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Dear Readers,

Greetings from the Mapana Journal of Sciences,

On behalf of our editorial team, I am pleased to present you with the special issue of the Mapana Journal of Sciences for 2023. The mission of the Mapana Journal of Sciences (MJS) has always been to publish innovative research and review papers in the broad field of science. We're proud to continue this trend with our most recent release.

In this special issue, we delve into the dynamic landscape of innovative research ideas with a perfect blend of implementation and proven works. Moreover, we examine the reflective implications of various sustainable technologies on different applications and research avenues.

Paulin and co-investigators introduce how the conventional approach to defect detection in magnetic resonance brain images relies on manual human inspection, a method rendered impractical due to the sheer volume of data. The author outlines an approach to detecting and classifying brain tumours within patient MRI images. Additionally, the article reports a performance comparison of Convolutional Neural Network (CNN) models in this context.

Rajesh Kumar and co-investigators conducted a detailed study that comprehensively overviews lossless and lossy image coding techniques. The methods are divided into many groups, and a taxonomy of techniques is repeated. The different compression techniques are compared in this study. The compression algorithm performance evaluation parameters are presented. The main issues discovered during the current research are then reviewed, and potential directions for the future are discussed.

Nilesh Patil and co-investigators introduces MedicHub – Disease Detection using Deep Learning, where the integration of technology in healthcare is rapidly revolutionizing the sector and transforming through Machine Learning. This technique offers patients a very reliable and accessible alternative for immediate results and also minimizes the risk of errors. Another excellent utility of technology is in the discipline of medical image analysis. Convolutional Neural Networks (CNN) are neural networks which are capable of

recognizing patterns in medical images like X-rays, MRI scans, or CT scans, allowing it to accurately diagnose complicated diseases such as Brain Tumors, COVID-19, Alzheimer's disease, and Pneumonia.

Angel Preethi and co-investigators propose a fuzzy model for sentiment classification using fuzzy linguistic hedges for Decision-making, which uses fuzzy linguistic hedges to improve the accuracy of the sentiment analysis. The fuzzy linguistic add context and nuance to the sentiment analysis, enabling the model to better distinguish between subtle differences in sentiment. The proposed model is tested with a microblog electronics dataset.

Tiras Jeffrey briefs about the concept of Green Skies with data analysis, which aims to examine the current state and the future of sustainable aviation, electric aviation, and pollution-free aviation. The various technologies and innovations developed to reduce environmental designs, lightweight materials, and cleaner engines are briefed. Also, a discussion on the potential of electric aviation, which offers a promising alternative to traditional fossil-fueled airplanes. The article provides recommendations of how the aviation industry can continue to reduce the carbon footprint and minimize its impact on the environment.

Malarkodi reported accurate farming procedures on Artificial Intelligence, which makes it simpler to monitor farmers' crop and soil health. The most effective AI-based solutions for ensuring crop health are hyperspectral imaging and 3D laser scanning. For analysis, these AI-driven devices gather more detailed information on the health of the crops. The necessity for AI in agriculture was examined in this research, which provided a quick overview of AI in the agriculture process and a few criteria that AI monitors in agriculture.

Kavitha Rajalakshmi and group discuss deep convolutional neural networks with image processing techniques and Resnet252v2 for detection of COVID-19 from X-Ray images. The network demonstrated superior accuracy by employing features derived from two robust networks. A comprehensive evaluation was conducted on a dataset of 15,602 images to assess the network's performance. This evaluation aimed to determine the accuracy achieved by the network under real-world conditions.

Subbulakshmi and the group discuss crop prediction and recommendation Using an ensemble of DL models. Extensive research indicates that algorithms such as Neural Networks and XGBoost are highly effective and accurate in developing crop yield prediction models. This strategy aims to predict crop yield based on historical data, which helps in recommending which crop should be cultivated depending on the soil type and the weather conditions of the field location.

Yashwanth Balan and co-investigators explain the research avenues of Robotic Process Automation as a Service (RPAaaS). It also identifies challenges related to RPA and the need for objective reasoning and academic attention to achieve meaningful advances. It focuses on the potential applications of robotic process automation to address the research avenue for the challenges in Cloud RPA.

Karthik proposes forest animal detection and alerting systems where the initiative offers a framework to monitor the situation. This is done by locating the invader in the area of the field using a sensor. A camera will identify the animal, and a text message will be delivered to the farmer through GSM.

