

PROCEEDINGS OF SPIE

***Unattended Ground, Sea,  
and Air Sensor Technologies  
and Applications X***

**Edward M. Carapezza**  
*Editor*

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# Contents

vii	<i>Conference Committee</i>
xi	<i>Introduction</i>

---

## KEYNOTE PRESENTATION

---

- 6963 02 **A vision of network-centric ISTAR and the resulting challenges (Keynote Paper)** [6963-01]  
G. Pearson, Defence Science and Technology Lab. (United Kingdom)
- 6963 03 **Photon-counting passive 3D image sensing and processing for automatic target recognition (Keynote Paper)** [6963-21]  
S. Yeom, Daegu Univ. (South Korea); B. Javidi, Univ. of Connecticut (USA); E. Watson, Air Force Research Lab. (USA)

---

## SENSOR NETWORKING AND COMMUNICATIONS

---

- 6963 05 **Integration of unattended ground sensors into the tactical radio communications architecture** [6963-03]  
M. T. Cahill, H. M. Sasaki, Harris Corp. (USA)
- 6963 06 **OmniSense unattended ground sensor system** [6963-04]  
J. McQuiddy, McQ Inc. (USA)
- 6963 07 **SCORPION persistent surveillance system with universal gateway** [6963-05]  
M. Coster, J. Chambers, M. Winters, J. Belesi, Northrop Grumman Systems Corp. (USA)
- 6963 08 **USMC UGS technology advancements** [6963-06]  
D. C. Hartup, M. E. Barr, P. M. Hirz, J. Kipp, T. A. Fishburn, E. S. Waller, B. A. Marks, L-3 Communications Nova Engineering (USA)
- 6963 09 **Sustainable coastal sensor networks: technologies and challenges** [6963-07]  
E. M. Carapezza, Univ. of Connecticut, Avery Point (USA); J. Butman, Phase Coherence (USA); I. Babb, A. Bucklin, Univ. of Connecticut, Avery Point (USA)

---

## TRANSIENTS DETECTION

---

- 6963 0D **Helmet-mounted acoustic array for hostile fire detection and localization in an urban environment** [6963-11]  
M. V. Scanlon, Army Research Lab. (USA)
- 6963 0E **Acoustic detection and localization of small arms, influence of urban conditions** [6963-12]  
P. Naz, French-German Research Institute of Saint-Louis (France); Ch. Marty, DGA (France); S. Hengy, P. Hamery, French-German Research Institute of Saint-Louis (France)

- 6963 OF **Artillery/mortar type classification based on detected acoustic transients** [6963-13]  
A. Morcos, D. Grasing, S. Desai, U.S. Army RDECOM (USA)
- 6963 OG **Acoustic analysis of explosions in high noise environment** [6963-14]  
H. Man, Stevens Institute of Technology (USA); S. Desai, U.S. Army RDECOM (USA)
- 6963 OH **Three layers of battlefield gunfire protection: soldier, vehicle, and area protection sensors**  
[6963-15]  
R. L. Showen, R. B. Calhoun, W. C. Chu, J. Dunham, ShotSpotter, Inc. (USA)

---

#### MODELING, SIMULATION, AND EXPERIMENTATION I

---

- 6963 OI **Implementing statistical acoustic characterization of urban terrain into a decision support tool** [6963-16]  
H. H. Cudney, D. K. Wilson, S. A. Ketcham, U.S. Army Corps of Engineers (USA)
- 6963 OK **Signal fading curves from computed urban acoustic wave fields** [6963-19]  
S. A. Ketcham, D. K. Wilson, M. W. Parker, H. H. Cudney, U.S. Army Engineer Research and Development Ctr. (USA)
- 6963 OL **Sparse detector sensor model** [6963-20]  
A. L. Robinson, C. E. Halford, E. Perry, T. Wyatt, Univ. of Memphis (USA)

---

#### SIGNAL PROCESSING I

---

- 6963 OM **Sparse detector sensor: profiling experiments for broad-scale classification** [6963-22]  
D. J. Russomanno, M. Yeasin, E. Jacobs, M. Smith, S. Sorower, Univ. of Memphis (USA)
- 6963 ON **Qualitative performance of a local track repair algorithm for video tracking on small UAVs**  
[6963-23]  
S. DelMarco, BAE Systems (USA)
- 6963 OO **Combining advanced imaging processing and low cost remote imaging capabilities**  
[6963-24]  
M. J. Rohrer, B. McQuiddy, McQ Inc. (USA)
- 6963 OP **Efficient sensor network vehicle classification using peak harmonics of acoustic emissions**  
[6963-25]  
P. E. William, M. W. Hoffman, Univ. of Nebraska, Lincoln (USA)
- 6963 OQ **Profiling sensor for ISR applications** [6963-52]  
R. B. Sartain, Army Research Lab. (USA)

