

PROCEEDINGS OF SPIE

Compressive Sensing IV

Fauzia Ahmad

Editor

22–24 April 2015

Baltimore, Maryland, United States

Sponsored and Published by
SPIE

Volume 9484

Proceedings of SPIE 0277-786X, V. 9484

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

Compressive Sensing IV, edited by Fauzia Ahmad, Proc. of SPIE Vol. 9484
948401 · © 2015 SPIE · CCC code: 0277-786X/15/\$18
doi: 10.1117/12.2197716

Proc. of SPIE Vol. 9484 948401-1

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Compressive Sensing IV*, edited by Fauzia Ahmad, Proceedings of SPIE Vol. 9484 (SPIE, Bellingham, WA, 2015) Article CID Number.

ISSN: 0277-786X

ISBN: 9781628416008

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 © 2015, 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/15/\$18.00.

Printed in the United States of America.

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



SPIDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print. Papers are published as they are submitted and meet publication criteria. A unique citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages.

Contents

v *Authors*
vii *Conference Committee*

SESSION 1 COMPRESSIVE SENSING FOR RADAR

- 9484 02 **Compressive sensing for a general SAR imaging model based on Maxwell's equations** [9484-1]
- 9484 03 **Sparsity-based moving target localization using multiple dual-frequency radars under phase errors** [9484-2]
- 9484 04 **Cross-term free based bistatic radar system using sparse least squares** [9484-3]
- 9484 05 **Multi-view TWRI scene reconstruction using a joint Bayesian sparse approximation model** [9484-4]

SESSION 2 COMPRESSIVE SENSING FOR SPECTRAL IMAGING

- 9484 07 **Computational imaging in a multiplexed imager with static multispectral encoding** [9484-6]
- 9484 08 **Compressive and classical hyperspectral systems: a fundamental comparison** [9484-7]
- 9484 09 **Compressive spectral polarization imaging with coded micropolarizer array** [9484-8]

SESSION 3 CS FOR OPTICAL IMAGING, MOTION IMAGERY, AND VIDEO I

- 9484 0A **Recent results in single-pixel compressive imaging using selective measurement strategies (Invited Paper)** [9484-9]
- 9484 0B **Compressed-sensed-domain L_1 -PCA video surveillance** [9484-10]
- 9484 0C **Compressive sensing for noisy video reconstruction** [9484-11]

SESSION 4 CS SIGNAL PROCESSING

- 9484 0E **Sparsity-based DOA estimation of coherent and uncorrelated targets using transmit/receive co-prime arrays** [9484-13]
- 9484 0F **See-through obscurants via compressive sensing in degraded visual environment** [9484-14]

9484 OG **An analysis of spectral transformation techniques on graphs** [9484-15]

9484 OH **Time-frequency signature sparse reconstruction using chirp dictionary** [9484-16]

SESSION 5 CS FOR OPTICAL IMAGING, MOTION IMAGERY, AND VIDEO II

9484 OI **Near-infrared compressive line sensing imaging system using individually addressable laser diode array** [9484-17]

SESSION 6 CS FOR ACOUSTICS, ULTRASOUND, AND HEALTH MONITORING OF STRUCTURES

9484 OK **Compressive power spectrum sensing for vibration-based output-only system identification of structural systems in the presence of noise** [9484-19]

9484 OL **Multimodal exploitation and sparse reconstruction for guided-wave structural health monitoring** [9484-20]

9484 OM **Seismic full waveform inversion from compressive measurements** [9484-21]

9484 ON **Group sparsity based spectrum estimation of harmonic speech signals** [9484-22]

SESSION 7 CS FOR HEALTHCARE AND BIOMEDICAL APPLICATIONS

9484 OO **Biomedical sensor design using analog compressed sensing** [9484-23]

9484 OP **Conflict-cost based random sampling design for parallel MRI with low rank constraints** [9484-24]

9484 OQ **Long-term surface EMG monitoring using K-means clustering and compressive sensing** [9484-25]

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.

