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SPIE Defense + Commercial Sensing 2017
Invited Papers

Laser Sensors and Systems

10193 Ultrafast Bandgap Photonics II (CONV. CTR. ROOM 208A)

Toward high fidelity spectral sensing and RF signal processing in silicon photonic and nano-opto-mechanical platforms [10193-13]
Author(s): Aleem Siddiqui, Charles M. Reinke, Sandia National Labs. (USA); Robert C. Potter, Dominic Riehl, Rockwell Collins, Inc. (USA); Heedeuk Shin, Yale Univ. (USA); Robert L. Jarecki, Andrew L. Starbuck, Sandia National Labs. (USA); Peter T. Rakich, Yale Univ. (USA)
Ultrafast Photonic Device Application 10 April • 2:30 PM

Imaging and Sensing Technologies

10212 Advanced Photon Counting Techniques XI (CONV. CTR. ROOM 206B)

Bio-inspired photon detection using chromophore/nanotube hybrids [10212-7]
Author: François Léonard, Sandia National Labs. (USA
DARPA DETECT Program I 12 April • 2:45 PM

Presentations and Posters

Defense, Homeland Security, and Law Enforcement

10184 Sensors, and Command, Control, Communications, and Intelligence (C3I) Technologies for Homeland Security, Defense, and Law Enforcement Applications XVI
(CONV. CTR. ROOM 208B)

Counter unmanned aerial system testing and evaluation methodology [10184-7]
Author(s): Camron G. Kouhestani, Gabriel C. Birch, Bryana L. Woo, Sandia National Labs. (USA)
Command, Control Systems, and Technologies **10** April • 10:40 am

Intelligence, Surveillance, and Reconnaissance

10188 Radar Sensor Technology XXI
Session Chair: Laura A. McNamara, Sandia National Labs. (USA)
(CONV. CTR. ROOM 202B)

VideoSAR collections to image underground chemical explosion surface phenomena [10188-21]
Author(s): David A. Yocky, Terry M. Calloway, Daniel E. Wahl, Sandia National Labs. (USA)
Applications and Exploitation II **11** April • 9:00 am

10188 Radar Sensor Technology XXI
Session Chairs: Kenneth I. Ranney, U.S. Army Research Lab. (USA); Armin W. Doerry, Sandia National Labs. (USA)
(CONV. CTR. ROOM 202B)

Coherence in radar processing [10188-40]
Author: Douglas L. Bickel, Sandia National Labs. (USA)
Keynote Session **12** April • 9:00 am

10188 Posters-Wednesday
(CONV. CTR. BALLROOM E, 6:00 pm)

An architecture for pre-warping general parametric frequency-modulated radar waveforms [10188-49]
Author(s): Armin W. Doerry, Sandia National Labs. (USA)

Using coherence as a quality measure for complex radar image compression [10188-50]
Author(s): Armin W. Doerry, Douglas L. Bickel, Sandia National Labs. (USA)

Discriminating spurious signals in radar data using multiple channels [10188-51]
Author(s): Armin W. Doerry, Douglas L. Bickel, Sandia National Labs. (USA)

Intelligence, Surveillance, and Reconnaissance (cont.)

10188 Posters-Wednesday
(CONV. CTR. BALLROOM E, 6:00 pm)

Use of unmanned SAR and EO/IR sensor suites for monitoring wildfires [10188-52]
Author(s): Randy Saddler, General Atomics (USA); Ralf Dunkel, General Atomics Aeronautical Systems, Inc. (USA); Armin W. Doerry, Sandia National Labs. (USA)

10190 Ground/Air Multisensor Interoperability, Integration, and Networking for Persistent ISR VIII
Session Chair: Laura A. McNamara, Sandia National Labs. (USA)
(CONV. CTR. ROOM 202A)

The need for separate operational and engineering user interfaces for command and control of airborne synthetic aperture radar systems [10190-18]
Author(s): Laura M. Klein, Laura A. McNamara, Sandia National Labs. (USA)
Human-Machine Interface and Machine Learning Approaches I **11** April •11:40 am

Cloning and sharing: Interaction designs for reducing work and maintaining state across 24X7 operations teams [10190-21]
Author(s): John Ganter, Paul Reeves, Sandia National Labs. (USA)
Human-Machine Interface and Machine Learning Approaches II **11** April •2:10 pm

"Does this interface make my sensor look bad?" Basic principles for designing usable, useful interfaces for sensor technology operators [10190-22]
Author(s): Laura A. McNamara, Laura M. Klein, Sandia National Labs. (USA)
Human-Machine Interface and Machine Learning Approaches II **11** April •2:30 pm

Imaging and Data Visualization

10222 Computational Imaging II
(CONV. CTR. ROOM 207A)

Lensless computational imaging using 3D printed transparent elements [10222-7]
Author(s): Gabriel C. Birch, Charles F. LaCasse IV, Amber L. Dagel, Bryana L. Woo, Sandia National Labs. (USA)
Session 2 **9** April • 11:50 am

Imagery and Pattern Analysis

10202 Automatic Target Recognition XXVII
(CONV. CTR. ROOM 208B)

Open set recognition of aircraft in aerial imagery using synthetic template models [10202-5]
Author(s): Aleksander B. Bapst, Jonathan Tran, Mark W. Koch, Mary M. Moya, Sandia National Labs. (USA); Robert Swahn, Defense Threat Reduction Agency (USA)
Advanced Processing Methods for ATR I **10** April • 9:50 am

Next-Generation Sensors and Systems

10195 Unmanned Systems Technology XIX
(CONV. CTR. ROOM 304C)

Rapid abstract perception to enable tactical unmanned system operations [10195-10]
Author(s): Stephen P. Buerger, Anup Parikh, Steven J. Spencer, Mark W. Koch, Sandia National Labs. (USA)
Perception **11** April •4:30 pm

10197 Degraded Environments: Sensing, Processing, and Display 2017
(CONV. CTR. ROOM 304D)

Optical characterization of the Sandia fog facility [10197-3]
Author(s): Jeremy B.Wright, John D. van der Laan, Shanalyn A. Kemme, David A. Scrymgeour, Sandia National Labs. (USA)
Phenomenology and Perception **11** April •9:00 am

Particle distribution variation on linear and circular polarization persistence in fog environments [10197-4]
Author(s): John D. van der Laan, Jeremy B. Wright, David A. Scrymgeour, Shanalyn A. Kemme, Sandia National Labs.(USA)
Phenomenology and Perception **11** April •9:20 am

Imaging and Sensing Technologies

10210 Next-Generation Spectroscopic Technologies X
(CONV. CTR. ROOM 207B)

Time multiplexed spectral imaging of burning aluminum monoxide particles [10210-16]
Author(s): Alvaro A. Cruz-Cabrera, Leland J. Sharp, Byron Demosthenous, Sandia National Labs. (USA); Jan S. Kasprzak, Feng Jin, Jolanta I. Soos, Sudhir B. Trivedi, Brimrose Corp. of America (USA)
Novel Imaging Instrumentation **11** April •8:00 am

Sensor Data and Information Exploitation

10198 Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXIII
(CONV. CTR. ROOM 210B)

Supervised non-negative tensor factorization for automatic hyperspectral feature extraction and target discrimination [10198-25]
Author(s): Dylan Anderson, Joshua Coon, Aleksander B. Bapst, Aaron J. Pung, Sandia National Labs. (USA); Michael W. Kudenov, North Carolina State Univ. (USA)
Dimensionality Reduction and Feature Extraction **12** April • 8:40 am

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