

PROCEEDINGS OF SPIE

Hyperspectral Imaging Sensors: Innovative Applications and Sensor Standards 2016

David P. Bannon

Editor

20 April 2016

Baltimore, Maryland, United States

Sponsored and Published by
SPIE

Volume 9860

Proceedings of SPIE 0277-786X, V. 9860

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

Hyperspectral Imaging Sensors: Innovative Applications and Sensor Standards 2016, edited by David P. Bannon,
Proc. of SPIE Vol. 9860, 986001 · © 2016 SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2244350

Proc. of SPIE Vol. 9860 986001-1

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 *Hyperspectral Imaging Sensors: Innovative Applications and Sensor Standards 2016*, edited by David P. Bannon, Proceedings of SPIE Vol. 9860 (SPIE, Bellingham, WA, 2016) Six-digit Article CID Number.

ISSN: 0277-786X
ISSN: 1996-756X (electronic)
ISBN: 9781510601017

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 © 2016, 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 \$18.00 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/16/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIE. DIGITAL LIBRARY
SPIDigitalLibrary.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 six-digit CID article numbering system structured as follows:

- The first four 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 *Authors*
vii *Conference Committee*

SESSION 1 HYPERSPECTRAL SENSING AND IMAGING SENSORS I

- 9860 02 **HELICoID project: a new use of hyperspectral imaging for brain cancer detection in real-time during neurosurgical operations** [9860-1]
- 9860 04 **Best practices in passive remote sensing VNIR hyperspectral system hardware calibrations** [9860-3]

SESSION 2 HYPERSPECTRAL SENSING AND IMAGING SENSORS II

- 9860 0A **Adaptive uniform grayscale coded aperture design for high dynamic range compressive spectral imaging** [9860-9]
- 9860 0B **Optical design of MWIR imaging spectrometer with a cold slit** [9860-10]
- 9860 0C **High resolution hyperspectral imaging with a high throughput virtual slit** [9860-11]
- 9860 0D **Spectral dynamic scenes reconstruction based in compressive sensing using optical color filters** [9860-12]
- 9860 0E **Hyperspectral sensing based analysis for determining milk adulteration** [9860-13]
- 9860 0G **Recent advances in rapid and non-destructive assessment of meat quality using hyperspectral imaging** [9860-16]

POSTER SESSION

- 9860 0H **Along-track calibration of SWIR push-broom hyperspectral imaging system** [9860-14]

Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Arguello, Henry, 0A, 0D
B. S., Mithun, 0E
Bulters, Diederik, 02
Bürmen, Miran, 0H
Callico, Gustavo M., 02
Cenko, Andrew T., 0C
Diaz, Nelson, 0A
Durell, Christopher, 04
Eichelberger, Andrew, 04
Fabelo, Himar, 02
Galvis, Laura, 0D
Ghouse, Syed M., 0E
Gooding, Edward A., 0C
Gunn, Thomas, 0C
Hajian, Arsen R., 0C
Jablonski, Joseph, 04
Jemec, Jurij, 0H
Jha, Amit Kumar, 0E
Kabwama, Silvester, 02
Kimbahune, Sanjay, 0E
León, Kareth M., 0D
Likar, Boštjan, 0H
Ngadi, Michael, 0G
Ortega, Samuel, 02
Osterberg, Jacob, 04
Pernuš, Franjo, 0H
Pineiro, Juan F., 02
Qian, Liqun, 0B
Rueda, Hoover, 0A
Sarmiento, Roberto, 02
Shinde, Sujit, 0E
Simon, Blair, 04
Slonecker, Terrence, 04
Szolna, Adam, 02
Tao, Feifei, 0G
Wang, Jianyu, 0B
Wang, Yueming, 0B
Wong, Kwok, 04
Yuan, Liyin, 0B
Zhou, Shiyao, 0B

Conference Committee

Symposium Chair

Ming C. Wu, University of California, Berkeley (United States)

Symposium Co-chair

Majid Rabbani, Eastman Kodak Company (United States)

Conference Chair

David P. Bannon, Headwall Photonics, Inc. (United States)

Conference Program Committee

David W. Allen, National Institute of Standards and Technology
(United States)

Lawrence A. Corp, NASA Goddard Space Flight Center
(United States)

Kurt C. Lawrence, Agricultural Research Service (United States)

Michael O. Ngadi, McGill University (Canada)

Matthew Staid, Scientific Aerial Imaging, Inc. (United States)

Conference Review Committee

Christopher Van Veen, Headwall Photonics, Inc. (United States)