---

#### SIGNAL PROCESSING II

---

- 6963 OR **Multi-objects recognition for distributed intelligent sensor networks** [6963-26]  
H. He, S. Chen, Y. Cao, Stevens Institute of Technology (USA); S. Desai, M. E. Hohil, U.S. Army ARDEC (USA)

- 6963 OT **Improving temporal coherence to enhance gain and improve detection performance** [6963-28]  
R. A. Wagstaff, H. E. Rice, Univ. of Mississippi (USA)
- 6963 OU **Coherence analysis of air and mechanically coupled ground vibrations** [6963-29]  
R. Burgett, Planning Systems Inc. (USA); J. M. Sabatier, Univ. of Mississippi (USA)
- 6963 OV **Range limitation for seismic footstep detection** [6963-30]  
J. M. Sabatier, A. E. Ekimov, Univ. of Mississippi (USA)

---

#### UNATTENDED GROUND SENSORS (UGS)

---

- 6963 OW **Helicopter detection using harmonics and seismic-acoustic coupling** [6963-31]  
T. R. Damarla, D. Ufford, Army Research Lab. (USA)
- 6963 OX **Segregation of tracked and wheeled ground vehicle mobility mechanisms through in-situ adaptation of seismic features** [6963-32]  
C. G. Park, J. Fitzgerald, D. Power, Textron Systems Corp. (USA)
- 6963 OY **iScout low cost UGS system: overview of enhancements and performance characterization** [6963-34]  
M. Winston, R. Klug, T. Plummer, R. Knobler, McQ Inc. (USA)
- 6963 OZ **Target activated frame capture** [6963-35]  
G. M. Roberts, J. Fitzgerald, M. McCormack, R. Steadman, Textron Systems Corp. (USA)

---

#### ENABLING TECHNOLOGIES (SENSING, POWER, FUSION, ETC.)

---

- 6963 10 **Stochastic analysis of unattended sensor battery life time** [6963-36]  
Q. Ge, Quigo Technologies (USA); R. Chandramouli, Stevens Institute of Technology (USA); V. S. Swaminathan, S. V. Desai, U.S. Army RDECOM (USA)
- 6963 11 **Miniaturization of electronics for a biomimetic acoustic direction finding system for use on multiple platforms** [6963-37]  
A. Hubbard, Boston Univ. (USA) and BioMimetic Systems, Inc. (USA); H. I. Cohen, Boston Univ. (USA); S. Deligeorges, BioMimetic Systems, Inc. (USA); D. Freedman, Boston Univ. (USA); T. Gore, C. Karl, BioMimetic Systems, Inc. (USA); S. Kelsall, M. Nourzad, Y. Pu, Boston Univ. (USA); S. Xue, BioMimetic Systems, Inc. (USA)
- 6963 12 **Warning equipment for UGS utilizing human body for data transmission and feeding** [6963-38]  
J. Cechak, Univ. of Defence (Czech Republic)

---

## ACOUSTIC, MAGNETIC, AND MULTI-MODAL SENSING

---

- 6963 13 **The development of a biomimetic acoustic direction finding system for use on multiple platforms** [6963-39]  
S. Deligeorges, BioMimetic Systems, Inc. (USA); D. Anderson, BioMimetic Systems, Inc. (USA) and Boston Univ. (USA); C. A. Browning, H. Cohen, D. Freedman, Boston Univ. (USA); T. Gore, BioMimetic Systems, Inc. (USA); C. Karl, Boston Univ. (USA) and BioMimetic Systems, Inc. (USA); S. Kelsall, Boston Univ. (USA); D. Mountain, BioMimetic Systems, Inc. (USA) and Boston Univ. (USA); M. Nourzad, Y. Pu, M. Sandifer, Boston Univ. (USA); S. Xue, BioMimetic Systems, Inc. (USA); L. Ziph-Schatzberg, Boston Univ. (USA); A. Hubbard, Boston Univ. (USA) and BioMimetic Systems, Inc. (USA)
- 6963 14 **A real-time biomimetic acoustic localizing system using time-shared architecture** [6963-40]  
M. Nourzad Karl, C. Karl, A. Hubbard, Boston Univ. (USA)
- 6963 15 **Advances in magnetometry** [6963-41]  
A. S. Edelstein, J. Burnette, G. A. Fischer, Army Research Lab. (USA); S. F. Cheng, Naval Research Lab. (USA); W. F. Egelhoff, Jr., P. W. T. Pong, National Institute of Standards and Technology (USA); E. R. Nowak, Univ. of Delaware (USA)
- 6963 16 **Exploiting nonlinearity in an advanced dynamic magnetometer for UGS and MDA applications** [6963-42]  
A. R. Bulsara, V. In, A. Kho, P. Longhini, Space and Naval Warfare Systems Ctr. (USA); S. Baglio, B. Ando, Univ. degli Studi di Catania (Italy)
- 6963 17 **Progress with MEMS based UGS (IR/THz)** [6963-43]  
D. Grbovic, S. Rajic, N. V. Lavrik, P. G. Datskos, Univ. of Tennessee (USA)

