

PROCEEDINGS OF SPIE

***Third Asia Conference on
Computer Vision, Image
Processing, and Pattern
Recognition (CVIPPR 2025)***

Lei Chen
Editor

23–25 May 2025
Xiamen, China

Organized by
College of Computer Science and Technology, Huaqiao University (China)

Sponsored by
Huaqiao University (China)

Published by
SPIE

Volume 13697

Proceedings of SPIE 0277-786X, V. 13697

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

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 SPIDigitalLibrary.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 *Third Asia Conference on Computer Vision, Image Processing, and Pattern Recognition (CVIPPR 2025)*, edited by Lei Chen, Proc. of SPIE 13697, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510693432

ISBN: 9781510693449 (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.

**SPIE. DIGITAL
LIBRARY**

SPIDigitalLibrary.org

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

vii *Conference Committee*

THIRD ASIA CONFERENCE ON COMPUTER VISION, IMAGE PROCESSING, AND PATTERN RECOGNITION

- 13697 02 **Video anomaly detection based on both normal and anomaly reconstruction with Siamese Network** [13697-44]
- 13697 03 **Fabric image retrieval based on fine-grained features** [13697-10]
- 13697 04 **Analysis of SIFT, SURF, and ORB feature extraction techniques for 3D reconstruction of mango trees** [13697-18]
- 13697 05 **Student classroom behavior detection algorithm based on improved YOLO11** [13697-3]
- 13697 06 **EL Former-BEV: an efficient lightweight transformer-based BEV perception method** [13697-1]
- 13697 07 **Research on flame detection algorithm based on improved YOLOv11** [13697-7]
- 13697 08 **Community illegal building detection algorithm based on CICDNet network** [13697-15]
- 13697 09 **FA-Mamba: a Mamba-based approach for remote sensing change detection** [13697-34]
- 13697 0A **Feature-fusion-based learning algorithm for construction site safety monitoring** [13697-23]
- 13697 0B **A lightweight fashion style recognition model based on large kernel separable attention mechanism** [13697-33]
- 13697 0C **360-degree video long-term viewport prediction model based on LSTM and self-attention mechanism** [13697-37]
- 13697 0D **3D reconstruction of colored objects via Gamma correction and piecewise normalization** [13697-41]
- 13697 0E **Cattle detection system based on various variants of optimized YOLOv5** [13697-19]
- 13697 0F **Research on upper garment image classification based on improved ResNet** [13697-42]
- 13697 0G **The application and thinking of AIGC in animation creation: taking the AIGC work time as an example** [13697-32]

- 13697 OH **Design of personalized career planning assistant based on large language models** [13697-31]
- 13697 OI **Intelligent legal consultation and contract review system based on LLMs and knowledge graph** [13697-8]
- 13697 OJ **Common sense-guided embodied task reasoning method for service robots** [13697-59]
- 13697 OK **Improved YOLO model with attention mechanism and soft non-maximum suppression algorithm for applications in intelligent safety supervision** [13697-57]
- 13697 OL **A CT eye disease classification method combining EMA and mobileNetV3** [13697-26]
- 13697 OM **Efficient defect detection method for YOLOv5 circuit board based on RepVGG and SE attention mechanism** [13697-4]
- 13697 ON **KDAU-Net: KAN-based dynamic attention U-Net with global-local fusion for robust skin-lesion segmentation** [13697-21]
- 13697 OO **1+1 $\geq$ 2: achieving enhanced global pattern recognition with FSA-ResNet** [13697-2]
- 13697 OP **Feature segmentation-based recognition technology for explosive devices** [13697-53]
- 13697 OQ **Research and application of DeepSeek large model and digital twin technology in warehouse and factory workshop** [13697-50]
- 13697 OR **Deep learning-based change detection in quadcopter aerial images** [13697-24]
- 13697 OS **Comparative performance of YOLOv5 and R-CNN in detecting overlapping fasteners** [13697-25]
- 13697 OT **SDC-YOLO11: lightweight small object detection in remote sensing via deformable convolution and cross-group attention optimization** [13697-5]
- 13697 OU **Maritime target search path planning based on a collision-aware ant colony algorithm** [13697-52]
- 13697 OV **A global-local edge-aware adaptive feature fusion network for rat corneal vessel segmentation** [13697-12]
- 13697 OW **Research on the application of digital image restoration technology in art appreciation teaching: taking the reconstruction of missing figures in Yan Liben's Emperor Taizong Receiving the Tibetan Envoy as an example** [13697-55]
- 13697 OX **AI-driven livestock movement prediction with deep learning and Kalman filtering** [13697-56]
- 13697 OY **Research on automatic navigation and line drawing system for intelligent vehicles based on multisensor fusion** [13697-20]

- 13697 0Z **Dynamic emotional processing in major depressive disorder with naturalistic stimuli**
[13697-48]
- 13697 10 **Satellite hybrid static-dynamic scheduling method driven by large language model**
[13697-29]
- 13697 11 **Energy consumption prediction based on GAN-AGA-SVR: an example of copper metallurgy** [13697-13]
- 13697 12 **Study on the spatial layout characteristics and optimization of child-friendly preschool education facilities in the main urban area of Chongqing based on big data** [13697-6]
- 13697 13 **A simple and effective normalization method for neural networks** [13697-36]