PROCEEDINGS OF SPIE

Fifth International Conference on Computer Vision and Computational Intelligence (CVCI 2024)

Chin-Chen Chang Chutisant Kerdvibulvech Editors

29–31 January 2024 Bangkok, Thailand

Organized by National Institute of Development Administration, Thailand Singapore Institute of Electronics, Singapore

Sponsored by National Institute of Development Administration, Thailand Singapore Institute of Electronics, Singapore

Published by SPIE

Volume 13169

Proceedings of SPIE 0277-786X, V. 13169

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Fifth International Conference on Computer Vision and Computational Intelligence (CVCI 2024), edited by Chin-Chen Chang, Chutisant Kerdvibulvech, Proc. of SPIE Vol. 13169, 1316901 ⋅ © 2024 SPIE ⋅ 0277-786X ⋅ doi: 10.1117/12.3034699

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings: Author(s), "Title of Paper," in *Fifth International Conference on Computer Vision and Computational Intelligence (CVCI 2024)*, edited by Chin-Chen Chang, Chutisant Kerdvibulvech, Proc. of SPIE 13169, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510680050

ISBN: 9781510680067 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2024 Society of Photo-Optical Instrumentation Engineers (SPIE).

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

v Conference Committee

SESSION 1	IMAGE RECOGNITION AND IMAGE CLASSIFICATION
13169 02	Efficient boxing punch classification: fine-grained skeleton-based recognition made light [13169-5]
13169 03	Recognition of vehicle country from license plate image based on Siamese network model with triplet loss function and negative sampling technique [13169-16]
13169 04	Promptable model for premium connection sealing surface detection and segmentation [13169-14]
13169 05	E-commerce image classification with transfer learning [13169-1]
SESSION 2	DIGITAL IMAGE ANALYSIS AND PROCESSING METHODS
13169 06	A local distance descriptor for 3D point clouds [13169-3]
13169 07	Zero/few-shot anomaly localisation using language prompts [13169-10]
13169 08	Purifying adversarial perturbations based on a text-guided diffusion model [13169-17]
13169 09	CLEVR-BT-DB: a benchmark dataset to evaluate the reasoning abilities of deep neural models in visual question answering problems [13169-13]
13169 OA	2D virtual YouTuber character generation using generative adversarial networks [13169-2]
SESSION 3	ADVANCED INTELLIGENT INFORMATION SYSTEMS AND ARTIFICIAL INTELLIGENCE APPLICATIONS
13169 OB	Al-based, automated longitudinal performance monitoring of multiple boxers in large scale videos [13169-8]
13169 OC	Hiding information in a reordered codebook using pairwise adjustments in codewords [13169-4]
13169 OD	Analysis of various machine learning models in detecting credit card fraud activities [13169-7]

13169 OE	Enhance routing efficiency in dynamic edge computing environments through multi-agents optimization [13169-9]
13169 OF	Calculation and planning of multi-beam survey lines based on geometric analysis [13169-12]

Conference Committee

Conference Advisory Chair

Nikola Kasabov, Auckland University of Technology (New Zealand)

Conference Chairs

Chin-Chen Chang, Feng Chia University (Taiwan)Chutisant Kerdvibulvech, National Institute of Development Administration (Thailand)

Program Chairs

Zhangjin Huang, University of Science and Technology of China (China)

Ka-Chun Wong, City University of Hong Kong (Hong Kong, China)

Steering Co-chairs

Francesco Zirilli, Università degli Studi di Roma La Sapienza (Italy) **Grigorios N. Beligiannis**, University of Patras (Greece)

Chapter Chair

Jacey Lynn Minoi, Universiti Malaysia Sarawak (Malaysia)

Publication Chair

Apple Xiong, Singapore Institute of Electronics (Singapore)

Publicity Chair

Lei Chen, Shandong University (China)

Technical Program Committee

Zhangjin Huang, University of Science and Technology of China (China)

Ka-Chun Wong, City University of Hong Kong (Hong Kong, China) **Jacey Lynn Minoi**, Universiti Malaysia Sarawak (Malaysia)

Eric Patterson, Clemson University (United States)

Francesco Zirilli, Università degli Studi di Roma La Sapienza (Italy)

Grigorios N. Beligiannis, University of Patras (Greece)

Vishnu Kotrajaras, Chulalongkorn University (Thailand)

Zhiyu Jiang, Northwestern Polytechnical University (China)

Ku-Yaw Chang, National Chin-Yi University of Technology (Taiwan)

Gianluca Zaza, Università degli Studi di Bari Aldo Moro (Italy)

Rawesak Tanawongsuwan, Mahidol University (Thailand)

Yubing Tong, University of Pennsylvania (United States)

Stephanie Chua, Universiti Malaysia Sarawak (Malaysia)

Piyanuch Silapachote, Mahidol University (Thailand)

Sukanya Phongsuphap, Mahidol University (Thailand)

Muriel Visani, La Rochelle Université (France)

Shekhar R., Alliance University (India)

Nguyen Thi Hoang Lan, Hanoi University of Science and Technology (Vietnam)

Amnach Khawne, King Mongkut's Institute of Technology Ladkrabang (Thailand)

Olarik Surinta, Mahasarakham University (Thailand)

Tsorng-Lin Chia, Ming Chuan University (Taiwan)

Anwaar Ul-Haq, Charles Sturt University (Australia)

Soodamani Ramalingam, University of Hertfordshire (United Kingdom)

Hongchuan Yu, Bournemouth University (United Kingdom)

Lily Meng, University of Hertfordshire (United Kingdom)

Munkhjargal Gochoo, United Arab Emirates University (United Arab Emirates)

Zahid Akthar, State University of New York Polytechnic Institute (United States)

Md Liakat Ali, Rider University (United States)

Stefano Berretti, Università degli Studi di Firenze (Italy)

Uma Mudenagudi, Karnatak Lingayat Education Technological University (India)

Wanwan Li, University of South Florida (United States)

Alfonso Guarino, Università degli Studi del Sannio di Benevento (Italy) **Luis Gómez Déniz**, Universidad de Las Palmas de Gran Canaria

Yew Kee Wong, Hong Kong Chu Hai College (Hong Kong, China)

Session Chairs

- Image Recognition and Image Classification Kazuya Ueki, Meisei University (Japan)
- 2 Digital Image Analysis and Processing Methods
 - **Ahmad Loffi**, Nottingham Trent University (United Kingdom)
- 3 Advanced Intelligent Information Systems and Artificial Intelligence Applications
 - Md Liakat Ali, Rider University (United States)