Journal of ICT Research and Applications

Journal of ICT Research and Applications welcomes full research articles in the area of Information and Communication Technology from the following subject areas: Theory, Signal Processing, Electronics, Computer Network, Telecommunication, Wireless & Mobile Computing, Internet Technology, Multimedia, Software Engineering, Computer Science, Information System, and Knowledge Management. Authors are invited to submit articles that have not been published previously and are not under consideration elsewhere.

Abstracts and articles published on *Journal of ICT Research and Applications* are available online at http://journals.itb.ac.id/index.php/jictra and indexed by Scopus, Google Scholar, DOAJ, EBSCO Open Science Directory, Electronic Library University of Regensburg, Open J-Gate, New Jour, International Association for Media and Communication Research (IAMCR), Cabell's Directories, Zurich Open Repository and Archive Journal Database, and ISJD-Indonesian Institute of Sciences.

Publication History

Formerly known as:

• ITB Journal of Information and Communication Technology (2007 – 2012)

Editorial board of	f Journal of ICT	Docoarch	and Applications
Editorial board o	or Journal of ICI	Research	and Applications

Chief Editor Achmad Munir School of Electrical Engineering and Informatics ITB, Indonesia	Adit Kurniawan School of Electrical Engineering and Informatics ITB, Indonesia	Rila Mandala School of Electrical Engineering and Informatics ITB, Indonesia	Bambang Riyanto Trilaksono School of Electrical Engineering and Informatics ITB, Indonesia
Editorial Board Hans Dulimarta Grand Valley State University, USA	Yoanes Bandung School of Electrical Engineering and Informatics ITB, Indonesia	Dugki Min School of Computer Science and Engineering, Konkuk University, Korea	Anak Agung Julius Dept. Electrical, Computer and Systems Engineering, Rensselaer Polytechnic Institute Jonsson Engineering Center, New
Ken Ferens University of Manitoba, Canada	M. Amin Sulthoni School of Electrical Engineering and Informatics ITB,	Ayu Purwarianti School of Electrical Engineering and Informatics ITB,	York, USA Dwi H. Widyantoro School of Electrical
Leo P. Ligthart International Research	Indonesia	Indonesia	Engineering and Informatics ITB, Indonesia
Center on Telecommunication and Radar, TU Delft, Netherlands	Budi Rahardjo School of Electrical Engineering and Informatics ITB, Indonesia	David Taniar Clayton School of Information Technology Monash University, Australia	Rinaldi Munir School of Electrical Engineering and Informatics ITB, Indonesia

Publication assistant: Yuliah Qotimah. Address: *ITB Journal Publisher*, LPPM ITB, Center for Research and Community Services (CRCS) Building 6th & 7th Floor, Jl. Ganesha No. 10 Bandung 40132, Indonesia, Tel. +62-(022)-86010080, Fax.: +62-(022)-86010051; e-mail: jictra@lppm.itb.ac.id.

Distribution: Distributed to other universities and research institutions for exchange publications and to regular subscribers.

Subscription per issue: Rp 100.000,- (domestic) and \$50 (overseas). Order form for subscription should be sent to the editorial office.

Reg. No. 691-SIC-UPPGT-SIT-1963, Accreditation No. 30/E/KPT/2018

Published by ITB Journal Publisher, the Institute for Research and Community Services, Institut Teknologi Bandung, in collaboration with Indonesian Engineering Association (Persatuan Insinyur Indonesia - PII).

Cover Design by Chandra Tresnadi.

Table of Contents i

Table of Contents

1.	Review on the Use of ICT Driven Solutions Towards Managing Global Pandemics Navod Neranjan Thilakarathne	207
2.	Hate Speech Classification in Indonesian Language Tweets by Using Convolutional Neural Network Dewa Ayu Nadia Taradhita & I Ketut Gede Darma Putra	225
3.	An Adaptive Common Control Channel MAC with Transmission Opportunity in IEEE 802.11ac Azhar Abbad Alsufyani, Khaled H. Almotairi	240
4.	Development of Hybrid Automatic Segmentation Technique of a Single Leaf from Overlapping Leaves Image Ripple Bala Jibrin, Habeeb Bello Salau, Ime Jarlath Umoh, Adeiza James Onumanyi, Salawudeen Ahmed Tijani & Basira YahayaDinaryanto,	257
5.	Real A Proposed Hidden Markov Model Method for Dynamic Device Pairing on Internet of Things End-Devices Aji Gautama Putrada & Nur Ghaniaviyanto Ramadhan	274
6.	A New Indonesian Traffic Obstacle Dataset and Performance Evaluation of YOLOv4 for ADAS Agus Mulyanto, Wisnu Jatmiko, Petrus Mursanto, Purwono Prasetyawan & Rohmat Indra Borman	286