PROCEEDINGS OF SPIE

Big Data II: Learning, Analytics, and Applications

Fauzia Ahmad
Editor

27 April – 8 May 2020
Online Only, United States

Sponsored and Published by
SPIE

Volume 11395

Proceedings of SPIE 0277-786X, V. 11395

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 *Big Data II: Learning, Analytics, and Applications*, edited by Fauzia Ahmad, Proceedings of SPIE Vol. 11395 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510635678
ISBN: 9781510635685 (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.

SPIE. DIGITAL LIBRARY
SPIEDigitalLibrary.org

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

SESSION 1 BIG DATA FOR DEFENSE AND SECURITY

11395 04 **Machine learning for discovery analytics to support criminal investigations** [11395-4]

SESSION 2 BIG DATA FOR IMAGING AND AUTONOMOUS SENSING

11395 05 **A novel 3-D radar imaging method based on sparse optimization** [11395-5]

11395 06 **Vehicle detection from multi-modal aerial imagery using YOLOv3 with mid-level fusion** [11395-6]

11395 07 **DeblurGAN-C: image restoration using GAN and a correntropy based loss function in degraded visual environments** [11395-7]

SESSION 3 MACHINE LEARNING I

11395 0B **Motion-aware deep video coding network** [11395-11]

SESSION 4 BIG DATA FOR MEDICINE AND HEALTHCARE

11395 0F **An algorithm for automatic respiratory state classifications using tracheal sound analysis** [11395-15]

11395 0I **Gene expression classification using L1 norm PCA** [11395-18]

SESSION 5 MACHINE LEARNING II

11395 0J **An effective method to obtain contour of fisheye images based on explicit level set method** [11395-13]

11395 0K **Comparable study of convolutional neural networks in classification and feature extraction applications** [11395-20]

11395 0L **Tree-based architectures for rule discovery in sequence modeling** [11395-21]

SESSION 6 BIG DATA MODELING AND PROCESSING I

11395 0M **Computer vision learning techniques for sports video analytics: removing overlays** [11395-22]

11395 0O **ASTOR: a compute framework for scalable distributed big data processing** [11395-24]

11395 0P **Investigation of water quality using transfer learning, phased LSTM and, correntropy loss** [11395-25]

SESSION 7 BIG DATA MODELING AND PROCESSING II

11395 0R **Fisher information for big and disparate data** [11395-27]

11395 0S **Large-scale storage of whole slide images and fast retrieval of tiles using DRAM** [11395-28]