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EDITORIAL

Editorial

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In this grave situation of pandemic that has hit the entire globe; we all stand one for saving 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 one issue i.e. Volume 12 Number 04 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. 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.

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Volume 12 Number 04 presents a compilation of forty five 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 Cloud Computing, Biometric Systems, Data Warehousing, IoT, Data Mining, Augmented Reality and Mobile Networks; to name a few.

Our current, smart workforce is marred by varied issues like drug addiction. The first manuscript in this issue "Investment obstacles in drug addiction treatment in Saudi Arabia", Naseer Abdulrahman Aldohailah traces the investment obstacles in creating specialized treatment units for such patients taking the specific case of Saudi Arabia. Data is everywhere, and the current world is creating more of it each day for accurate decision making. The second manuscript "Qualitative model to enhance quality of metadata for data warehouse", Vinay Gautam propositions a formal representation of metadata to enhance the quality of information for decision making. To increase the efficiency of wireless system applications like SAR efficient antenna designs are desirable. The next manuscript "Simulation and practical study of L and inverted L slot heptaband rectangular microstrip antenna-notch band characteristics", Ambresh P. Ambalgi et al. outlines a L and inverted L slot heptaband microstrip antenna-notch band simulation. Biometrics based human identification is finding varied applications in a number of devices like the computers, laptops, smartphones etc. The manuscript "Multi-modal biometric system using finger knuckle image and retina image with template security using PolyU and DRIVE database", Pratap Patil et al. implements a novel Finger knuckle image and Retina image based multi-modal biometric system for higher level security. Managing high attitudes is a challenge as nutation control and many other

issues are involved. The manuscript "Nutation control strategy through state feedback: application to a spin-stabilized autonomous system", A. Mazinan proposes a solution for the same. The manuscript "Secure keyword search using dual encryption in cloud computing", Husna Tariq et al. intends PID controller optimization through the Big Bang-Big Crunch algorithm. Underwater communication are affected by numerous parameters. The manuscript "UWB Saleh–Valenzuela model for underwater acoustic sensor network", Md. Rizwan Khan et al. designs a novel scheme for improving datarate in underwater communication. The next manuscript "A Light Weight Efficient Cluster based routing Model for Mobile Ad-hoc Networks (LWECM)", Prashant Dixit et al. advises a novel light weight cluster based routing model for adhoc networks to increase the life of the cluster head. Cloud security has become the primary need of the Information Technology industry. The manuscript "Adaptive task scheduling method in multi-tenant cloud computing", Ashalatha Ramegowda et al. proposes adaptive particle swarm optimization to address the multi-tenancy process to enable high resource utilization service under cloud storage network. Smart cities are creating novel opportunities for the overall development of a nation. The manuscript "An intelligent metro tracking system for Riyadh Smart City", Kahkashan Tabassum presents a novel approach for integrating the public transportation facility provided by Riyadh metro, an element of Smart City into the Riyadh Smart City (RSC) application. The manuscript "A novel low power and highly efficient inverter design", Sapna Sharma et al. suggests a new scheme for embedding more gates on a given chip area without generating more heat. The manuscript "Algorithm for fairness in schedule lengths of sink-rooted trees in multi-sink heterogeneous wireless sensor networks", Tejas Vasavada et al. defines an algorithm called Schedule Length Balancing for Multi-sink HeTerogeneous networks (SLBMHT) to balance the schedule lengths. In today's scenario, the efforts for prolonging the life-time of the network have gained momentum. The manuscript "Fuzzy based multi-level multi-constraint multi-path reliable routing in wireless sensor network", Jayashree Agarkhed et al. propagates fuzzy based Multi-level Multi-constraint Multi-path reliable routing to contain the energy, delay and transmission reliability of the network. Text categorization is mainly a supervised classification problem. The manuscript "A novel semi supervised approach for text classification", Debaditya Barman et al. captures Kohonen self organizing map (SOM) for labelling the unlabeled data and three classifiers for observing the accuracy of classification. The manuscript "Text classification algorithms for mining unstructured data: a SWOT analysis", Akshi Kumar et al. offers a detailed analysis of the text classification algorithms employed in the process of mining unstructured data. The manuscript "Conceptual model for comparison of IPv6 ISPs based on IPv4 traffic profiles", Shailendra Singh Tomar et al. details a novel research methodology to estimate IPv6 responses to the users of an organization for destinations present in current IPv4 traffic profile, without accessing the IPv6 network. The manuscript "NB-IoT: applications and future prospects in perspective of Bangladesh", Mobasshir Mahbub evaluates the technical background of the narrow-band Internet of Things (NB-IoT) and their possible applications in conditions of Bangladesh. The manuscript "Autonomous deployment and adjustment of nodes in UWSN to achieve blanket coverage (ADAN-BC)", Gulista Khan et al. details the findings of Autonomous Deployment and Adjustment of Nodes in UWSN to achieve Blanket Coverage (ADAC-BC). Frequent itemset mining mechanism can be applied to a variety of algorithms on varied systems. The manuscript "Comprehensive mining of frequent itemsets for a combination of certain and uncertain databases", Samar Wazir et al. extends the existing work by using *Poisson* and *Normal Distribution based UApriori* on uncertain database. The manuscript "Language-based document image retrieval for Trilingual System", Umesh D. Dixit et al. suggests a method for language based document image retrieval (LBDIR) using multi-resolution Histogram of Oriented Gradient (HOG) features. Steganography is important for hiding secret data in normal files in encoded format. The manuscript, "A novel PDF steganography optimized using segmentation technique", Sanjive Tyagi et al. introduces three novel schemes for organizing the secret bits inside between-words spaces of cover-text before embedding them in files. In present times e-government services have witnessed widespread adoption in almost all countries. The manuscript, "An overview of M-government services in Saudi Arabia", Awad Saleh Alharbi et al. provides an overview of the extent and success M-government services in Saudi Arabia. The manuscript, "A comprehensive survey of data mining", Manoj Kumar Gupta et al. details a systematic and comprehensive survey of various data mining tasks and techniques. Optimization of cost and effort is a major aim of any software development process. The manuscript,"Optimizing design parameters of fuzzy model based COCOMO using genetic algorithms", Sonia Chabbra et al. proposes the implementation of non algorithmic modelling through soft computing techniques like fuzzy logic and genetic algorithms to achieve optimization. The next manuscript, "Efficient mixture control chart pattern recognition using adaptive RBF neural network", Sapna Kadakadiyavar et al. proposes a stochastic gradient method based adaptive version of the radial basis function neural network to map the pattern features of the control chart patterns in different categories to recognize their

