

PROCEEDINGS OF SPIE

***International Conference on
Computer Vision, Application,
and Algorithm (CVAA 2022)***

Imane Hilal

Editor

18–20 November 2022

Chongqing, China

Organized by

Chongqing University of Posts and Telecommunications (China)

Sponsored by

AEIC Academic Exchange Information Centre (China)

Published by

SPIE

Volume 12613

Proceedings of SPIE 0277-786X, V. 12613

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 *International Conference on Computer Vision, Application, and Algorithm (CVAA 2022)*, edited by Hilal Imane, Proc. of SPIE 12613, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510664036

ISBN: 9781510664043 (electronic)

Published by

SPIE

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

Telephone +1 360 676 3290 (Pacific Time)

SPIE.org

Copyright © 2023 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*

SESSION 1 COMPUTER VISION AND IMAGE RECOGNITION

- 12613 02 **Pneumonia diagnosis from x-ray images exploiting light-weighted CNN** [12613-46]
- 12613 03 **Feature filtering module of convolutional neural networks for image recognition system**
[12613-3]
- 12613 04 **Video description combining visual and audio features** [12613-5]
- 12613 05 **Obstacle detect based on improved neural network for fusion of radar and visual information**
[12613-37]
- 12613 06 **Monocular 2D and 3D human pose estimation review** [12613-45]
- 12613 07 **The identification and ranging method of transmission line tree barrier based on 3D mapping of
point cloud** [12613-38]
- 12613 08 **Design and implementation of pedestrian detection system based on video image** [12613-33]
- 12613 09 **Adaptive SLIC superpixel segmentation based on images of UAV forward-view** [12613-52]
- 12613 0A **Application of deformable registration method of medical images based on unsupervised
learning in radiotherapy** [12613-22]
- 12613 0B **Adaptive RetinexNet and fusion strategy for low-intensity image enhancement** [12613-28]
- 12613 0C **Multi-branch offset architecture for unaligned cross-view geo localization** [12613-11]
- 12613 0D **The effectiveness of image augmentation in pneumonia diagnosis using convolutional neural
network** [12613-44]
- 12613 0E **Out of distribution detection for medical images** [12613-50]
- 12613 0F **Research on sign language gesture division and gesture extraction in complex background**
[12613-21]
- 12613 0G **A research on deep learning methods for 3D point cloud semantic segmentation** [12613-47]

- 12613 OH **Handwritten Chinese character text image correction method based on block similarity**
[12613-26]
- 12613 OI **A target distance estimation method through front-to-rear binocular vision inspired by head bobbing behaviour of walking bird** [12613-18]

SESSION 2 COMPUTER TECHNOLOGY AND SYSTEM OPERATION

- 12613 OJ **Effectiveness of preprocessing strategies for work hours prediction based on machine learning model** [12613-43]
- 12613 OK **An adversarial cross-modal retrieval method based on collaborative attention networks**
[12613-23]
- 12613 OL **Improved EAST scene text detection based on ResNet-50** [12613-15]
- 12613 OM **High speed train ride comfort evaluation method based on IFOA-BPNN** [12613-6]
- 12613 ON **Evaluation of deep-learning based lane detection under low-light environments** [12613-35]
- 12613 OO **Demographic prediction of mobile users based on machine learning** [12613-41]
- 12613 OP **Semantic segmentation network based on global and local multiscale feature fusion**
[12613-31]
- 12613 OQ **Openpose based motion posture evaluation system** [12613-7]
- 12613 OR **Comparing different machine learning techniques for diabetes risk prediction** [12613-48]
- 12613 OS **Visualization architecture design of multi-dimensional business management resource input**
[12613-39]
- 12613 OT **Semi-supervised learning method based on Fuzzy-LSTM for intrusion detection** [12613-36]

SESSION 3 ADVANCED ALGORITHM AND GEOMETRIC CALCULATION MODEL

- 12613 OU **An interactive method for measuring gender bias and evaluating bias in Chinese word embeddings** [12613-30]
- 12613 OV **Research on face occlusion recognition algorithm based on capsule network** [12613-10]
- 12613 OW **Image rendering efficiency improvement based on deep autoencoder in virtual environment**
[12613-32]
- 12613 OX **Computer vision algorithm practice of multiple video streams in distributed AI cluster** [12613-2]

- 12613 0Y **Automated employee salary prediction algorithm based on machine learning** [12613-51]
- 12613 0Z **Research and development trend of machine learning based track data association algorithm** [12613-12]
- 12613 10 **A hybrid digital watermarking scheme based on silicon photonic microcavity chaos (SPM-Chaos) and DWT** [12613-19]
- 12613 11 **Stroke risk prediction using multiple machine learning algorithms** [12613-53]
- 12613 12 **Point cloud registration algorithm based on improved ICP** [12613-29]
- 12613 13 **Approximation algorithms for variable-sized materials constructing tree-form structures in undirected graph** [12613-24]
- 12613 14 **Survey of image segmentation algorithm based on convolution neural network** [12613-9]
- 12613 15 **Daily temperature prediction exploiting linear regression and LSTM-based model** [12613-49]
- 12613 16 **Contrast clustering based on representation learning** [12613-16]
- 12613 17 **UAV target detection based on attention mechanism YOLOv3 network** [12613-40]
- 12613 18 **Modified tuna swarm optimization algorithm using levy flight** [12613-17]
- 12613 19 **A taxi demand prediction model based on spectral domain graph convolution** [12613-42]