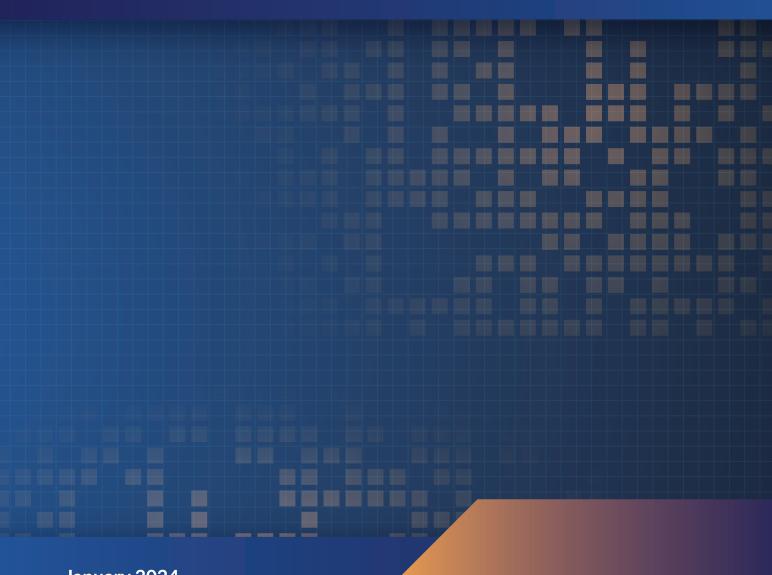
# **JST: SMART SYSTEMS AND DEVICES**



January 2024 Volume 34 Issue 1

Since 1991 No. 171

#### **GENERAL GUIDELINES**

- The Journal of Science and Technology publishes research results with novel scientific and practical values in scientific research, technological transfer and production practice. The work described must not have been published in or submitted to other scientific journals.
- 2. Manuscript to be submitted must be prepared according to the journal's template.
- 3. All manuscripts will be double blind reviewed. Authors need to ensure that their manuscripts are prepared in a way that does not give away their identity.
- 4. The contribution and affiliation of each author in a paper should be clarified. One author should be assigned as the corresponding author.
- 5. Publications of results from research projects must have permission from the funding agencies and should include conforming acknowledgment.
- 6. Authors are requested to submit their manuscript and follow the review progress electronically by using the online submission system on the journal's web site.
- 7. The detail guidelines for authors and reviewers can be consulted on the journal's website.

No. 1, Dai Co Viet Str., Hai Ba Trung District, Hanoi, Vietnam Tel: (+84 24) 3623.0949 | email: jst@hust.edu.vn | website: https://jst.hust.edu.vn



Journal of Science and Technology

## **Engineering and Technology for Sustainable Development**

Volume 34, Issue 1, January 2024

#### **Deputy Editor-in-Chief**

Prof. Dr. Dinh Van Phong Hanoi University of Science and Technology Vietnam

#### **Advisory Board**

Prof. Dr. Sci. Banh Tien Long - VASE, Vietnam
Prof. Dr. Sci. Dang Vu Minh - VUSTA, Vietnam
Prof. Dr. Sci. Ho Tu Bao - JAIST, Vietnam
Prof. Dr. Sci. Bui Van Ga - UDN, Vietnam
Assoc. Prof. Dr. Dang Hoai Bac - PTIT, Vietnam
Assoc. Prof. Dr. Mai Thanh Phong - HCMUT, Vietnam
Prof. Dr. Nguyen Duc Chien - HUST, Vietnam
Assoc. Prof. Dr. Huynh Quyet Thang - HUST, Vietnam

