PROCEEDINGS OF SPIE

Pattern Recognition and Prediction XXXV

Mohammad S. Alam Vijayan K. Asari Editors

24–25 April 2024 National Harbor, Maryland, United States

Sponsored and Published by SPIF

Volume 13040

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 *Pattern Recognition and Prediction XXXV*, edited by Mohammad S. Alam, Vijayan K. Asari, Proc. of SPIE 13040, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510673984

ISBN: 9781510673991 (electronic)

Published by

SPIE

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

SPIE.ora

Copyright © 2024 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

v Conference Committee

| SESSION 1 | INTELLIGENT PREDICTION |
|-----------|---|
| 13040 02 | Improving pulmonary CT image generation with transformer-based generative adversarial networks [13040-1] |
| 13040 03 | Novel algorithm development for event-based sensing deployment [13040-2] |
| | |
| SESSION 2 | HYPERSPECTRAL IMAGING BASED CLASSIFICATION |
| 13040 04 | Hyperspectral image classification with retentive network [13040-5] |
| 13040 05 | Improving computational complexity of multi-target multi-agent reinforcement for hyperspectral satellite sensor tasking [13040-6] |
| 13040 06 | NABLA-N for meltpond detection [13040-8] |
| | |
| SESSION 3 | MACHINE LEARNING BASED DETECTION |
| 13040 07 | Intelligent knowledge base search tool using large language model and graph neural network (Invited Paper) [13040-9] |
| 13040 08 | Generalized comparison assessment of unstructured data using foundation model features [13040-12] |
| 13040 09 | Underwater simultaneous enhancement and super-resolution impact evaluation on object detection [13040-13] |
| 13040 0A | Evaluation of the required optical resolution for deep learning-based long-range UAV detection [13040-14] |
| 13040 OB | Leveraging deep learning for data processing to improve discriminative modeling capabilities [13040-26] |
| | |
| SESSION 4 | NOVEL PATTERN RECOGNITION METHODS |
| 13040 OC | Using ResWnet for semantic segmentation of active wildfires from Landsat-8 imagery [13040-15] |

| 13040 OD | Algorithm for deinterleaving of RADAR scans for analysis by ELINT systems [13040-18] |
|-----------|---|
| 13040 OE | 3D brain image segmentation using 3D tiled convolution neural networks [13040-19] |
| | |
| SESSION 5 | BIOMETRICS |
| 13040 OF | YOLO-based GNN for multi-person pose estimation [13040-20] |
| 13040 OG | Data visualization of vaccine hesitancy among African American community in Tuskegee County [13040-22] |
| | POSTER SESSION |
| 13040 OH | High-capacity reversible information hiding based on multi-difference histogram and gray coding [13040-24] |
| 13040 01 | Attention-based fusion network for image forgery localization [13040-25] |
| 13040 OJ | Deep learning architecture: an application for skin lesion segmentation-based polar image transformations on dermoscopy images [13040-23] |
| 13040 OK | Subpixel object tracking in RGB intensity and depth imagery [13040-4] |
| | DIGITAL POSTER SESSION |
| 13040 OL | Bridging the gap: deep learning in the semantic segmentation of remote sensing data [13040-3] |
| 13040 OM | Adapting to climate change: the role of metaheuristic algorithms in optimal decision making [13040-7] |
| 13040 ON | Optimizing network sensors using unsupervised machine-learning approach to identify a pollutant source [13040-10] |
| 13040 OP | Small-scale simulator on common warehouse components for low-power object detection methods [13040-16] |
| 13040 OQ | Automatic detection of translocation t(9;22) using Siamese architecture [13040-17] |