PROCEEDINGS OF SPIE

International Symposium on Artificial Intelligence and Robotics 2020

Huimin Lu Jože Guna Yujie Li Editors

8–10 August 2020 Kitakyushu, Japan

Organized by International Society for Artificial Intelligence and Robotics

Sponsored by IEEE Computer Society Big Data Technical Committee International Association of Pattern Recognition

Technical Cosponsor and Publisher SPIE

Volume 11574

Proceedings of SPIE 0277-786X, V. 11574

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 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 Symposium on Artificial Intelligence and Robotics 2020, edited by Huimin Lu, Jože Guna, Yujie Li, Proceedings of SPIE Vol. 11574 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510639683 ISBN: 9781510639690 (electronic)

Published by **SPIE** P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time)· Fax +1 360 647 1445 SPIE.org Copyright © 2020, Society of Photo-Optical Instrumentation Engineers.

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 copying fees. The Transactional Reporting Service base fee for this volume is \$21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online 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. The CCC fee code is 0277-786X/20/\$21.00.

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: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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

ARTIFICIAL INTELLIGENCE

11574 02	ECDet: an efficient convolutional network for real-time object detection [11574-4]
11574 03	Research on character recognition technology based on neural network [11574-5]
11574 04	Delegate proof of job relevance: consensus for a smart industry [11574-12]
11574 05	Substation pointer meters detection and reading based on CNN [11574-15]
11574 06	Cross-domain text classification algorithm based on instance-transfer learning [11574-16]
11574 07	Modulation pattern recognition of M-QAM signals based on convolutional neural network and extreme learning machine [11574-23]
11574 08	Higher accuracy and lower complexity: convolutional neural network for multi-organ segmentation [11574-27]
11574 09	Text emotion analysis of BGRU model based on the fusion of emoticons [11574-28]
11574 0A	Video compression approach for apron surveillance in bad weather [11574-29]
11574 OB	Single image dehazing based on transmittance fusion [11574-30]
11574 OC	Improving performance of dictionary learning via auxiliary training samples and robust dictionary [11574-31]
11574 0D	A fusion model for multi-label emotion classification based on BERT and topic clustering [11574-36]
11574 OE	Chinese poetry and couplet automatic generation based on self-attention and multi-task neural network model [11574-46]
11574 OF	Reinforcement learning based adaptive handover in ultra-dense cellular networks with small cells [11574-50]
11574 0G	An improved ant colony optimization job scheduling algorithm in fog computing [11574-52]

	ROBOTICS
11574 OH	Vessel detection based on dual-operator log-pol top-hat filter [11574-6]
11574 Ol	Small infrared target detection via iteratively reweighted nuclear norm [11574-9]
11574 OJ	Detection and localization of scorebox in long duration broadcast sports videos [11574-11]
11574 OK	An improved genetic algorithm for mobile robot path planning in grid environment [11574-17]
11574 OL	Research on path planning of mobile robot based on improved A* algorithm [11574-19]
11574 OM	A MoCap system for real-time entertainment interaction [11574-22]
11574 ON	Semantic segmentation of manipulator grasping scene with fusion of RGB and depth information [11574-24]
11574 OO	Coal dust image recognition based on improved VGG convolution network [11574-25]
11574 OP	The correlation filter tracking algorithm using multi-feature background perception [11574-26]
11574 OQ	Visual SLAM technology based on weakly supervised semantic segmentation in dynamic environment [11574-49]
11574 OR	Speech emotion recognition based on data enhancement in time-frequency domain [11574-33]
11574 OS	An auto visual servoing manipulator for seafood harvesting [11574-37]
11574 OT	Multi-model transfer and optimization for cloze task [11574-38]
11574 OU	Object localization based on natural language descriptions for fine-grained image [11574-41]
11574 OV	A research on Quick-SIFT and ghosting elimination technique for UAV image mosaic [11574-42]
11574 OW	Tunnel lining voids detection method incorporating guide anchor mechanism [11574-43]
11574 OX	An end-to-end reinforcement learning method for automated guided vehicle path planning [11574-45]
11574 OY	Collaborative filtering recommendation algorithm based on bisecting K-means clustering [11574-47]
11574 OZ	A research on 3D simulation of mine fracture zone based on fractal theory [11574-48]

11574 10 **Optimal design for long-term stable area-coverage satellite group orbit** [11574-51]