Editorial

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Warm greetings 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 eighth issue i.e., Volume 13 Number 06 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 six 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 13 Number 06 presents a compilation of forty eight papers, chosen out of over 400 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 Blockchain, 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 “A novel decentralized model for storing and sharing neuroimaging data using ethereum blockchain and the interplanetary file system”, Sai Batchu et al. evaluates a proof-of-concept smart contract that stores patient brain tumor data such as patient identifier, disease, grade, chemotherapy drugs, and Karnofsky score. The second manuscript “Energy-efficient enhanced Particle Swarm Optimization for virtual machine consolidation in cloud environment”, S. P. Usha Kirana et al. propositions an optimal virtual machine replacement scheme that will be found with the energy consumption at the lowest. Diabetes Mellitus is a common disease affecting a large proportion of the population. The next manuscript “Modeling, simulation and computational analysis of plasmonic optical sensor using BaTiO₃ in diabetes mellitus”, Archana Yadav et al. outlines the design and simulation of a surface plasmon resonance (SPR) Sensor for better sensitivity performance in detection of diabetes mellitus. The manuscript “Enhanced lexicon E-SLIDE framework for efficient sentiment analysis”, Geetika Vashisht et al. implements a contribution of idioms as features in sentiment analysis

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task. The manuscript “Orientation angle based online motion control of an Aldebaran NAO humanoid robot in V-REP software environment using novel sunflower optimization (SFO) algorithm”, Aanjaney Gupta et al. proposes a Sunflower Optimization (SFO) algorithm based online motion and orientation planner for an Aldebaran NAO humanoid robot (NAO robot) in the Virtual Robot Experimentation Platform (V-REP). The next manuscript “Software fault prediction using lion optimization algorithm”, Somya Goyal et al. intends the metaheuristics available to select optimal feature subset from high-dimensional defect dataset. Strategic business alignment with IT is a common goal of almost every industry today irrespective of its size. The manuscript “Benchmarking strategic alignment of business and IT strategies: opportunities, risks, challenges and solutions”, Modupeola Dairo et al. contends that there is a need to align and harmonize different agendas and interests within an organization and improve the understanding of the value of Strategic Alignment. The next manuscript “A novel algorithmic approach of open eye analysis for drowsiness detection”, Nageshwar Nath Pandey et al. advises a novel algorithmic approach to recognize the driver’s drowsiness at its initial stage with remarkable accuracy. The manuscript “Performance evaluation of deep learning models in detection of different types of arrhythmia using photo plethysmography signals”, Tripti R. Kulkarni et al. addresses a novel deep learning algorithm for detection of five different types of Arrhythmias, using Photo plethysmography (PPG) signals. Breast cancer is the most dominant type of cancer after skin cancer. The manuscript “Cuckoo search based multi-objective algorithm with decomposition for detection of masses in mammogram images”, Pramod B. Bhalerao et al. captures the details of a hybrid breast cancer detection approach based on a multiobjective evolutionary algorithm (MOEA) and cuckoo search. The manuscript “A comprehensive analysis of wavelet tree based indexing schemes in GIR systems”, Dharmendra Kumar et al. suggests a novel indexing technique, named wavelet tree for indexing and retrieval of geographical information from the web. The manuscript “Simulative analysis of manchester coded DPSK FSO in diverse weather conditions”, Manisha Bharti et al. delineates a novel manchester coding format in Differential Phase Shift Keying with an object of increasing efficiency. Inter-organizational collaboration is an important aspect of organizational operations. The manuscript “Implementation and evaluation of the DAOM framework and support tool for designing blockchain decentralized applications”, Chibuzor Udokwu et al. propagates a method for development and implementation of the semantics of the DAOM framework for building decentralized applications. The manuscript “Sequential (t,n) multi secret sharing scheme for level-ordered access

structure”, Appala Naidu Tentu et al. captures a novel, secret sharing scheme for multiple secrets to realise LoAS. The manuscript “A novel approach to predict stock market price using radial basis function network”, Rajesh Kumar et al. offers an intelligent prediction model based on the radial basis function network (RBFN). The manuscript “Implementation and study of a novel approach to control adaptive cooperative robot using fuzzy rules”, Ganesh Entharakandi Narasimhan et al. details two co-operating mobile robots with a multilayer control system to enable the significance of a relative behavior. The manuscript “Cryptographic one-way hash function generation using twelve-terms 4D nonlinear system”, Musheer Ahmed et al. presents an efficient, hash generation scheme. Crop quality is an important facet of agriculture and the farming industry. The manuscript “Cross-dataset learning for performance improvement of leaf disease detection using reinforced generative adversarial networks”, Bhavana Nerkar et al. details a 2 level non-intrusive leaf disease detection model. In the current times, a plethora of smart devices are aiding us in our daily lives. The manuscript “MirrorME: implementation of an IoT based smart mirror through facial recognition and personalized information recommendation algorithm”, Khandaker Mohammad Mohi Uddin et al. develops a low-cost intelligent mirror system that can display a variety of details based on user recommendations. The manuscript “Characterize ingredient network for recipe suggestion”, Umang Nyati et al. evaluates certain frameworks for preparatory descriptive analysis of the ingredient-recipe preparation study.