Sivasankari and co-investigators propose imbalanced multiclass data classification using combined data sampling and deep learning methods. It combined a random over-under sampling approach in training data that was preprocessed prior to replacing missing values with mean, feature selection and noise filtering. This work extends the existing feedforward Neural Network to Deep Learning (Deep FeedForward Neural Network). The work is implemented in the rapidminer tool and assessed individually with appropriate evaluation measures for training and testing data.

Jayamalar and co-investigators suggested a machine learning vehicle counting and detection system that intelligently identifies and tracks automobiles in still images and moving movies. The results demonstrated that CNN-based YOLOv3 does an excellent job of detecting and tracking vehicles.

Thirumoorthi and the group discuss the use of a transform-based edge feature preserving CT scan, medical image coder (EZWT EFPIC) using computed tomography (CT) images to help in the early

diagnosis of lung cancer. The author explores the design and its significance of image processed model in cancer diagnosis.

Vignesh Ramamoorthy and the group introduce a forecasting model for predicting cryptocurrency prices, which deals with the forecasting of cryptocurrency prices by using data mining algorithms such as bagging, KNN, linear regression, and support vector machine. The outcome specifies the accuracy value gained from the cryptocurrency forecasting model from which can predict the price of the cryptocurrency

G Maria Priscilla conducted an empirical analysis and perception of health disparities in rural people with special reference to anaikatti village Coimbatore. The most prevalent diseases and signs of health problems been covered. The public perceptions of health concerns and their causes are also examined. The research is based on real-time data gathered from a poll of anaikatti village inhabitants. Convenience sampling was used to choose the respondents.

Mahendiran provides a new dimension to deal with the facial recognition system by proposing a Stacked Auto Encoder with a Convolutional Neural Network approach that does not rely on landmarks or a reference model. The proposed approach outperforms the existing techniques.

Anna Saro Vijendran and the group conducted a study that attempts to overcome the medical issue by comparing MUNets (Modified UNets), MCNNs (Multi Cascaded ConvolutionNeural Networks) with fully connected CRFs (Conditional Random Fields), MFCLs (Modified Fully Connected Layers), TAcGANs (Tissue Aware conditional Generative Adversarial Networks) and EL (Ensemble Learning) algorithms. Furthermore, novel multimodal medical image fusion techniques are being examined to enhance image quality and enable the early diagnosis of brain tumours.

Shorya Rawal and co-investigators propose a new DNA encryption for storage applications by a new DNA sequence in an encrypted format to store big data for archival purposes and provide security. It is concluded that DNA encryption is a promising approach for securing digital data in DNA storage systems. The

authors further suggest the requirement for further research to optimize the performance and reliability of this technology.

Akshay Agrawal and co-investigators propose a blood management system using blockchain. The proposed system uses blockchain to handle and preserve data from blood banks, such as donor details, blood type, and availability. Automating the blood donation procedure using smart contracts ensures accountability and transparency. Additionally, the system has an interface for donors and receivers to obtain data and follow their donation history. While preserving the anonymity of the donors and recipients, the proposed blood management system employing blockchain is projected to boost efficiency, transparency, and trust in the blood donation process.

Maheshwari and co-investigators elaborates the drawbacks of online pharmacy and emphasized the high risk of misuse of drugs, especially where there are no governing online pharmacy laws, lack of awareness and poor logistics. They also analyzed the challenges that are faced by society while using the existing epharm apps.

Kowsalya and group developed early prediction of liver problems using knowledge mining techniques or the algorithms that support the medical challenges, which are increasingly capable of integrating AI-based algorithms that can rationalize and shorten complex data analysis and improve verdicts. It can reduce reporting delays, and improve workflow transparency. This effect promptly shifts patient care milestones, benchmarks, and a budget-strapped economy.

Shanmugapriya and co-investigators conducted a survey on spoofing and selective forwarding attacks on zigbee-based WSN. It identifies the security vulnerabilities of the zigbee network and gaps in the existing methodologies to address the security issues. The study will help the future researchers to narrow down their research in WSN.

With the publication of another edition of the Mapana Journal of Sciences, we would like to express our sincere thanks to all the authors, reviewers, editors and section editors who contributed to the completion of this publication. The wide range of topics and disciplines reflects the interdisciplinary nature of contemporary

scientific research. Mapana is proud to participate in essential efforts that promote scientific culture and research.

We look forward to future projects of knowledge and discovery.MJS continues to provide its readers with the latest information on various fields of scientific research and serve as a forum for the exchange of research ideas and discoveries.

Dr Manoj Balachandran

Editor