Ahmad, Fauzia, 03, 0E, 0L
Al Kadry, Khodour, 03
Amin, Moeness G., 03, 0E, 0H, 0L
Arce, Gonzalo R., 09, 0M
Arguello, Henry, 09
August, Isaac Y., 08
Balouchestani, Mohammadreza, 0O, 0Q
BouDaher, Elie, 0E
Bouzerdoun, A., 05
Britton, Walter, 0I
Bulatović, Nikola, 0G
Caimi, Frank M., 0I
Cetin, A. Enis, 04
Chen, Jianbo, 0A
Dalglish, Fraser R., 0I
Djurović, Igor, 0G
Fu, Chen, 09
Ghogho, Mounir, 0H
Giaralis, Agathoklis, 0K
Gkoktsi, Kyriaki, 0K
Golato, Andrew, 0L
Gong, Sue, 0I
Gu, Haicheng, 02
Herman, Matthew A., 0A
Hines, Kevin, 07
Hou, Weilin, 0I
Hu, Mengqi, 02
Kelly, Kevin F., 0A
Kim, Wan, 0P
Krishnan, Sridhar, 0O, 0Q
Lau, Richard C., 0F
Li, Shuxia, 0C
Li, Yun, 0A
Liu, Ying, 0B
Lyu, Jingyuan, 0P
Mahalanobis, Abhijit, 07
McLemon, Des, 0H
McMackin, Lenore, 0A
Montalbo, John, 0C
Muise, Robert, 07
Neifeld, Mark, 07
Nguyen, Yen T. H., 0H
Ouyang, Bing, 0I
Pados, Dimitris A., 0B
Phung, S. L., 05
Qiao, Zhijun, 02, 0C
Ramirez, Ana, 0M
Sadler, Brian M., 09
Santhanam, Sridhar, 0L
Sejdić, Ervin, 0G
Sevimli, R. Akin, 04
Shay, Adi, 08
Simeunović, Marko, 0G
Stern, Adrian, 08
Sun, Bing, 02
Sun, Yaqi, 0C
Tang, V. H., 05
Tau Siesakul, Bamrung, 0K
Tivive, F. H. C., 05
Veras, Johann, 07
Vuorenkoski, Anni K., 0I
Wang, Ben, 0N
Weston, Tyler, 0A
Woodward, T. K., 0F
Ying, Leslie, 0P
Zhang, Yimin D., 0N
Zhao, Huihuang, 0C
Zhou, Yihang, 0P

Conference Committee

Symposium Chair

Wolfgang Schade, Clausthal University of Technology and Fraunhofer Heinrich-Hertz Institute (Germany))

Symposium Co-chair

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

Conference Chair

Fauzia Ahmad, Villanova University (United States)

Conference Program Committee

Moeness G. Amin, Villanova University (United States)
Gonzalo R. Arce, University of Delaware (United States)
Abdesselam Salim Bouzerdoun, University of Wollongong (Australia)
Michael J. DeWeert, BAE Systems (United States)
Matthew A. Herman, InView Technology Corporation (United States)
Eric L. Mokole, U.S. Naval Research Laboratory, Retired (United States)
Ram M. Narayanan, The Pennsylvania State University (United States)
Dimitris A. Pados, University at Buffalo (United States)
Athina P. Petropulu, Rutgers, The State University of New Jersey (United States)
Zhijun G. Qiao, The University of Texas-Pan American (United States)
Ervin Sejdic, University of Pittsburgh (United States)
Lei (Leslie) Ying, University at Buffalo (United States)

Session Chairs

- 1 Compressive Sensing for Radar
Eric L. Mokole, U.S. Naval Research Laboratory, Retired (United States)
- 2 Compressive Sensing for Spectral Imaging
Gonzalo R. Arce, University of Delaware (United States)
- 3 CS for Optical Imaging, Motion Imagery, and Video I
Michael J. DeWeert, BAE Systems (United States)
- 4 CS Signal Processing
Ervin Sejdic, University of Pittsburgh (United States)

- 5 CS for Optical Imaging, Motion Imagery, and Video II
Matthew A. Herman, InView Technology Corporation (United States)
- 6 CS for Acoustics, Ultrasound, and Health Monitoring of Structures
Dimitris A. Pados, University at Buffalo (United States)
- 7 CS for Healthcare and Biomedical Applications
Eric L. Mokole, U.S. Naval Research Laboratory, Retired (United States)