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The **Journal of Computational Innovations and Engineering Applications (JCIEA)** is a peer-reviewed, open access journal of De La Salle University, Manila. The JCIEA aims to promote the development of new and creative ideas on the use of technology in solving different problems in different fields of our daily lives. The JCIEA solicits high quality papers containing original contributions in all areas of theory and applications of Engineering and Computing including but not limited to: Computational Applications, Computational Intelligence, Electronics and Information and Communications Technology (ICT), Manufacturing Engineering, Energy and Environment, Robotics, Control and Automation, and all their related fields. The JCIEA editorial board is comprised of experts from around the world who are proactively pushing for the development of research in these fields.

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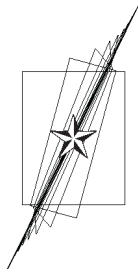
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Elmer P. Dadios
Editor-in-Chief

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Guidelines for Contributors

From the Editor

The Journal of Computational Innovations and Engineering Applications (JCIEA) is a peer-reviewed and abstracted journal published twice a year by De La Salle University, Manila, Philippines. JCIEA aims to promote and facilitate the dissemination of quality research outputs that can push for the growth of the nation's research productivity. In its second volume, second issue, seven articles were selected to provide valuable references for researchers and practitioners in the field of environmental engineering, air quality monitoring, agricultural crop health assessment, healthcare engineering, assistive systems, machine learning, computer vision, video processing, wireless systems, motor controller for electric vehicles, and robotic systems.

The first article is "Air Quality Characterization Using k -Nearest Neighbors Machine Learning Algorithm via Classification and Regression Training in R". This paper aims to characterize air quality by using k -nearest neighbors machine learning algorithm to provide accurate sensor readings and calculations for an improved air quality index (AQI). The proposed methodology is implemented using a prototype of integrated gas sensors for data gathering. R programming, focusing on classification and regression training (caret) package for data processing, model development, and algorithm tuning, is utilized. The system is evaluated, and an accuracy of 99.56% is obtained.

The second article is "Assessment of Lettuce (*Lactuca sativa*) Crop Health Using Back Propagation Neural Network". Crop health assessment is important in ensuring high agricultural yield. The growth rate and productivity are factors that can help establish the expected yield by computing the crop assessment index. Using a romaine lettuce as test crop, a classification algorithm using color recognition and artificial neural network was developed for better crop quality assessment.

The third article is "Technology Acceptance Model for Breast Cancer Examination Assistant Using Computer Vision and Speech Recognition". This paper presents the development of a computer-assisted breast cancer examination using computer vision and speech recognition, with focus on user acceptance for improved technology penetration. Technology acceptance model (TAM) is used in the design concept and implementation of the breast examination assistant to rate its perceived usefulness (PU), perceived ease of use (PEOU), attitude (ATT), and behavioral intention to use (BI). Performance rating is based on Cronbach's α . Computer vision algorithm for BSE, speech recognition, and synthesis results in previous studies were highlighted to associate in TAM considerations.

The fourth article is "Performance Evaluation of HEVC With Intra-Refresh for Wireless Video Surveillance". This paper presents the result of the performance evaluation for a wireless video surveillance using the High Efficiency Video Coding (HEVC) standard. The video test sequences are converted into HEVC bit streams by the HM6.0 encoder. The HEVC bit streams were transmitted using a wireless network simulator setup for video surveillance. The effects of adjusting different parameters of the HEVC encoder, namely, the intra-refresh period and quantization parameter, were also evaluated in this paper.

The fifth article is “Comparison of High-Side and Synchronous Trapezoidal Control Using XMC-Based Brushless DC Motor Controller for Pedelects”. This study aims to compare high-side and synchronous trapezoidal brushless DC (BLDC) control methods using an XMC-based motor controller for pedelecs. The electric bicycle implemented three different pedal-assist modes with varying human-to-motor power ratios and one throttle mode with the use of proportional-integral control. The study compares the efficiencies of two trapezoidal control methods through the throttle and pedal-assist mode. The data obtained shows that the high-side trapezoidal control is more efficient than the synchronous trapezoidal control in all modes implemented on the e-bike. This research opens possibilities to improve other BLDC control algorithms especially in terms of efficiency.

The sixth article is “Literature Review for the Design and Implementation of the Archer Robot”. This paper presents a literature review for the design and implementation of an archer robot capable of knocking an arrow to a standard recurved bow, drawing the arrow, and hitting a target. Ancient and current human-like mechanical archers using machine vision and intelligent controllers are discussed in this paper to serve as the ground work of the archer robot. Such robots with accurate and precise control systems are highly valued in automation and industrial processes.

The seventh article is “Design and Implementation of a Thermal-Based Exploration Mobile Robot”. Inaccurate control of industrial thermal processes occurs when there is no operator involvement in monitoring temperature set points. This paper examines the specifics of a temperature controlled mobile robot (MoBot) with the use of PIC16F877A microcontroller and LM 35 as temperature sensor. Experimental results showed that 98.31% accuracy of temperature readings from the sensor enabled the MoBot to properly work in different PWM values. The JCIEA editorial board expresses their warmest thanks and deepest gratitude to the distinguished authors for their outstanding contribution to JCIEA second volume, second issue. They likewise express profound appreciation to the peer reviewers for their assistance and cooperation.

Original research outputs are most welcome to JCIEA. There is no publication fee in this journal, and the research papers are assured of fair and fast peer review process. For further information, please visit www.dlsu.edu.ph/offices/publishinghouse/journals.asp.

Prof. Elmer P. Dadios, PhD
Editor-in-Chief, JCIEA