# PROCEEDINGS OF SPIE

# International Conference on Computer Vision and Image Processing (CVIP 2024)

Xin Xu Zhenghao Shi Editors

15–17 November 2024 Hangzhou, China

Organized by
Xi'an University of Technology (China)
Beihang University (China)
SouthWest Petroleum University (China)

Published by SPIE

Volume 13521

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 *International Conference on Computer Vision and Image Processing (CVIP 2024)*, edited by Xin Xu, Zhenghao Shi, Proc. of SPIE 13521, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510688384

ISBN: 9781510688391 (electronic)

Published by

SPIE

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

31 IL.OIG

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**

- vii Conference Committee
- ix Preface

### COMPUTER VISION AND IMAGE PROCESSING TECHNOLOGIES

13521 02	Video object segmentation quality assessment without groundtruth [13521-8]
13521 03	YOLOv8's layout analysis algorithm integrates multiscale features [13521-4]
13521 04	Daytime overexposed image processing for autonomous driving based on improved multiscale Retinex with color restoration [13521-28]
13521 05	Remote sensing image super-resolution reconstruction using hybrid dilated convolution and adaptive pruning $[13521\text{-}5]$
13521 06	ADLT: a novel method for effective detection of adversarial attacks in image retrieval [13521-23]
13521 07	CAU-Net: U-shaped medical image segmentation network based on compound attention [13521-7]
13521 08	B-H-deformable-DETR: H-deformable-DETR model based on Bayesian neural network optimization in few-shot object detection [13521-17]
13521 09	Efficient LED image reflection removal via mixture of experts [13521-18]
13521 0A	A zero-reference nighttime road image enhancement method [13521-12]
13521 OB	SFPCDDFuse: an enhanced CDDFUSE infrared and visible image fusion model [13521-29]
13521 OC	Recognition of side-scan sonar images under long-tail distribution [13521-33]
13521 0D	Comparison of different masking strategies of MAE [13521-43]
13521 OE	Real-time traffic sign recognition for driving: a hybrid approach integrating efficient  Mamba models with dilated convolution [1352]-13]

## WIRELESS COMMUNICATION AND NETWORK TECHNOLOGIES

13521 OF	Mask R-CNN-based method for recognizing external breakage of transmission lines [13521-11]
13521 0G	Light-aware luminance adaptive enhancement network for RGBT video object detection [13521-40]
13521 OH	Wireless multipath VR audio and video file synchronous transmission technology based on two-way transmission [13521-38]
13521 01	Research on fine recognition method of electric power equipment safety hazards based on visual processing [13521-39]
13521 OJ	Workpiece inspection system based on zoom lens [13521-3]
13521 OK	TSEP: text spotting based on transformer with bidirectional explicit points sampling [13521-2]
13521 OL	Research on anti-breakout system of power optical fiber communication network based on remote sensing image target detection [13521-41]
13521 OM	DSPR-DoubleU-Net: a network for tongue crack segmentation [13521-32]
13521 ON	Lightweight insulator defect detection algorithm based on improved Deeplabv3+ and YOLOv5s [13521-9]
13521 00	Deep difference convolutional network for RGBD instance segmentation [13521-25]
13521 OP	Research on instantaneous feature recognition models of finger movement based on surface electromyography signals [13521-10]
13521 0Q	IHD-Former: infrared hybrid denoising transformer for removing infrared mixed noise [13521-24]
13521 OR	Swin-BFB-UNet: a Swin transformer-based UNet combined with bottleneck fusion block for vertebra segmentation $[13521\text{-}6]$
	INTELLIGENT SYSTEMS AND DETECTION TECHNOLOGIES
13521 OS	SparseNetYOLOv8: integrating vision transformers and dynamic probing for enhanced sparse object detection [13521-20]
13521 OT	3D lane detection method based on M-BEV-LaneDet [13521-31]
13521 OU	A robust lane detection and tracking method based on vanishing point for multi-environment situation [13521-27]

13521 0V	Vehicle detection in different traffic scenarios based on YOLOv5 [13521-15]
13521 OW	A method for stochastic human action prediction based on denoising diffusion probability model [13521-21]
13521 0X	Facial expression recognition based on YOLOv9 improvement [13521-19]
13521 0Y	Improved YOLOv8-based PCB defect detection [13521-26]
13521 OZ	Early detection and diagnosis of skin diseases based on YOLOv9 improvement [13521-16]
13521 10	Multiphase difference enhanced fusion for tumor and pancreas segmentation [13521-30]
13521 11	Attention synergy adaptive fusion convolutional neural network for multilabel skin lesion classification [13521-14]
13521 12	Laser spot array detection for structured light calibration [13521-42]
13521 13	Research on visual monitoring of natural gas leak based on spectral video technology [13521-37]
13521 14	Binocular vision measurement of robot end position based on orthogonal iteration to suppress covariance error [13521-34]