

# JOURNAL OF COMPUTATIONAL INNOVATIONS AND ENGINEERING APPLICATIONS

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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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De La Salle University, Philippines

elmer.dadios@dlsu.edu.ph

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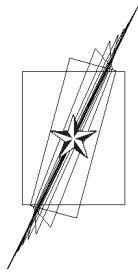
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## From the Editor

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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 "*Denavit-Hartenberg-based Analytic Kinematics and Modeling of 6R Degrees of Freedom Robotic Arm for Smart Farming*". Advances in technology is apparent especially in the field of agriculture. This study presented the use of Denavit-Hartenberg in parallel with the circular and serpentine motion of the robot arm when spraying water is the most efficient combination. The robot arm used in this study has 6 revolute (6R) degrees of freedom. This method is proven to provide the most efficient path of 22 seconds. Hence, it is essential to avoid agricultural malpractices.

The second article is "*Blockchain Technology Application: Challenges, Limitations and Issues*". Blockchain technology is an emerging technology that is widely used nowadays in many industries. The first application of this technology is in the cryptocurrency named Bitcoin. In this study, a thorough literature review was performed in order to analyze the challenges, limitations and issues. It is found out that privacy, security and protocols are among the challenges of this technology today.

The third article is "*Lean Strategy Implementation in Metal Job Shop Manufacturing Firm: A Simulation Modelling Approach*". This paper aims to analyze the two approaches of lean strategy namely Just-in-Time and Kanban. The job shop of metal manufacturing company was analyzed using the software for lean strategy. The average time in system, production throughput, work in process and bottlenecks were measured and compared to the two approaches. Based on the results of the simulation model, Just in Time approach is best for companies with few processes while Kanban approach is best for companies with several to many processes.

The fourth article is "*Reliability and Safety Assessment of SCADA Project Implementation of Peninsula Electric Cooperative*". Power reliability and safety of power system are the important factors that a electric cooperative must consider. In this study, the Supervisory Control and Data Acquisition (SCADA) project for the twenty-seven (27) substations in Bataan Peninsula was studied and assessed. Reliability of the system was measured based on the power interruption occurrences in all substations before and after the implementation of the project. the data on the response of protection in the substations were also collected and interpreted to see the improvement in safety structures of acquired SCADA. Given the initial findings, PENELCO may use the results of the study as guide in assessing the succeeding phases of the project implementation.

The fifth article is “*Design and Application of BatBot: Distance Measuring and Obstacle Sensing Mobile Robot*”. Robotics is one of the major technology that has a great impact to the industries. The exploitation of this technology helped in the improvement of the current status of the systems. This paper aims to developed a batbot that can measure distance as well as detect obstacle in its path using echolocation method. This robot has successfully implemented and executed its purpose.

The sixth article is “*Automated Water Quality Monitoring for Aquaponics Applied to Vertical Farming*”. In this study, the researchers were able to automate the water quality of aquaponics by monitoring the ammonia, dissolved oxygen, pH level, temperature and turbidity. The system were capable to measure this and maintain the expected values for these. The system also showed high accuracy in all of the measurements and was able to grow fishes accordingly based on its needs.

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](http://www.dlsu.edu.ph/offices/publishinghouse/journals.asp).

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