

PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Front Matter: Volume 6957

, "Front Matter: Volume 6957," Proc. SPIE 6957, Enhanced and Synthetic Vision 2008, 695701 (2 May 2008); doi: 10.1117/12.801002

SPIE.

Event: SPIE Defense and Security Symposium, 2008, Orlando, Florida, United States

PROCEEDINGS OF SPIE

Enhanced and Synthetic Vision 2008

Jeff J. Güell
Maarten Uijt de Haag
Editors

18–20 March 2008
Orlando, Florida, USA

Sponsored and Published by
SPIE

Volume 6957

Proceedings of SPIE, 0277-786X, v. 6957

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 2008*, edited by Jeff J. Güell, Maarten Uijt de Haag, Proceedings of SPIE Vol. 6957 (SPIE, Bellingham, WA, 2008) Article CID Number.

ISSN 0277-786X

ISBN 9780819471482

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 © 2008, 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/08/\$18.00.

Printed in the United States of America.

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

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

- vii *Conference Committee*
- ix *Introduction*
- xi *Display content in advanced NVG and HMD systems: a pilot/flight surgeon's concerns (Plenary Paper) [6955-05]*
J. C. Antonio, NAVAIR/NAWCAD (USA)

SESSION 1

- 6957 02 **Runway infrared range concept for EVS [6957-01]**
J. R. Kerr, Max-Viz, Inc. (USA)
- 6957 03 **Enhanced detection of LED runway/approach lights for EVS [6957-02]**
J. R. Kerr, Max-Viz, Inc. (USA)
- 6957 04 **Stereo radar: reconstructing 3D data from 2D radar [6957-03]**
S. Schmerwitz, H.-U. Döhler, N. Peinecke, B. Korn, German Aerospace Ctr. (DLR) (Germany)
- 6957 05 **Next generation enhanced vision system processing [6957-04]**
M. Bernhardt, C. Cowell, T. Riley, Waterfall Solutions Ltd. (United Kingdom)
- 6957 06 **Synthetic vision for lunar and planetary landing vehicles [6957-05]**
S. P. Williams, J. J. Arthur III, K. J. Shelton, L. J. Prinzel III, NASA Langley Research Ctr. (USA);
R. M. Norman, Boeing Phantom Works (USA)

SESSION 2

- 6957 07 **Operational landing credit with EVS head down display: crew procedure and human factors evaluation [6957-06]**
B. R. Korn, M. Biella, H. Lenz, German Aerospace Ctr. (DLR) (Germany)
- 6957 08 **Synthetic vision primary flight displays for helicopters [6957-07]**
G. He, T. Feyereisen, B. Wilson, Honeywell Aerospace (USA)
- 6957 09 **An efficient real time superresolution ASIC system [6957-08]**
D. Reddy, Z. Yue, P. Topiwala, FastVDO Inc. (USA)
- 6957 0A **Enhanced optical tracking [6957-09]**
T. McSheery, PhaseSpace (USA)
- 6957 0B **Design of a synthetic vision overlay for UAV autoland monitoring [6957-10]**
J. Tadema, Netherlands Defence Academy (Netherlands); E. Theunissen, Netherlands Defence Academy (Netherlands) and Delft Univ. of Technology (Netherlands)

SESSION 3

- 6957 OD **Hazard detection on runways using image processing techniques** [6957-12]
G. S. Rajput, Z. Rahman, Old Dominion Univ. (USA)
- 6957 OE **Ultraviolet sensor as integrity monitor for enhanced flight vision system (EFVS) approaches to Cat II RVR conditions** [6957-13]
J. B. McKinley, R. Pierson, M. C. Ertem, N. J. Krone, Jr., J. A. Cramer, Univ. Research Foundation (USA)
- 6957 OF **Sensor classification and obstacle detection for aircraft external hazard monitoring** [6957-14]
M. Smearcheck, A. K. Vadlamani, M. Uijt de Haag, Ohio Univ. (USA)

