

PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11392

, "Front Matter: Volume 11392," Proc. SPIE 11392, Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXVI, 1139201 (10 June 2020); doi: 10.1117/12.2572760

SPIE.

Event: SPIE Defense + Commercial Sensing, 2020, Online Only

PROCEEDINGS OF SPIE

Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXVI

Miguel Velez-Reyes
David W. Messinger
Editors

27 April – 8 May 2020
Online Only, United States

Sponsored and Published by
SPIE

Volume 11392

Proceedings of SPIE 0277-786X, V. 11392

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

Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXVI,
edited by Miguel Velez-Reyes, David W. Messinger, Proc. of SPIE Vol. 11392, 1139201
© 2020 SPIE · CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2572760

Proc. of SPIE Vol. 11392 1139201-1

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 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 *Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXVI*, edited by Miguel Velez-Reyes, David W. Messinger, Proceedings of SPIE Vol. 11392 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510635616
ISBN: 9781510635623 (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

SPATIAL ENHANCEMENT

- 11392 03 **Radiometric assessment of four pan-sharpening algorithms as applied to hyperspectral imagery** [11392-1]
- 11392 04 **New layers in JMARS for displaying enhanced stereo and disparity images of Mastcam** [11392-2]
- 11392 05 **Analyzing the effects of pixel-scale data fusion in hyperspectral image classification performance** [11392-3]

SENSOR AND INFORMATION FUSION

- 11392 06 **Studying the effect of a decision fusion model on enhanced hyperspectral images** [11392-4]
- 11392 07 **Generation of stereo images for Mastcam imagers** [11392-5]
- 11392 08 **Hyperspectral and LiDAR data fusion using collaborative representation** [11392-6]
- 11392 09 **Combining multispectral imagery and synthetic aperture radar for detecting deforestation** [11392-7]

SENSOR DESIGN, CHARACTERIZATION, AND CALIBRATION

- 11392 0B **Specifying radiometric performance of hyperspectral and conventional cameras: a minimal set of independent characteristics** [11392-9]
- 11392 0D **Multi-spectral SWIR Lidar for imaging and spectral discrimination through partial obscurations** [11392-11]

SPECTRAL SENSING AND IMAGING OF CULTURAL ARTIFACTS

- 11392 0I **Leveraging high performance hyperspectral sensors for the conservation of masterworks (Invited Paper)** [11392-20]
- 11392 0J **Automatic material classification of paintings in illuminated manuscripts from VNIR reflectance hyperspectral data cubes** [11392-21]
- 11392 0K **Hyperspectral analysis: black inks separation in the Gough map of Great Britain** [11392-22]

CHEMICAL AND EXPLOSIVES DETECTION

- 11392 OL **Algorithm and system advancements to enable infrared standoff trace detection (Invited Paper)** [11392-24]
- 11392 OM **A system for rapid standoff detection of trace explosives by active infrared backscatter hyperspectral imaging** [11392-25]
- 11392 ON **More chemical detection through less sampling: amplifying chemical signals in hyperspectral data cubes through compressive sensing** [11392-26]
- 11392 OO **Sprayed or soaked concealed drug detection using SWIR hyperspectral imaging** [11392-27]

APPLICATIONS OF SPECTRAL SENSING

- 11392 OT **Deep snow: synthesizing remote sensing imagery with generative adversarial nets** [11392-33]

TARGET AND ANOMALY DETECTION

- 11392 OW **Constructing optimal classifiers from sub-optimal composite hypothesis tests** [11392-37]
- 11392 OX **Investigating temporal distributions for spectral anomaly detection through time** [11392-38]
- 11392 OY **Too big, too small, or just right? The influence of multispectral image size on mosquito population predictions in the greater Toronto area** [11392-39]
- 11392 OZ **Reducing false alarms in hyperspectral images using a covariance matrix based on preliminary false detections** [11392-40]
- 11392 IO **Non-negative matrix factorization for hyperspectral anomaly detection** [11392-41]
- 11392 II **Experiments in anomalous change detection with the Viareggio 2013 trial dataset** [11392-42]

FEATURE EXTRACTION, CLASSIFICATION, AND UNMIXING

- 11392 I4 **Fast approximate kernel PCA via wavelet decomposition** [11392-45]

POSTER SESSION

- 11392 17 **Parametric modeling of diffuse-reflectance spectra for surface-distributed RDX particles**
[11392-49]
- 11392 18 **Local density based potential dictionary construction for low rank representation in
hyperspectral anomaly detection** [11392-51]
- 11392 1A **Multispectral and panchromatic images fusion based on NSCT and GS transform** [11392-53]
- 11392 1E **On constructing a dielectric function for cesium lead halide perovskites** [11392-57]
- 11392 1G **Evaluating the effect of band subset selection in SLIC superpixel segmentation** [11392-61]

