

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 Journal of ICT Research and Applications

Chief Editor Dwi H. Widyantoro 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	Armein Z. Langi 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 York, USA
Ken Ferens University of Manitoba, Canada	M. Amin Sulthoni School of Electrical Engineering and Informatics ITB, Indonesia	Ayu Purwarianti School of Electrical Engineering and Informatics ITB, Indonesia	
Leo P. Ligthart International Research 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	

Publication assistant: Dini Sofiani Permatasari & Yuliah Qotimah. Address: *ITB Journal Publisher*, LPPM ITB, Ged. Rektorat ITB Lt. 5, Jalan Tamansari 64, Bandung 40116, Indonesia, Tel. (022) 2501759 ext. 121, Fax.: (022) 2504010; 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. 56/DIKTI/Kep/2012 (Juli 2012- Juli 2017)

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

1. Dynamic Path Planning for Mobile Robots with Cellular Learning Automata Judhi Santoso, Bambang Riyanto & Widyawardhana Adiprawita	1
2. Randomized Symmetric Crypto Spatial Fusion Steganographic System Viswanathan Perumal	16
3. Voting-based Classification for E-mail Spam Detection Bashar Al-Shboul, Heba Hakh, Hossam Faris, Ibrahim Aljarah & Hamad Alsawalqah	31
4. Design of Triple-Band Bandpass Filter Using Cascade Tri-Section Stepped Impedance Resonators Gunawan Wibisono, Teguh Firmansyah & Tierta Syafraditya	45
5. VLSI Architecture for Configurable and Low-Complexity Design of Hard-Decision Viterbi Decoding Algorithm Rachmad Vidya Wicaksana Putra & Trio Adiono	59
6. Topic Modeling in Sentiment Analysis: A Systematic Review Toqir A. Rana, Yu-N Cheah & Sukumar Letchmunan	78