The manuscript, “Energy and target coverage aware technique for mobile sink based wireless sensor networks with duty cycling”, Shivani S. Bhasgi et al. reviews and analyzes Energy and target coverage aware technique for mobile sink based wireless sensor networks. Requirements analysis is a sub-process of requirements engineering to identify and analyze the software requirements according to the stakeholder’s needs. The manuscript, “*Fuzzy attributed goal oriented software requirements analysis with multiple stakeholders*”, Chaudhary Wali Mohammad et al. investigates a fuzzy attributed goal oriented software requirements analysis. The manuscript, “Performance evaluation of distance metrics on Firefly Algorithm for VRP with time windows”, Divya Aggarwal et al. details a modification in randomness factor for enhancing the exploitation capability of firefly algorithm. The manuscript, “Mental arithmetic task load recognition using EEG signal and Bayesian optimized K-nearest neighbor”, Lakhan Dev Sharma et al. evaluates a novel task load recognition algorithm. The next manuscript, “A novel SETA-based gamification framework to raise cybersecurity awareness”, Fadi Abu Amara et al. empirically improves the employees’ cybersecurity awareness through an

interactive video game. The manuscript, “Fuzzy based energy efficient clustering for designing WSN-based smart parking systems”, Richa Sharma et al. collates a fuzzy based methodology to design an energy aware WSN based framework for smart parking systems. Varied machine learning algorithms have been successfully applied to handwritten character recognition in various language. The manuscript, “Offline handwritten Gurmukhi character recognition: k-NN vs. SVM classifier”, Anupam Garg et al. investigates the impact of combination of feature extraction and classification techniques for recognition of offline handwritten segmented Gurmukhi characters. The manuscript, “A hybrid model for data security and preserving anonymity using machine learning”, Shridhar Allagi et al. offers a novel model for preserving user data security. The manuscript, “Low voltage Improved Impedance Wide Bandwidth Current Mirror”, P. Anil Kumar et al. details a high performance current mirror to significantly boost the output resistance. The manuscript, “An efficient CNN approach for facial expression recognition with some measures of overfitting”, Mayank Kumar Rusia et al. deploys an efficient customized CNN model for facial expression recognition. The next manuscript, “PCAC: a new method for predicting compounds with activity cliff property in QSAR approach”, Mohammad Keyvanpour et al. builds a model to discover the most proper descriptors. The manuscript, “Prioritization of e-learners activities using principal component analysis method”, S. Anthony Philomen Raj et al. outlays the most preferred learning activities of learners through the application of the PCA method. The manuscript, “Modeling and availability analysis of data center: a fuzzy approach”, Monika Saini et al. identifies a novel algorithm to ensure the reliability of a data center. Plant pathologists have always desired an accurate plant disease prediction system. The manuscript, “Identification of plant diseases using convolutional neural networks”, Sachin B. Jadhav et al. proposes an efficient soybean diseases identification method based on a transfer learning approach. The manuscript, “Advanced AODV routing based on restricted broadcasting of route request packets in MANET”, Priyanka Pandey et al. empirically details a routing scheme in MANETs. Effective placement of photovoltaic module for maximum power generation is crucial. The manuscript, “Modified variable step incremental-conductance MPPT technique for photovoltaic system”, Priyanka Singh et al. emulates and proposes a variable step size INC-MPPT technique which automatically tracks the next step size to maximize the power output. The next manuscript, “Hajj and Umrah management during COVID-19”, Sarah Basahel et al. simulates the design of an effective framework for organizing crowded events during pandemic. Timely fraud detection is important to avoid unrecoverable financial losses. The

manuscript, “An efficient approach for clustering and classification for fraud detection using bankruptcy data in IoT environment”, Panigrahi Srikanth simulates an IoT based approach for fraud detection. The next manuscript, “AHP based network selection scheme for heterogeneous network in different traffic scenarios”, Pushpa Singh et al. proposes a scheme based on analytic hierarchical process (AHP) to select the best network from the multiple coexist networks at a particular location. Cloud computing due to its many benefits have led many companies to embrace it. The manuscript, “An artificial intelligence based approach for managing risk of IT systems in adopting cloud”, Shikha Gupta elaborates a novel approach for managing the risks associated with transformation of IT systems to the cloud environment. The manuscript, “Detection and delineation of the enigmatic U-wave in an electrocardiogram”, Lakhan Dev Sharma et al. proposes a novel technique to detect the presence of U-wave in the TP-segment and delineate its peak. Low power consumption voltage controlled oscillators have always been desirable. The manuscript, “A new design of low power varactor based voltage controlled oscillator”, Manoj Kumar et al. offers an efficient, novel design of voltage controlled oscillators. The next manuscript, “A smartphone-based wander management system for Bangla speaking patients with Alzheimer’s disease”, Maliha Rashida outlays a novel smartphone based wanderer management system. The manuscript, “Evaluating the Quality of Indian School Education boards’ websites using multi criteria decision making models”, Diksha Dani et al. details a model to evaluate the quality of Indian school education boards through multicriteria models. The manuscript, “Implementation of convolution coded OFDM through different channel models on SDR platform”, Ashish Thakur et al. proposes a model to analyze the error rate performance of OFDM techniques. Energy efficient routing in wireless sensor networks is very crucial for a good network lifetime. The manuscript, “Gauss-sigmoid based clustering routing protocol for wireless sensor networks”, Deepak Kumar Sharma et al. extends a new clustering based routing protocol to improve network characteristics as compared to traditional models. The manuscript, “Female perception towards buying decisions of mobile phones”, Neetu Mittal et al. details and analyzes the motivational factors towards the perception of buying mobile phone devices among female consumers in Delhi-NCR, India. The last manuscript, “Performance analysis of 2-D optical prime codes for optical-CDMA”, Ankit Kumar et al. analyzes the performance of varied 2-D optical prime code 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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