

PROCEEDINGS OF SPIE

International Conference on Image Processing and Intelligent Control (IPIC 2021)

**Feng Wu
Fengjie Cen**
Editors

**30 July–1 August 2021
Lanzhou, China**

Organized by
AEIC—Academic Exchange Information Centre (China)

Sponsored by
Wuhan University (China)

Published by
SPIE

Volume 11928

Proceedings of SPIE 0277-786X, V. 11928

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

International Conference on Image Processing and Intelligent Control (IPIC 2021),
edited by Feng Wu, Fengjie Cen, Proc. of SPIE Vol. 11928, 1192801
© 2021 SPIE · 0277-786X · doi: 10.1117/12.2614580

Proc. of SPIE Vol. 11928 1192801-1

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 Image Processing and Intelligent Control (IPIC 2021)*, edited by Feng Wu, Fengjie Cen, Proc. of SPIE 11928, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510647244
ISBN: 9781510647251 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2021 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

COMPUTER VISION AND MEDICAL IMAGE ANALYSIS

- 11928 02 **Research on visual navigation path extraction method of combine harvester based on machine vision** [11928-34]
- 11928 03 **Test sequence selection method for video criticality evaluation** [11928-15]
- 11928 04 **Adaptive aggregation stereo matching algorithm based on edge preservation** [11928-25]
- 11928 05 **Black and white digital print technology based on computer digital image processing software** [11928-8]
- 11928 06 **Research on the method of predicting feeding volume of rice combine harvester base on machine vision** [11928-44]
- 11928 07 **Three-dimensional point cloud registration algorithm based on quadratic error** [11928-28]
- 11928 08 **FEU-Net: Glomeruli region segmentation network based on pseudo-labelling and channel attention mechanisms** [11928-48]
- 11928 09 **Research on the application of immersive media in new retail cyberspace** [11928-51]
- 11928 0A **Estimation and prediction of fog day-based visibility based on convolutional neural network** [11928-54]
- 11928 0B **A multi-task unsupervised domain adaptation network for medical image segmentation** [11928-36]
- 11928 0C **Research on equipment dynamic failure feature analysis method based on edge computing** [11928-22]
- 11928 0D **Improved coherent point drift for 3D point clouds registration** [11928-29]
- 11928 0E **A camouflage effect evaluation method for moving target based on time constraint** [11928-10]
- 11928 0F **Evaluation and selection of shipbuilding demand in cloud manufacturing environment** [11928-1]

REMOTE SENSING IMAGE RECOGNITION AND OPTICAL IMAGING

- 11928 0G **Infrared image fusion technology research based on feature point matching** [11928-56]

11928 OH	Remote sensing image semantic segmentation method based on improved Deeplabv3+ [11928-53]
11928 OI	Research on image recognition technology based on machine learning in the context of big data [11928-47]
11928 OJ	Infrared image simulation technology based on Vega Prime [11928-16]
11928 OK	Target recognition and positioning method for steel structure spraying robot based on binocular vision [11928-13]
11928 OL	Lip print recognition using LBP based on bit plane [11928-37]
11928 OM	Research on simulation test of thermal interference of flame detector [11928-38]
11928 ON	Chinese style digital illustration texture: the application of Photoshop brushes [11928-5]
11928 OO	Research on improved image edge detection based on Hough transform [11928-26]
11928 OP	PS-GAN: a single image snow removal framework using pseudo-Siamese GANs [11928-21]
11928 OQ	Accurate recognition method of plant leaves based on multi-feature fusion [11928-49]
11928 OR	A novel hyperspectral image classification iteration method based on deep learning [11928-43]
11928 OS	Facial feature transfer based on self-recognition style-encoding face editing network [11928-19]
11928 OT	SAR image target recognition based on improved hybrid attention [11928-7]
11928 OU	Soil image segmentation based on fuzzy clustering OTSU [11928-45]
11928 OV	Gold crucian carp identification based on Siamese network [11928-33]
11928 OW	Design on the online dynamic map service framework in WebGL [11928-40]

INTELLIGENT TARGET DETECTION AND MODEL MATCHING

11928 OX	A point tracking method of Tracking-Detection-Deformation Matching for structural vibration measurement [11928-32]
11928 OY	A repair model to improve arm problem in semantic segmentation generation [11928-14]
11928 OZ	Delving deep into light-weight salient object detection [11928-57]

- 11928 10 **Small target modified car parts detection based on improved Faster-RCNN** [11928-24]
- 11928 11 **Research on orchard water and fertilizer automatic control system based on service composition** [11928-9]
- 11928 12 **Exploration for application scope of interactive digital media in the prevention and control of COVID-19 epidemic in the community: interactive digital media design plan for garbage classification in Jingxianli community as an example** [11928-30]
- 11928 13 **Analysis on the language features of digital sculptures** [11928-20]
- 11928 14 **Downhole target detection based on channel pruning and generalized intersection ratio** [11928-11]
- 11928 15 **Research on skydiving experience design under virtual reality technology** [11928-31]
- 11928 16 **Intelligent garbage detection system based on neural networks** [11928-4]
- 11928 17 **Analysis of digital sculpture language in the application of ZBrush** [11928-23]
- 11928 18 **Real-time stereo matching model based on deformable convolution** [11928-18]
- 11928 19 **Anomaly detection in dosing system** [11928-12]
- 11928 1A **Target detection optimization model based on fine-grained feature fusion** [11928-46]
- 11928 1B **Numerical simulation of single-phase flow in zinc fluidized bed furnace** [11928-2]
- 11928 1C **Energy regulation model of multiple chillers considering building thermal inertia** [11928-42]
- 11928 1D **Dynamic monitoring method of regional communication network service quality for digital city construction** [11928-39]

