

INNOVATUS 2022

Special Issue on Digital Transformation in Business Information Systems

Volume 5 (1), 2022

All rights reserved.

Copyright © 2022 by Department of Information Science and Technology.

University of Asia and the Pacific

ISSN (Print): 2651-6993

Editorial Advisory Board

Varsolo Sunio, Ph. D. – Department of Science and Technology

Prospero Naval, Jr., Ph.D. – University of the Philippines

Janice Velasquez – Lyceum of the Philippines University

Ruel Maningas, Ph. D. – Program Director, Masters of Applied Business Analytics, UA&P School of Management

Florencio O. Gaa, Ph. D. – Dean, UA&P School of Sciences and Engineering

Enrique M. Ligot, Dcomm. – Vice Dean, UA&P School of Sciences and Engineering

Noemi B. Torre, Ph. D. – Operations Committee Secretary, UA&P School of Sciences and Engineering

Edwin L. Olmos, Ph. D. – Chair, Department of Engineering and Natural Sciences

Cyrus Paolo M. Buenafe – Chair, Department of Information Science and Technology

Kimberly Mae M. Vallesteros – Chair, Department of Mathematics

Maria Beatrice Quilinguin – IT Industry Consultant

Editor in Chief

Giuseppe C. Ng

Cover Design

Miguel Antonio Li

No part of this publication may be reproduced by any process without the written permission of the copyright holder except for brief sections to be used for academic and research related purposes.

For information,

☎(+632) 8637-0912 to 26 ext. 336

✉innovatus@uap.asia

❖ School of Sciences and Engineering,

5th Floor, CAS Building,

University of Asia and the Pacific,

Pearl Drive, Ortigas Center, Pasig City 1605, Philippines



©2022 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY-NC-ND) license (<http://creativecommons.org/licenses/by/4.0/>)

ABOUT INNOVATUS

Innovatus is the official research journal of the University of Asia and the Pacific (UA&P), Department of Information Science and Technology. *Innovatus* is the past participle of the Latin word 'innovare' or innovate. The research journal is a compilation of double-blind peer-reviewed research articles from the Yearly International Research Conference on Emerging Information Technology Trends in Asia and the Pacific. The journal accepts original scholarly works in the areas of Information Technology, Computer Science, Information System, Computer Engineering, and allied disciplines.

Innovatus Team

Alyssa Ashley Capco
Isabella Molo
Miguel Antonio Li
Giuseppe Ng

Special Thanks

Paula Andrea Belo



from the editor-in-chief

This edition of Innovatus is a milestone in many ways. With expanding our editorial board, my vision is to improve the quality of the journal and expand the reach of the journal. As a result of this vision, we have managed to attract submissions from not only the Philippines but from other countries as well. This is but a small step forward but a most important one to make.

In the face of global challenges, innovation and the advancement of technology does not stop. This publication puts the spotlight on new and innovative works in the fields of machine learning and its applications in the business industry. It is my hope that the quality of the published works in this edition serve to reinforce my new vision for the journal. I extend my gratitude not only to the papers who were accepted but to those who submitted to the journal.

To all who made this issue happen, thank you for being part of the Innovatus family.

Giuseppe Ng
Editor-in-Chief
Innovatus