belonging class. The manuscript, "Performance analysis of biometric recognition system based on palmprint", Huma Farooq et al. proposes an improved framework for software based performance analysis of classifiers. Braille is widely used by visually impaired people for written communication. The manuscript," Alignment and disruption robust binary mapper for optical Braille recognition", Kapil Juneja et al. details a disruption robust model is presented to improve the scope and accuracy of Braille character recognition system. The manuscript, "Opinion mining with reviews summarization based on clustering", Shabnam Bagheri Marzijarani et al. offers an extraction method for text summarization. The manuscript, "Ranking semantic web services by matching triples and query based on similarity measure", M. Santoshkumar et al. details a novel mechanism for a tool for Semantic Web Service Discovery (SWSD) to calculate Semantic Web Service (SWS) similarity values between the Requested Query (R_Q) and Triples (T_r) from OWL-S file. The manuscript, "Data analysis of COVID-2019 epidemic using machine learning methods: a case study of India", Ramjeet Singh Yadav applies six regression analysis based models for the predictions from the COVID-2019 dataset. The next manuscript, "Virtual machine migration based load balancing for resource management and scalability in cloud environment", Nagamani H. Shahapure et al. puts forward a a virtual machine migration based load balancing algorithm for resource management. The manuscript, "Energy dissipation model for wireless sensor networks: a survey", Nihar Ranjan Roy et al. critically analyzes prominent protocols on the basis of their sources of energy dissipation. The manuscript, "A fuzzy rough set based fitting approach for fuzzy set-valued information system", Waseem Ahmed et al. identifies a novel fuzzy set-valued information system (FSIS) as a generalized model of set-valued information systems (SIS). Classifying continuous datasets in an efficient mechanism has always been an open research concern for researchers. The manuscript," Adaptive strategy operators based GA for rule discovery", T. Shobha et al. details a new variant of genetic algorithm, that provides equal opportunity for all parent solutions to produce the offspring solution. The manuscript, "Partitioning and hierarchical based clustering: a comparative empirical assessment on internal and external indices, accuracy, and time", Syed Imtiyaz Hassan et al. empirically analyzes the partitioning based clustering algorithms and hierarchical based clustering algorithm; by conducting extensive experiments for the same. Cloud Computing has provided major push to the proliferation of e-learning. The manuscript, "A review of cloud computing in education in Saudi Arabia", Mishaal Mofleh Almutairi provides a detailed analysis of the effectiveness of cloud computing in Saudi Arabia in the education sector, in particular related with the e-learning. The next manuscript," Highly sensitive photonic crystal based biosensor for Bacillus cereus", S.S. Ajey et al. provides an alternate method for the detection of *B. cereus* on the fly. The manuscript, "Temperature invariant and high precision absolute rotary encoder using photocells on visible light spectrum", Vanita Jain et al. introduces a temperature invariant absolute rotatory encoder using photocells on the visible light spectrum. The next manuscript, "An efficient dispersion compensating AMI–SSP technique utilizing DCF supporting 100 Gbps Radio over Fiber system", Namita Kathpal et al. details an Alternate Mark Inversion–Symmetrical–Symmetrical-Post (AMI–SSP) dispersion compensation technique for mitigating dispersion effects in Radio over Fiber (RoF) system to improve the RoF link performance. Grids have gained much importance due to their distributed characteristics and scalability. The manuscript, "System reliability estimation of constrained multi-state computational grids", Debashreet Das et al. implements a novel mechanism for doing system reliability estimation of computational grids. The next manuscript, "ASIC design of 4K-point RADIX-2 FFT in 0.18 μm CMOS technology", Pulkit Jain et al. details the design of an application specific integrated circuit (ASIC) of 4k-point decimation in time (DIT) radix-2 FFT using fixed-point arithmetic. The manuscript, "Segmentation of tibia femoral bone using graph cut method and 3D rendering for FEA", Mahesh Kumar Agasanapura Somasundar et al. presents the novel graph cut method to segment tibia femoral bone from MRI/CT knee images. If the inter connection link between any two dual subsystems is not in place it may lead to unstable system. The manuscript, "Simulation and synthesis of TS fuzzy system using parallel distribution compensation technique", E.N. Ganesh et al. discusses the simulation and synthesis of Takagi–Sugeno fuzzy system for a decentralized stabilization problem using parallel distribution compensation technique. The manuscript, "An efficient and scalable hybrid task scheduling approach for cloud environment", Sunita Rani et al. proposes a hybrid algorithm for the cloud environment. The last manuscript, "Strengthening the bitcoin safety: a graded span based key partitioning mechanism", Habib ur Rehman et al. proposes a private key safety model for safely securing the sub elements of the private key of a bitcoin.

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. Deepika Sureshkumar 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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