Information Technology and Computer Science, especially addressing current research problems related to neuroimaging, software requirements analysis, wireless sensor networks, smart parking system, workload migration, cloud services and plant disease identification; to name a few.

Current methods to store and transfer medical neuroimaging data raise issues with security and transparency, and novel protocols are desirable. The first manuscript in this issue “Development of service-dominant business model for CAE software industry in Greater China: a case study”, Cheng-Yu Hsu et. al. evaluates proof-of-concept of a service-dominant business model for public cloud services on how to integrate significant software features and hardware criteria, how to measure service quality, and what business risks might take place. The second manuscript “Hybrid gated recurrent unit and convolutional neural network-based deep learning architecture-based visibility improvement scheme for improving fog-degraded images”, R. Suganya et. al. propositions a hybrid gated recurrent unit and convolutional neural network-based deep learning architecture (HGRU-CNN-DLA)-based visibility improvement scheme for improving fog-degraded images. The next manuscript “Real time fault detection in railway tracks using Fast Fourier Transformation and Discrete Wavelet Transformation”, Chayan Ghosh et. al. outlines the performance analysis of two mathematical models to detect faults on railway tracks. The manuscript “A modular approach to design ternary content addressable memory architecture in quantum dot cellular automata”, Mrinal Goswami et. al. implements a cost-efficient, single-layer design of CAM and its ternary form (TCAM) in QCA. The manuscript “Content based image retrieval on

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big image data using local and global features”, Suresh Kumar Kanaparthi et. al. proposes six different modes for processing image data. The next manuscript “PWEBSA: Twitter sentiment analysis by combining Plutchik wheel of emotion and word embedding”, Pravin Kumar et. al. intends the issue of polarization of Twitter sentiment analysis. Cloud Computing has emerged as a foremost technology in commercial space. The manuscript “Performance evaluation of task scheduling algorithms in virtual cloud environment to minimize makespan”, Rajbhupinder Kaur et. al. contends the makespan in cloud computing via a virtual environment on prominent task scheduling algorithms. The next manuscript “A low resource 3D U-Net based deep learning model for medical image analysis”, Girija Chetty et.al. advises a novel, fully automatic deep learning method for brain tumor segmentation in multimodal multi-contrast magnetic resonance image scans. The manuscript “Firefly and Grey Wolf search based multi-criteria routing and aggregation towards a generic framework for LEACH”, Devika G. et. al. addresses a novel LEACH algorithm for the increased lifetime of network in addition to increasing throughput. To control road accidents traffic lights need to be smarter. The manuscript “A novel algorithm for traffic control using thread based virtual traffic light”, Parul Choudhary et. al. captures the details of a novel thread-based virtual traffic light system for traffic management. The manuscript “Performance analysis of Geocast based location aided routing using Cache agent in VANET”, E. Gurumoorthi et. al. suggests novel hybrid routing protocols for better performance of VANETs. The manuscript “EES-WCA: energy efficient and secure weighted clustering for WSN using machine learning approach”, Pooja Gulganwa et. al. delineates a novel data-driven and machine learning-based Energy Efficient and Secure Weighted Clustering Algorithm (EES-WCA). Recognition of degraded offline handwritten characters of Gurmukhi script is a very challenging task. The manuscript “Degraded offline handwritten Gurmukhi character recognition: study of various features and classifiers”, Anupam Garg et. al. propagates a method for Gurmukhi character recognition. The manuscript “A novel CZP-BC-FLASH ADC using zero phase bubble error robust controller for reliable VLSI circuits”, M. Kalaiyarasi et. al. captures a novel flash ADC using Clocked-Improved Threshold Inverter Quantization (CITIQ) comparator and Zero Phase Bubble Error Robust Controller (ZPBEC). The manuscript “GEAD: generating and evaluating handwritten Eastern Arabic digits using generative adversarial networks”, Tarik Alaffif et. al. offers an intelligent GANs to generate handwritten Arabic digits in the Eastern Arabic numeral script. The manuscript “ACS LEACH protocol using optimized clustering and improved orthogonal matching pursuit in WSN”, Nandini S. Patil et.

