

## SPECIAL ISSUE ON EMERGING TRENDS IN ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS

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ICIC Express Letters, Part B: Applications (ICIC-ELB) collaborates with the Asia Joint Conference on Computing (AJCC) to provide a platform for authors to publish their excellent research works. The AJCC2023 was held at Silpakorn University, Nakhon Pathom, Thailand, and online on April 26-28, 2023. The committees of AJCC2023 have selected ten excellent articles presented at the conference as a special issue of ICIC-ELB. At least three experts review all the selected articles, and the ICIC-ELB editorial board conducts an additional review to ensure high-quality standards.

The selected papers on emerging trends in machine learning, deep learning, image processing, and the Internet of Things are briefly described as follows. In *Trading Strategies Development Using Combined Enhanced Voter-Method with Technical Indicators and Machine Learning*, the authors (*Narongsak Sukma and Chakkrit Snae Namahoot*) have incorporated traditional technical indicators and a machine learning model. This has led to a more accurate prediction of market trends and a better overall performance of trading strategies. They have introduced a framework for developing trading strategies that utilize the random forest algorithm for time-series data analysis. The study's findings are particularly useful for day traders, investors, and anyone interested in the stock market. In *Geospatial Analysis and Business Intelligence in Massage and Spa Center*, the rapid growth of business intelligence (BI) presents challenges for organizations struggling with design, development, and result interpretation. The authors (*Numtip Trakulmaykee, Chidchanok Choksuchat, Arbthip Phetsakul, Korakot Wichitsanguan Jetwana and Kochakorn Sukjan Inthanuchi*) focus on BI design and development for a massage and spa center, emphasizing geospatial data interpretation. The research methodology involves understanding business requirements, design, development, and BI testing. Findings highlight staff task allocation, patient distribution, and treatment rights. These insights inform decision-making and organizational strategy at Hatyai Chivasuk. In *Integrating MFCC, CNN and Ensemble Methods in Environmental Sound Analysis and Speech-to-Text Conversion*, the authors (*Naphatsara Thorngsophon, Chananya Aiamprakhon, Nuttachot Promrit and Sajjaporn Waijanya*) explore environmental sound classification and speech-to-text conversion. Input data include videos or audio files categorized into speech and environmental sounds. API Gowajee is utilized for speech recognition, while environmental sound undergoes feature extraction. The study compares Mel-Spectrogram and MFCC feature extraction techniques. Deep learning techniques, specifically CNN, classify environmental sounds with regularization methods. The best-performing model achieves 90% accuracy using MFCC features. Results inform a voting ensemble for accurate predictions. In *Developing an Automatic Open Question and Answering of Association Question Data for*

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*Community Tourism*, the researchers (*Chatklaw Jareanpon, Umaporn Chaisoong, Thummarat Boonrod and Khanabhorn Kawattikul*) focus on developing automatic question-answering using Open-QA to address tourists' spatial information needs. The challenge lies in Thai language processing, which lacks spaces and punctuation. Correct word tokenization is crucial for precision. The study employs cosine similarity based on the vector space model (VSM) with TF-IDF weighting and bag of words (BoWs). Model evaluation shows an impressive 99% accuracy, demonstrating its efficacy in answering questions. In *Quality Level Identification for Mangifera Indica L. Using a Deep Learning Model*, the authors (*Saowalak Arampongsanuwat, Chanya Maneechai, Nuttachot Promrit and Sajjaporn Waijanya*) focus on Falan mangoes, which are a significant economic crop but are prone to breakage and defects. Traditionally, mangoes have been graded visually, which can lead to errors due to individual variations. The research integrates a mask R-convolutional neural network (Mask R-CNN) to improve grading accuracy and reduce workforce costs. In *Risk Prediction of Gastric Cancer Using Decision Tree J48*, the authors (*Navamin Suwannapool and Sany Khruahong*) introduce a risk prediction model for stomach cancer using decision tree J48. The model leverages six gastric cancer risk markers (passive smoking, exhaustion, clubbing of fingernails, obesity, snoring, and dry cough) from a dataset of 1,000 patients in Phitsanulok province. This research achieves a remarkable accuracy score of 1.00, while F1 scores for other approaches range from 0.944 to 0.977. The findings inform a web application based on risk indicators, achieving a 100% success rate in 30 simulation patterns. In *Face Mask Imagery Classification with Data Augmentation*, the researchers (*Kritsana Kumphet and Wansuree Massagram*) have trained models for image analysis to classify face mask usage in public places. They have enhanced the performance of their models through data augmentation techniques. They refined pre-trained networks to detect three key aspects: 1) whether someone is wearing a mask, 2) correct mask usage, and 3) the type of mask. Augmentation has improved detection performance, with a mean mAP increase of 13.9%. In *Mobile-Based Deep Learning Framework for Classifying Common Skin Diseases in Thailand*, the researchers (*Tanatorn Tanantong, Nawarerk Chalarak, Pinnaporn Pandecha, Kitiya Tanantong and Krittakom Srijiranon*) use mobile-based deep learning to focus on skin disease classification while considering model size and computational resources. Deep learning models are trained on different skin disease image sizes, and their impact on performance is evaluated. By reducing the size of the images, they could decrease the model's training time while maintaining a certain level of accuracy. In *A Comparison of Texture-Based Diabetic Retinopathy Classification Using Diverse Fundus Image Color Models*, the authors (*Nittaya Muangnak, Bowornrat Sriman, Shubhangi Ghosh and Cong Su*) have proposed a method for classifying diabetic retinopathy (DR) based on comparisons of texture features across different color spaces. To improve image quality, techniques such as non-local means denoising (NLMD) and contrast limited adaptive histogram equalization (CLAHE) are used. The LR model achieves an accuracy of 82% using local binary pattern (LBP) and gray-level co-occurrence Matrix (GLCM) features. In *Application of Internet of Things (IoT) for Monitoring of the Flow Incentive Spirometer*, the authors (*Naratorn Sangprasert, Keerati Inthavisas and Kitisak Wattanakul*) focus on using IoT technology to monitor physical therapy activities in patients who have undergone thoracic or abdominal surgery. They explore the use of an incentive spirometer equipped with a laser distance sensor. The Node MCU 8266 V2 microcontroller processes data from the sensor and converts the distance into air flow rate (mL/s). The system achieves 100% accuracy compared with manually recorded values.

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