PROCEEDINGS OF SPIE

Second International Conference on Advanced Robotics, Automation Engineering, and Machine Learning (ARAEML 2025)

Genci Capi Xudong Jiang Shigeo Akashi Tomofumi Matsuzawa Editors

18–20 July 2025 Tokyo, Japan

Organized by International Computing and Engineering Association (Hong Kong, China) Tokyo University of Science (Japan) Cisco Networking Academy (Japan)

Published by SPIE

Volume 13815

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 Second International Conference on Advanced Robotics, Automation Engineering, and Machine Learning (ARAEML 2025), edited by Genci Capi, Xudong Jiang, Shigeo Akashi, Tomofumi Matsuzawa, Proc. of SPIE 13815, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510695238

ISBN: 9781510695245 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2025 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

SECOND INTERNATIONAL CONFERENCE ON ADVANCED ROBOTICS, AUTOMATION **ENGINEERING, AND MACHINE LEARNING (ARAEML25)** 13815 02 Sliding mode trajectory tracking control for uncertain manipulators based on fully actuated system theory [13815-1] 13815 03 AVB-aware fault-tolerance routing of time-triggered traffic in time-sensitive networks [13815-4] 13815 04 Adaptive feature fusion with mixture of experts for no-reference video quality assessment [13815-5] 13815 05 Pseudo tongue data generation using statistical tongue model and TSC-GAN [13815-6] 13815 06 DHINet: decomposed hybrid interaction network [13815-8] 13815 07 Time-varying Bezout identity-based compensation for perturbed MIMO right coprime factorization feedback systems [13815-13] 13815 08 Performance analysis of a dual-helix driven pipeline descaling robot [13815-17] 13815 09 Efficient robust control of pure sine wave inverters for robotic automation systems [13815-20] 13815 0A Research on multitarget tracking and event warning technology method for engineering vehicles and personnel based on improved YOLOv5 and DeepSort algorithms [13815-23] 13815 0B Performance measurement of Bayesian online changepoint detection and its application [13815-24] 13815 OC Application of multiuser listening system to virtual remote surveillance system [13815-26] 13815 0D Research on the value evaluation of agricultural listed companies based on the GA-BP neural network method [13815-28] 13815 OE ShufaNet: classification method for calligraphers who have reached the professional level [13815-29] 13815 OF Improved model in generated image detection [13815-30] 13815 0G UAV real-time path planning in 3D multidynamic obstacle environments [13815-31]

13815 OH	Genetic algorithm-based oil pipeline continuous production scheduling and manufacturing execution system [13815-32]
13815 01	Data augmentation for equipment technical standard entity recognition [13815-33]
13815 OJ	A deep-learning-based reconstruction method for 3D low-altitude propagation fields [13815-34]
13815 OK	Enhancing trading strategy performance by using memetic algorithm with a diverse technical indicator pool [13815-35]
13815 OL	TIR-VD: bimodal CNN-BiLSTM with attention for robust violence detection in thermal infrared videos [13815-36]
13815 OM	An adaptive multipath routing algorithm based on deep reinforcement learning with delayed-reward in dynamic IoT networks [13815-37]
13815 ON	Support attribute anonymous multiauthority access control scheme [13815-38]
13815 00	Customer flow and behavior analysis using YOLO, DeepSORT, and computational geometry algorithms [13815-39]
13815 OP	Comparison between traditional machine learning algorithms and deep learning algorithms in pneumonia image classification [13815-40]
13815 0Q	Research on lightweight object detection network for high-resolution remote sensing images [13815-44]
13815 OR	Object target tracking using the alpha sliding innovation filter [13815-45]