---

## SESSION 10 MODELING, SIMULATION, AND EXPERIMENTATION II

---

- 6963 18 **Development, integration, testing, and evaluation of the U.S. Army Buckeye System to the NAVAIR Arrow UAV** [6963-44]  
R. L. Fischer, Science Applications International Corp. (USA); B. G. Kennedy, Neany, Inc. (USA); M. Jones, J. Walker, D. Muresan, G. Baxter, M. Flood, B. Follmer, Science Applications International Corp. (USA); X. Sun, W. Chen, Flight Landata, Inc. (USA); J. G. Ruby, U.S. Army Engineer Research and Development Ctr. (USA)
- 6963 19 **Automated ship image acquisition** [6963-45]  
T. R. Hammond, Defence Research and Development Canada (Canada)
- 6963 1A **U.S. Army Research Laboratory (ARL) multimodal signatures database** [6963-46]  
K. Bennett, Army Research Lab. (USA)

*Author Index*

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**Tien Pham**, Army Research Laboratory (USA)

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UGS Users

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## Introduction

The interest in unattended sensor technologies and applications has dramatically increased over the past several years. Systems are being developed in support of military, homeland security, intelligence, law enforcement, physical security, and environmental monitoring applications around the world. Government agencies are making significant investments to develop improved unattended sensors and sensor networks. Recently, the United States and other countries have significantly increased the use of unattended ground, sea, and air sensors for homeland security applications, such as land border and coastal shore monitoring. This SPIE conference series is devoted to papers on recent technological advancements in unattended ground, sea, and air sensor technologies and applications.

The conference included five keynote/invited and 53 technical paper presentations organized into 13 sessions covering recent advances in Acoustic, Magnetic, and Multi-modal Sensing; Sensor Networking and Communications; Transients Detection; Modeling, Simulation, and Experimentation; Signal Processing; Enabling Technologies (Sensing, Power, Fusion, etc.); Integrated UGS Systems; and a UGS Users Panel.

Additionally, there were two joint keynote/invited sessions with Conference 6943 and one stand-alone keynote/invited session. The following five keynote/invited talks were given and we sincerely thank all of these speakers for very stimulating and relevant presentations:

- 1) A computational model of the human visual cortex by Dr. James Albus (National Institute of Standards and Technology)
- 2) MEMS and NEMS technologies for sensor applications by Dr. Panos Datskos (Oak Ridge National Laboratory and University of Tennessee)
- 3) Enhanced cyber security with CyLab Technologies by Dr. Pradeep Khosla (Carnegie Mellon University)
- 4) A vision of network-centric ISTAR and the resulting challenges by Mr. Gavin Pearson (Defence Science and Technology Laboratory, United Kingdom)
- 5) Design of trustworthy fielded sensor networks by Dr. Greg Pottie (University of California, Los Angeles)
- 6) Photon-counting passive 3D image sensing and processing for automatic target recognition by Dr. Edward Watson (Air Force Research Laboratory)

We would also like to thank Mr. Michael Kolodny (Army Research Laboratory) for organizing and moderating a very interesting Unattended Sensor User Panel. We especially thank the following eight User Panel participants for making this panel so successful and an excellent wrap-up to this conference: Mr. Terrence Ryan (Marines-MARCORSYSCOM), Mr. Shawn McDonald (Navy-NAVSEA Dahlgren Divison), Mr. Bob McCaskey (Special Operations-SOCOM), Mr. Ken Grier and Mr.

Charlie Gates (Defense Intelligence-DIA), Mr. Taylor Miller (Central Command-CENTCOM), Mr. John DellaGiustina (Army-TRADOC) and Mr. Robert O. Nelson (Department of Homeland Security-DHS).

Thanks to those who prepared and presented the technical papers for their contribution to a very successful meeting. The success of this conference is attributed to the participation of the commercial, university, and government research-and-development community as well as the organizing efforts of the diverse and talented program committee.

Thanks to our program committee members for their dedication, time, and assistance in conference planning and organizing and especially to those members who were able to participate as session chairs, including: Jacques Bédard (Defence R&D Canada/Valcartier, Canada), Jeff Heberley (U.S. Army Armament Research, Development and Engineering Center), Todd Hintz (Naval Space and Warfare Center), Alan J. Gray (Defence Science and Technology Laboratory, United Kingdom), Myron E. Hohil (U.S. Army Research, Development and Engineering Command), Michael Kolodny (Army Research Laboratory), Tien Pham (Army Research Laboratory), and Graeme van Voorthuijsen (TNO-FEL, Netherlands).

Very special thanks to two program committee members who worked extra hard to help organize this challenging conference: Tien Pham and Todd Hintz. We could not have had so successful a technical conference without their excellent help and dedication.

Finally, an extra special thanks to all of the conference attendees this year for your interest and enthusiasm. The conference was well attended this year, with a lot of interest in all the sessions. We hope the interest in this technology continues to grow, and that this conference will expand with even greater technical content and significance in future years.

**Edward M. Carapezza**