

# JOURNAL OF ADVANCED COMPUTING TECHNOLOGY AND APPLICATION (JACTA)

## **Editor-in-Chief**

Professor Datuk Ts. Dr. Shahrin Sahib (UTeM)

## **Associate Editors-in-Chief**

GS. Dr. Othman Mohd (UTeM)

Dr. Zaheera Zainal Abidin (UTeM)

## **International Advisory Board Members:**

Professor Dr. Christine Julien (University of Texas at Austin, USA) Professor Dr.

Nilanjan Sarkar (Vanderbilt University, Tennessee, USA)

Professor Dr. Ohtsuki Tomoaki (Keio University, Japan)

Dr. Fahmi Arif (Institut Teknologi Nasional Bandung, Indonesia)

## **Editors**

Associate Professor Dr Choo Yun Huoy (UTeM)

Associate Professor Dr Mohd Faizal Abdollah (UTeM)

Associate Professor Dr Nurul Akmar Emran (UTeM)

Associate Professor Dr Sabrina Ahmad (UTeM)

Associate Professor Dr Zuraida Abal Abas (UTeM)

Dr Aslinda Hassan(UTeM)

Dr Ibrahim Ahmad (UTeM)

Dr Mohd Hafiz Zakaria (UTeM)

Dr Norhazwani Md Yunos (UTeM)

Dr Nur Fadzillah Othman (UTeM)

Dr Nurul Azma Zakaria (UTeM)

Dr Robiah Yusof (UTeM)

Dr Sazalinsyah Razali (UTeM)

Dr Siti Azirah Asmai (UTeM)

Dr Siti Rahayu Selamat (UTeM)

Dr Wahidah Md Shah (UTeM)

Dr Zulisman Maksom (UTeM)

Dr Zulkiflee Muslim (UTeM)

Journal of Advanced Computing Technology and Application (JACTA) is a journal published twice a year by Universiti Teknikal Malaysia Melaka.



Contents

<i>No.</i>	<i>Title</i>	<i>Page</i>
1.	<b>Analysis of RPL Power Consumption in 6LoWPAN Ecosystem using COOJA Simulator</b> <i>Nin Hayati Mohd Yusoff and Nurul Azma Zakaria</i> .....	1
2.	<b>Identification of Scan Signatures on Thesis Certification Sheet with Haar Wavelet and Euclidean Distance Method</b> <i>Rumini and Norhikmah</i> .....	9
3.	<b>A Secure Memo for Mobile Application using Blowfish Encryption Technique</b> <i>M.S. Suhaimi, H. Nahar, M. Zulkiflee, A. Hassan</i> .....	15
4.	<b>Analysis of Data Mining Tools for Android Malware Detection</b> <i>Robiah Yusof, Nurul Syahirrah Adnan, Nurlaily Abd. Jalil and Raihana Syahirah Abdullah</i> .....	21
5.	<b>Student Engagement in Learning Software Engineering Subject using Gamification Approach: A Case Study</b> <i>Nur Faiqah Ab Hamid@Fauzi, Mashanum Osman, Sazalinsyah Razali, Nor Haslinda Ismail, Nik Rahila Wan Ibrahim</i> .....	25



## **Journal of Advanced Computing Technology and Application (JACTA)**

Center for Advanced Computing Technology (C-ACT)

Faculty of Information & Communication Technology

Universiti Teknikal Malaysia Melaka

Hang Tuah Jaya, 76100 Durian Tunggal

Melaka, Malaysia



E-mail: [editor.jacta.utm.edu.my](mailto:editor.jacta.utm.edu.my)

Website: <https://jacta.utm.edu.my>

JACTA is an open access journal that provides a platform for researchers, practitioners and experts to share their research findings and readers to access knowledge at the state-of-the-art. The creation of JACTA has been a significant to Computing and Computer Science fields. In fact, JACTA is generated from a collaboration between Universiti Teknikal Malaysia Melaka (UTeM), Faculty of Information and Communication Technology (FTMK) and Center of Advanced Computing Technology (C-ACT). Furthermore, articles submitted to JACTA will be screened based on a peer review process to ensure the article contribution, relevance, readability and originality. Each year, in the month of May and November, JACTA will publish the issues and numbers based on the amount of high quality manuscripts that has been accepted. Potential authors are invited to submit their original contribution in the research topic of Algorithm and Computing, Analytics and Computational Intelligence, Cyber-Physical Systems and Advanced Networking Systems, Cyber Security and Digital Forensics, Immersive Multimedia and Games Technology; and Software Engineering and Knowledge Management but not limited to:

### **1. Algorithm and Computing**

- Algorithm Development and Mathematical modelling
- Cloud Computing
- Pervasive Computing
- Distributed Computing
- Social Computing
- Bio-inspired Computing
- High Performance Computing
- Human-centric Computing
- Ubiquitous Computing

### **2. Analytics and Computational Intelligence**

- Data Analytics
- Machine Learning
- Artificial intelligence

**3. Cyber-Physical Systems and Advanced Networking Systems**

- Internet-of-Things (IoT) and Machine-to-Machine
- Wireless Sensor Networks (WSNs) design
- Network Performance, Network Management, Network Surveillance
- Network Architecture & Design and Analysis

**4. Cyber Security and Digital Forensics**

- IoT Forensics
- Security and Privacy

**5. Immersive Multimedia and Games Technology**

- Multimedia Compression
- Multimedia System
- Virtual Reality and Augmented Reality
- Games Development
- Image and Signal Processing

**6. Software Engineering and Knowledge Management**

- Software Verification and Validation
- Software Testing
- Software Architecture and Design
- Database Management System