al. details an Adaptive Compressed Sensing (ACS) to overcome the drawbacks of compressive sensing. The manuscript “A novel approach for rice plant diseases classification with deep convolutional neural network”, Santosh Kumar Upadhyay et. al. presents an efficient rice plant disease detection method based on convolution neural network approach. Recognition accuracy of cancelable biometric template is important. The manuscript “Multi-modal compound biometric feature set security and person authentication using cancelable 2D color barcode pattern generation technique”, Devendra Reddy Rachapalli et. al. details a two-dimensional (2D) color barcode, as an automatic method to produce the cancelable biometric template with improved recognition accuracy. The manuscript “Vision-based outdoor navigation of self-driving car using lane detection”, Amit Kumar et. al. develops a self-driving car physical prototype based on traditional visual method of lane keeping. The manuscript “Neural/fuzzy self learning Lyapunov control for non linear systems”, Abhishek Kumar et. al. evaluates Lyapunov theory based Fuzzy/Neural Reinforcement Learning (RL) controllers with guaranteed stability. The manuscript, “Analysis and design of circular fractal antenna array for multiband applications”, Sumeet Singh Bhatia et. al. designs and analyzes eight element circular fractal antenna arrays. Glaucoma is the popular blindness causing disease. The manuscript, “Early-stage detection of eye diseases on microblogs: glaucoma recognition”, Samer Muthana Sarsam et. al. investigates an early detection mechanism for glaucoma using social media posts. The manuscript, “Mathematical model for early stage identification of Parkinson’s disease using neurotransmitter: GABA”, S. Anita et. al. details a mathematical model for the neurotransmitter to diagnose parkinson’s disease in an early stage. The manuscript, “Generation of domain-specific vocabulary set and classification of documents: weight-inclusion approach”, Vandana Kalra et. al. evaluates a novel generic methodology for generating a domain-specific set of vocabulary. The next manuscript, “Automatic methods for classification of visual based viral and bacterial disease symptoms in plants”, Rajesh Yakkundimath et. al. empirically proposes a machine vision system for the automatic identification of plant disease symptoms, from color images. The manuscript, “On comparing the performances of MLP and RBFN on sales forecasting problem”, Raman Tiwari et. al. collates two sales forecasting models based for the sales forecasting problem. Varied machine learning algorithms have been successfully applied to handwritten character recognition in various language. The manuscript, “Concept based document similarity using graph model”, Sheetal S. Sonawane et. al. investigates a novel method for calculating the similarity of text documents. The manuscript, “A novel modified

current comparator based on extremely low voltage high compliance current mirror “, Monika et. al. introduces a new modified current comparator which can be employed in low voltage, low power application in modern current mode analog integrated circuits. The manuscript, “MoEA-DeployWSN-SB: three variants of multi-objective evolutionary algorithms for the deployment optimization strategy of a WSN in a smart building”, Nour El-Houda Benalia et. al. offers a novel a multi-objective deployment strategy that would establish an efficient scheme of sensor positions that can offer good quality of service. The manuscript, “Agent driven resource scheduling in wireless sensor networks: fuzzy approach”, Gururaj S. Kori et. al. details a high software agent based resource scheduling scheme. The manuscript, “Multi-step time series analysis and forecasting strategy using ARIMA and evolutionary algorithms”, Raghavendra Kumar et. al. deploys an efficient, customized hyperparameter selection strategy for the ARIMA model. The next manuscript, “Enhancement Sushisen algorithms in Images analysis Technologies to increase computerized tomography images”, P. Senthil et. al. builds a comparison learning of five contrasting techniques. The manuscript, “Enhanced classification of hyperspectral images using improvised oversampling and undersampling techniques”, Pangambam Sendash Singh et. al. outlays the mechanism to enhanced classification of hyperspectral images. The manuscript, “A review of supervised and unsupervised machine learning techniques for suspicious behavior recognition in intelligent surveillance system”, Kamal Kant Verma et. al. identifies mechanisms for human’s normal and abnormal activities recognition. Image compression is gaining importance in the medical field. The manuscript, “Performance analysis of a new fractal compression method for medical images based on fixed partition”, Amit Kumar Biswas et. al. proposes performance study of the three coding schemes of fractal compression for grayscale medical images based on fixed partition. The manuscript, “Personal identifiable information privacy model for securing of users’ attributes transmitted to a federated cloud environment”, Maria Abur et. al. empirically details a PIIPrivacy model for protecting user’s attributes on transit to the Federated Cloud Environment. The manuscript, “A system to transform natural language queries into SQL queries”, Arun Solanki et. al. emulates and proposes an improved system with three-tier architecture to transform natural language queries to SQL. The next manuscript, “A rough-set based approach for the prioritization of software requirements”, Mohd. Sadiq et. al. simulates the design of an effective framework method for the prioritization of software requirements using rough set theory. Managing human scripts demands automation in the present times. The manuscript, “Script identification: a review”, Rumaan Bashir simulates the varied efforts in the

