PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11418

, "Front Matter: Volume 11418," Proc. SPIE 11418, Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV, 1141801 (8 June 2020); doi: 10.1117/12.2572778

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

PROCEEDINGS OF SPIE

Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV

**Steven S. Bishop
Jason C. Isaacs**
Editors

**27 April – 8 May 2020
Online Only, United States**

Sponsored and Published by
SPIE

Volume 11418

Proceedings of SPIE 0277-786X, V. 11418

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

Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV, edited by
Steven S. Bishop, Jason C. Isaacs, Proc. of SPIE Vol. 11418, 1141801 · © 2020 SPIE
CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2572778

Proc. of SPIE Vol. 11418 1141801-1

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 *Detection and Sensing of Mines, Explosive Objects, and Obscured Targets XXV*, edited by Steven S. Bishop, Jason C. Isaacs, Proceedings of SPIE Vol. 11418 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

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

ISBN: 9781510636132
ISBN: 9781510636149 (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

ADVANCED ATR TECHNIQUES

- 11418 02 **Doing more with less: similarity neural nets and metrics for small class imbalanced data sets (Invited Paper)** [11418-1]
- 11418 03 **Extending deep learning to new classes without retraining** [11418-2]

DETECTION STRATEGIES USING GPR

- 11418 06 **Alternative cost function for full waveform inversion of GPR data** [11418-6]
- 11418 07 **A false alarm reduction method for GPR sensor moving at varying heights** [11418-28]

SOIL AND BURIED TARGET INTERACTIONS

- 11418 09 **Effects of soil properties, emplacement depth, and object composition on thermal signature** [11418-15]
- 11418 0A **Massively parallel synthetic sensor-based infrared image generation for object detection** [11418-17]

DETECTION STRATEGIES OF SMALL AIRBORNE PLATFORMS

- 11418 0B **Improving detection of acoustic sources by coiling fiber optic cable (Invited Paper)** [11418-18]

AIRBORNE/REMOTE SENSING

- 11418 0D **Detecting underground structures in vegetation indices time series using histograms** [11418-21]
- 11418 0E **Using simple ratio (SR) vegetation index to detect deep man-made infrastructures in Cyprus** [11418-22]
- 11418 0F **The ERATOSTHENES Centre of Excellence (ECoE) as a digital innovation hub for Earth observation** [11418-29]

SENSING MELANGE

- 11418 OG **Vibration-enhanced underground sensing** [11418-23]
- 11418 OI **A novel standoff simultaneous UVN + LWIR laser induced breakdown spectroscopy (LIBS) detection system for rapid in-situ chemical analysis** [11418-27]

POSTER SESSION

- 11418 OJ **The use of remote sensing for maritime surveillance for security and safety in Cyprus** [11418-30]