PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 7689

, "Front Matter: Volume 7689," Proc. SPIE 7689, Enhanced and Synthetic Vision 2010, 768901 (13 May 2010); doi: 10.1117/12.867784

SPIE.

Event: SPIE Defense, Security, and Sensing, 2010, Orlando, Florida, United States

PROCEEDINGS OF SPIE

Enhanced and Synthetic Vision 2010

**Jeff J. Güell
Kenneth L. Bernier**
Editors

**6 April 2010
Orlando, Florida, United States**

Sponsored and Published by
SPIE

Volume 7689

Proceedings of SPIE, 0277-786X, v. 7689

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

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 *Enhanced and Synthetic Vision 2010*, edited by Jeff J. Güell, Kenneth L. Bernier, Proceedings of SPIE Vol. 7689 (SPIE, Bellingham, WA, 2010) Article CID Number.

ISSN 0277-786X

ISBN 9780819481535

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 © 2010, 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/10/\$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 and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent 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 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. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

v	Conference Committee
vii	Introduction

SESSION 1 OPERATIONS RESEARCH

7689 02	Beyond traffic depiction: conformally integrating the conflict space to support Level 3 situation awareness [7689-01] J. Tadema, Netherlands Defence Academy (Netherlands); E. Theunissen, Netherlands Defence Academy (Netherlands) and Technische Univ. Delft (Netherlands); K. M. Kirk, General Atomics Aeronautical Systems, Inc. (United States)
7689 03	Enhanced vision for all-weather operations under NextGen (Best Paper Award) [7689-02] R. E. Bailey, L. J. Kramer, S. P. Williams, NASA Langley Research Ctr. (United States)
7689 04	Part-task simulation of synthetic and enhanced vision concepts for lunar landing (Best Paper Award) [7689-03] J. J. Arthur III, R. E. Bailey, E. B. Jackson, NASA Langley Research Ctr. (United States); J. R. Barnes, ARINC, Inc. (United States); S. P. Williams, L. J. Kramer, NASA Langley Research Ctr. (United States)
7689 05	Standardization of databases for AMDB taxi routing functions [7689-04] C. Pschierer, A. Sindlinger, J. Schiefele, Jeppesen GmbH (Germany)
7689 06	INVIS: integrated night vision surveillance and observation system [7689-05] A. Toet, M. A. Hogervorst, J. Dijk, R. van Son, TNO Defence, Security and Safety (Netherlands)
7689 07	An evaluation test bed for enhanced vision [7689-06] H.-U. Doehler, N. Peinecke, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)

SESSION 2 VISION PROCESSING

7689 08	New adaptive algorithms for real-time registration and fusion of multimodal imagery [7689-07] J. P. Heather, M. I. Smith, Waterfall Solutions Ltd. (United Kingdom)
7689 09	Image enhancement on the INVIS integrated night vision surveillance and observation system [7689-08] J. Dijk, K. Schutte, A. Toet, M. Hogervorst, TNO Defence, Security and Safety (Netherlands)
7689 0A	An efficient color transfer algorithm for recoloring multiband night vision imagery [7689-09] G. Li, S. Xu, Changchun Institute of Optics, Fine Mechanics and Physics (China); X. Zhao, Changchun Univ. (China)

- 7689 0B **Correcting hyperstereopsis in a helmet-mounted vision system** [7689-10]
N. Peinecke, S. Schmerwitz, German Aerospace Ctr. (Germany)
- 7689 0C **A method for generating enhanced vision displays using OpenGL video texture** [7689-11]
K. L. Bernier, The Boeing Co. (United States)

SESSION 3 INTEGRATION TOOLS

- 7689 0D **Surveillance for collision avoidance with integrity using raw measurements in the automatic dependent surveillance-broadcast** [7689-13]
S. Vana, M. Uijt de Haag, Ohio Univ. (United States)
- 7689 0E **Synthetic observer approach to multispectral sensor resolution assessment** [7689-14]
A. R. Pinkus, D. W. Dommett, Air Force Research Lab. (United States); H. L. Task, Task Consulting (United States)
- 7689 0F **Evaluation of hazard and integrity monitor functions for integrated alerting and notification using a sensor simulation framework** [7689-15]
R. Bezawada, M. Uijt de Haag, Ohio Univ. (United States)
- 7689 0G **ALLFlight: multisensor data fusion for helicopter operations** [7689-16]
H.-U. Doeher, T. Lueken, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
- 7689 0H **Data-driven visibility enhancement using multi-camera system** [7689-17]
D. Wu, Q. Dai, Tsinghua Univ. (China)

Author Index

Conference Committee

Symposium Chair

Michael T. Eismann, Air Force Research Laboratory (United States)

Symposium Cochair

William Jeffrey, HRL Laboratories, LLC (United States)

Conference Chairs

Jeff J. Güell, The Boeing Company (United States)

Kenneth L. Bernier, The Boeing Company (United States)

Program Committee

Jarvis J. Arthur III, NASA Langley Research Center (United States)

Bernd R. Korn, Deutsches Zentrum für Luft- und Raumfahrt e.V.
(Germany)

Christian Pschierer, Jeppesen GmbH (Germany)

Maarten Uijt de Haag, Ohio University (United States)

Jacques G. Verly, Université de Liège (Belgium)

Session Chairs

- 1 Operations Research
Jeff J. Güell, The Boeing Company (United States)
Jacques G. Verly, Université de Liège (Belgium)
- 2 Vision Processing
Bernd R. Korn, Deutsches Zentrum für Luft- und Raumfahrt e.V.
(Germany)
Christian Pschierer, Jeppesen GmbH (Germany)
Maarten Uijt de Haag, Ohio University (United States)
- 3 Integration Tools
Jarvis J. Arthur III, NASA Langley Research Center (United States)
Kenneth L. Bernier, The Boeing Company (United States)

Introduction

This is the 16th volume of the series of conferences on Enhanced and Synthetic Vision.

After the first two proceedings volumes numbered 2220 (in 1994) and 2463 (in 1995), the proceedings volumes were systematically titled "Enhanced and Synthetic Vision YEAR," where YEAR stands for the year the conference was held: Proceedings of SPIE Vols. 2736 (1996), 3088 (1997), 3364 (1998), 3691 (1999), 4023 (2000), 4363 (2001), 4713 (2002), 5081 (2003), 5424 (2004), 5802 (2005), 6226 (2006), 6559 (2007), 6957 (2008), and 7328 (2009).

Jeff J. Güell
Kenneth L. Bernier