#### **Editorial Board**

Assoc. Prof. Dr. Lai Ngoc Anh, HUST, Vietnam Assoc. Prof. Dr. To Kim Anh, HUST, Vietnam Assoc. Prof. Dr. Do Van Dung, HCMUTE, Vietnam Assoc. Prof. Dr. Le Hieu Giang, HCMUTE, Vietnam Prof. Dr. Huynh Trung Hai, HUST, Vietnam Assoc. Prof. Dr. Vu Duy Hai, HUST, Vietnam Assoc. Prof. Dr. Bui Anh Hoa, HUST, Vietnam Prof. Dr. Nguyen Duc Hoa, HUST, Vietnam Prof. Dr. Nguyen The Hung, UDN, Vietnam Prof. Dr. Le Kim Hung, UDN, Vietnam Dr. Nguyen Thanh Hung, HUST, Vietnam Prof. Dr. Kozo Ishizaki, NUT, Japan Assoc. Prof. Dr. Preechar Karin, KMITL, Thailand Prof. Dr. Hyungsun Kim, Inha University, Korea Prof. Dr. Jae-chun Lee, KIGAM, Korea Prof. Dr. Tran Van Nam, UDN, Vietnam Prof. Dr. Nguyen Thanh Nam, HCMUT, Vietnam Assoc. Prof. Dr. Truong Quoc Phong, HUST, Vietnam Assoc. Prof. Dr. Le Thi Kim Phung, HCMUT, Vietnam Assoc. Prof. Dr. Le Minh Phuong, HCMUT, Vietnam Assoc. Prof. Dr. Hoang An Quoc, HCMUTE, Vietnam Assoc. Prof. Dr. Iman K. Reksowardojo, ITB, Indonesia Prof. Dr. Olivier Sename, Grenoble INP, France Prof. Dr. Le Minh Thang, HUST, Vietnam Assoc. Prof. Dr. Nguyen Xuan Thao, HUST, Vietnam Assoc. Prof. Dr. Hoang Trang, HCMUT, Vietnam Prof. Dr. Vu Van Yem, HUST, Vietnam

#### Supported by

Hanoi University of Science and Technology
Ho Chi Minh City University of Technology
Ho Chi Minh City University of Technology and Education
Posts and Telecommunications Institute of Technology
University of Danang

### **CONTENTS**

1.	An Efficient Face Recognition System Based on Edge Processing Using GPUs	1		
	Ha Xuan Nguyen <sup>1*</sup> , Dong Nhu Hoang <sup>2</sup> , Hung Trung Nguyen <sup>2</sup> , Hai Ngo Minh <sup>2</sup> , Tuan Minh Dang <sup>2,3,4</sup>			
	<sup>1</sup> Hanoi University of Science and Technology, Ha Noi, Vietnam			
	<sup>2</sup> CMC Applied Technology Institute, CMC Corporation, Ha Noi, Vietnam			
	<sup>3</sup> CMC University, CMC Corporation, Ha Noi, Viet Nam			
	<sup>4</sup> Posts and Telecommunication Institute of Technology, Ha Noi, Vietnam			
2.	Solving Resource Allocation Problem in Wifi Network by Dantzig-Wolfe Decomposition Algorithm	9		
	Ta Anh Son*, Nguyen Thi Thuy			
	Hanoi University of Science and Technology, Ha Noi, Vietnam			
3.	Credit Card Service Churn Prediction by Machine Learning Models			
	Tran Hoang Hai <sup>l,*</sup> , Vu Van Thieu <sup>l</sup> , Doan Minh Hieu <sup>2</sup>			
	<sup>1</sup> Hanoi University of Science and Technology, Ha Noi, Vietnam			
	<sup>2</sup> HUS High School for Gifted Students, Ha Noi, Vietnam			
4.	EDDS-Unet: An Encoder-Decoder Double Skip Connection Scheme for Skin Lesion Segmentation	23		
	Thi-Thao Tran, Minh-Nhat Trinh, Nhu-Toan Nguyen, Van-Truong Pham* Hanoi University of Science and Technology, Ha Noi, Vietnam			
5.	Study of the Dynamics of Automated Guided Vehicle Using Mecanum Omnidirectional Wheel	31		
	Tong Xuan Loc, Truong Dang Viet Thang, Ho Huu Hai*			
	Hanoi University of Science and Technology, Ha Noi, Vietnam			
6.	Fuzzy Observer-Based Control Design for Rotary Inverted Pendulum Using Takagi-Sugeno Model	42		
	Nguyen Thi Van Anh, Dong Bao Trung, Phan Bao Ngoc, Dao Quy Thinh* Hanoi University of Science and Technology, Ha Noi, Vietnam			
7.	Control of the Tower Crane Using Input Shaping-Sliding Mode Control	51		
	Minh Duc Duong, Minh Dung Le, Duy Long Le, Quy Thinh Dao*			
	Hanoi University of Science and Technology, Ha Noi, Vietnam			
8.	An Agent-Based Model for Simulating the Interactions of Tigers, Leopards, and Wild Boars to Support Wildlife Conservation Planning	58		
	Phung Anh Hung, Nguyen Duc Hung, Nguyen Phuong Thuy* Hanoi University of Science and Technology, Ha Noi, Vietnam			