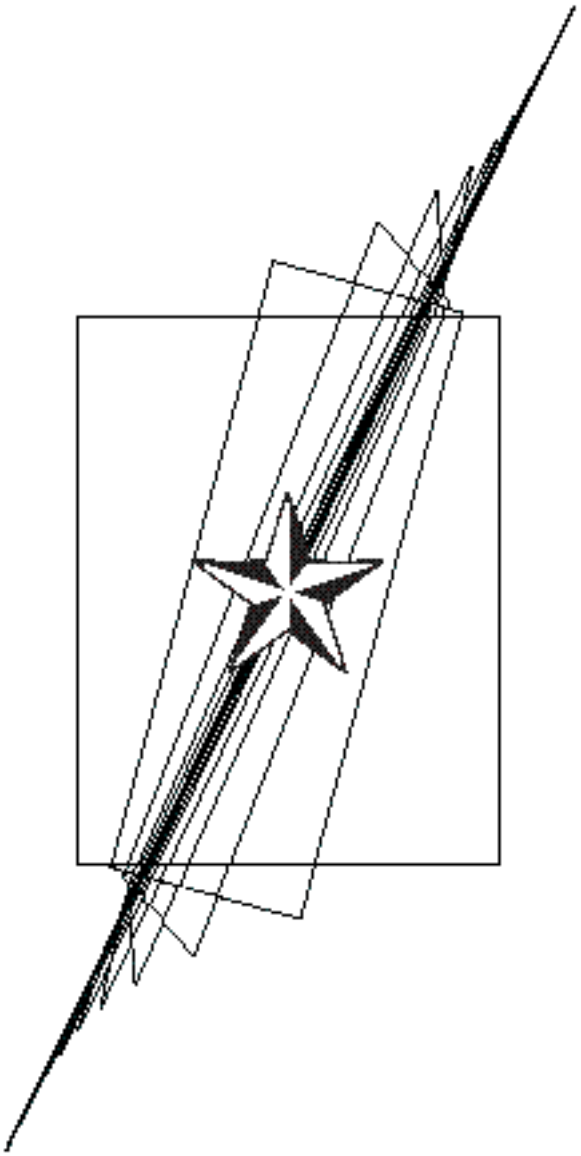


JOURNAL OF COMPUTATIONAL INNOVATIONS AND ENGINEERING APPLICATIONS

Volume 3 Number 1
JULY 2018

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.

Annual Subscription Rates: Foreign libraries and institutions: US$60 (airmail). Individuals: US$50 (airmail). Philippine domestic subscription rates for libraries and institutions: Php1,800, individuals: Php1,300. Please contact Ms. Joanne Castañares for subscription details: telefax: (632) 523-4281, e-mail: dlsupublishinghouse@dlsu.edu.ph

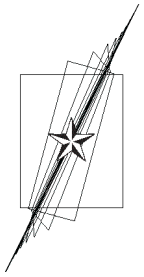
Copyright © 2018 by De La Salle University

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without written permission from the copyright owner.

ISSN 2507-9174

Published by De La Salle University Publishing House
2401 Taft Avenue, Manila 0922 Philippines
Telephone: (63 2) 523-4281 / 524-2611 loc 271
Fax: (63 2) 523-4281
Email: dlsupublishinghouse@dlsu.edu.ph
Website: http://www.dlsu.edu.ph/offices/publishing-house/journals.asp

The De La Salle University Publishing House is the publications office of De La Salle University, Manila, Philippines.



JOURNAL OF COMPUTATIONAL INNOVATIONS AND ENGINEERING APPLICATIONS

Table of Contents

From the Editor

Elmer P. Dadios
Editor-in-Chief

Research Articles

Jackfruit Phytophthora Palmivora (Butler) Disease Recognizer Using Naïve Bayes Classifier 1
Jonah Flor V. Oraño, Jomari Joseph A. Barrera, and Elmer A. Maravillas

ReTeSoil: A Temperature, Relative Humidity, and Soil Moisture Monitoring System Using GSM with Blynk 8
Sittie Alyzza M. Garcia, Ariel James T. Abarquez, and Cristina P. Dadula

A LabVIEW-Based Target Optimization Genetic Algorithm for Biological Predators 15
Ryann A. Alimuin, Elmer P. Dadios, and Argel A. Bandala

Hybrid Sensor Based Fuzzy Clustering Neural Network Classification for Human Activity Recognition 21
Ramtin Aminpour and Elmer P. Dadios

Implementation of k-Nearest Neighbor (KNN) for PC-Based Character Recognition of Currently Used Philippine Vehicle Standard Licensed Plate 27
Klariz Donna Mae B. Bundal, Arlyn P. Lauron, Jan Jeffrey R. Camiña, and Cristina P. Dadula

Real-Time Vehicle Classification Using MobileNet 38
Reagan L. Galvez, Melvin K. Cabatuan, and Argel A. Bandala

The Contributors

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 third volume first issue, six articles were selected to provide valuable references for researchers and practitioners in the field of agricultural crop and livestock monitoring and control, crop disease detection, environmental condition assessment, wireless sensor networks, vision systems, intelligent transport systems, fuzzy logic control, and human activity recognition.

The first article is "Jackfruit Phytophthora Palmivora (Butler) Disease Recognizer Using Naïve Bayes Classifier". This paper presents a technique to detect the presence of P. palmivora disease in jackfruit trunk using Naïve Bayes classifier. Based on the result, the classifier achieved 94% accuracy in detecting the disease incidence.

The second article is "ReTeSoil: A Temperature, Relative Humidity, and Soil Moisture Monitoring System Using GSM with Blynk". This monitoring system was developed based on the temperature, relative humidity, and soil moisture content of a plant to minimize the occurrence of excessive and irregular irrigation that leads to certain problems like shortage in soil nutritive elements and decrease in productivity.

The third article is "A LabVIEW-Based Target Optimization Genetic Algorithm for Biological Predators". In the livestock industry, one of the major causes of destructive loss is reptilian predators; these are hunters that feed on fowls and their by-product. The aim of this research paper is to provide a solution for determining the locus (gene position) of a target such as predators and take consideration of some parameters such as speed of movement and location status.

The fourth article is "Hybrid Sensor Based Fuzzy Clustering Neural Network Classification for Human Activity Recognition". In this study, the fuzzy c-means has been considered by the ANFIS model to produce the fuzzy inference system (FIS) to make the classification with the neural network algorithm to detect the six major human activities. The results of the experiments show that the 97.2% accuracy could be acceptable in the field of study and the clustering structure could make the simulation more robust and faster.

The fifth article is "Implementation of k-Nearest Neighbor (KNN) for PC-Based Character Recognition of Currently Used Philippine Vehicle Standard Licensed Plate". This study focused on the development of a PC-based license plate recognition system using visual basic language. A system that can recognize the Philippines' currently standard vehicle plate numbers using EmguCV methods in image processing and KNN machine learning algorithm in recognizing characters.

The sixth article is "Real-time Vehicle Classification Using MobileNet". Image classification is an important part of vision systems and has several applications like autonomous cars and surveillance. This is a challenging task because computer sees images differently from humans. This paper used MobileNet model for training the data and tested it on android device. This model is lightweight and efficient compared with previous developed models.

The JCIEA editorial board expresses their warmest thanks and deepest gratitude to the distinguished authors for their outstanding contribution to JCIEA second volume first 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