same domain. The next manuscript, “Quantum image processing: challenges and future research issues”, Sanjay Chakraborty et. al. evaluates some different methods of image storage, representation and retrieval in a quantum system. Error-free data transmission over a wireless channel is a major barrier to achieving group communication in mobile ad hoc networks. The manuscript, “Multicast error correction method to support scalability in mobile ad hoc networks”, Dinesh Chander elaborates a novel approach for multicast error correction that uses the concept of forward error correction to reduce the packet retransmission in mobile ad-hoc networks. The manuscript, “Data center network energy consumption minimization: a hierarchical FAT-tree approach”, Jyotirmaya Mishra et. al. proposes a novel modified cost effective hierarchical Fat-Tree for building network-topology. The increasing risk of cyber crimes has forced organizations to adopt proactive defense strategies. The manuscript, “Cyber threat intelligence framework using advanced malware forensics”, Yansi Keim et. al. offers an efficient, novel design of a cyber-threat intelligence framework. The next manuscript, “Multi-task CNN for multi-cue affects recognition using upper-body gestures and facial expressions”, Soumaya Zaghbani outlays a novel mechanism to identify the affective state of the individual through his facial expression and upper body gesture. The manuscript, “Issues and challenges of class imbalance problem in classification”, Prabhjot Kaur et. al. details existing research trends used to solve class imbalance problem. The manuscript, “Sparse coding and improved dark channel prior-based deep CNN model for enhancing visibility of foggy images”, R. Suganya et. al. proposes a model for enhancing the visibility of foggy images. Verbal speech is the most common mode of communication among human race. The manuscript, “Text to speech conversion in Punjabi language using nourish forwarding algorithm”, Mamoon Rashid et.al. extends a new translation system where Punjabi text is converted into speech by using nourish forwarding algorithm. The manuscript, “To investigate an efficient resilience oriented routing mechanism for high speed networks”, Himanshi Saini et. al. details and analyzes unicast routing techniques and their performance under different traffic arrival distributions. The manuscript, “Design and prototyping of a security locker system for public places using RFID technology”, Muhammad Abdus Sobur designs and prototypes a cost effective security locker system to ensure the safety of the valuable objects and belongings of people in public places. The last manuscript, “Cross project defect prediction for open source software”, Anushree Agrawal et. al. analyzes the the feasibility of cross project defect prediction algorithms.

I am sure the contributions in this issue, which is an amalgamation of novel trends and technologies to improve

our life and sustainability in the present environment, will not only enrich our reader's knowledgebase but will also motivate many of the potential researchers to take up these challenging application areas and contribute effectively for the overall prosperity of the mankind.

As a matter of policy, all the manuscripts received and considered for the Journal, are double blind peer reviewed by at-least two independent referees. Our panel of expert referees posses a sound academic background and have a rich publication record in various prestigious journals representing Universities, Research Laboratories and other Institutions of repute, globally. Finalizing the constitution of the panel of referees, for double blind peer review(s) of the considered manuscripts, was a painstaking process, but it helped us to ensure that only the best, interesting and novel of the considered manuscripts are showcased and that too after undergoing multiple cycles of review, as required.

I wish to express my sincere gratitude to the entire editorial board, members of the resident editorial team and our panel of experts in steering the considered manuscripts through multiple cycles of review and bringing out the best from the contributing authors. I thank my esteemed authors for having shown confidence in BJIT and considering it a

platform to showcase and share their original research work. I would also wish to thank the authors whose papers could not have been published in this issue of the Journal, probably because of the minor shortcomings. However, I would like to encourage them to actively contribute for the forthcoming issues.

I will fail in my duty, if I do not thank the members of the team from the Springer, particularly Ms. Suvira Srivastav, Mr. Madan Ellappan, Ms. Jeyapradha Saravanan and Ms. Nidhi Chandok for their constant support in realizing the issue and presenting it before you.

The undertaken Quality Assurance Process involved a series of well defined activities that, I trust, went a long way in ensuring the quality of the publication. Still, there is always a scope for improvement, and so, I request the contributors and readers to kindly mail me their criticism, suggestions and feedback at bjit@bvicam.ac.in and help in further enhancing the quality of forthcoming issues.

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