SESSION 4

- 6957 OH **Real-time panoramic of multiple sensors** [6957-16]
J. R. Beauvais, Octec Ltd. (USA)
- 6957 OI **Enhanced and synthetic vision system (ESVS) flight demonstration** [6957-17]
J. N. Sanders-Reed, Boeing SVS, Inc. (USA); K. Bernier, J. Güell, The Boeing Co. (USA)
- 6957 OJ **Down-to-the-runway enhanced flight vision system (EFVS) approach test results** [6957-18]
J. B. McKinley, E. Heidhausen, J. A. Cramer, N. J. Krone, Jr., Univ. Research Foundation (USA)
- 6957 OK **Simulation evaluation of synthetic vision as an enabling technology for equivalent visual operations** [6957-19]
L. J. Kramer, S. P. Williams, R. E. Bailey, NASA Langley Research Ctr. (USA)

SESSION 5

- 6957 OL **Simulation of imaging radar using graphics hardware acceleration** [6957-20]
N. Peinecke, H.-U. Döhler, B. R. Korn, German Aerospace Ctr. (DLR) (Germany)
- 6957 OM **Considerations on symbology, data requirements, and operational concept for integral NOTAM visualization on airport moving map displays** [6957-22]
C. Vernaleken, C. Urvoy, U. Klingauf, Technische Univ. Darmstadt (Germany)
- 6957 ON **Embedded formats for airport mapping databases** [6957-23]
C. Pschierer, J. Schiefele, Jeppesen GmbH (Germany)
- 6957 OO **A digital head-up display system as part of an integrated autonomous landing system concept** [6957-26]
P. L. Wisely, BAE Systems (United Kingdom)
- 6957 OP **Cybersickness and desktop simulations: field of view effects and user experience** [6957-21]
A. Toet, S. C. de Vries, M. L. van Emmerik, J. E. Bos, TNO Human Factors (Netherlands)

POSTER SESSION

6957 0Q

An approach to instrument qualified visual range [6957-24]

B. Courtade, J. Bonnet, Ecole Supérieure d'Ingénieurs en Electronique et Electrotechnique (France); C. Woodruff, J. Larson, A. Giles, N. Sonde, C. J. Moore, D. Schimon, D. M. Harris, Harvey Mudd College (USA); D. Pond, S. Way, Max-Viz, Inc. (USA)

Author Index

Conference Committee

Symposium Chair

Larry B. Stotts, Defense Advanced Research Projects Agency (USA)

Symposium Cochair

Ray O. Johnson, Lockheed Martin Corporation (USA)

Program Track Chairs

Clarence E. Rash, U.S. Army Aeromedical Research Laboratory (USA)

Jacques G. Verly, Université de Liège (Belgium)

Conference Chairs

Jeff J. Güell, The Boeing Company (USA)

Maarten Uijt de Haag, Ohio University (USA)

Program Committee

Kenneth L. Bernier, The Boeing Company (USA)

Guy A. French, Air Force Research Laboratory (USA)

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

Michael C. Lightfoot, NASA Langley Research Center (USA)

Jens Schiefele, Jeppesen GmbH (Germany)

Jacques G. Verly, Université de Liège (Belgium)

Session Chairs

Session 1

Jeff J. Güell, The Boeing Company (USA)

Kenneth L. Bernier, The Boeing Company (USA)

Session 2

Jacques G. Verly, Université de Liège (Belgium)

Guy A. French, Air Force Research Laboratory (USA)

Session 3

Maarten Uijt de Haag, Ohio University (USA)

Guy A. French, Air Force Research Laboratory (USA)

Session 4

Jens Schiefele, Jeppesen GmbH (Germany)

Christian Pschierer, Jeppesen GmbH (Germany)

Jeff J. Güell, The Boeing Company (USA)

Jacques G. Verly, Université de Liège (Belgium)

Session 5

Kenneth L. Bernier, The Boeing Company (USA)

Maarten Uijt de Haag, Ohio University (USA)

Introduction

This is the 14th 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), and 6559 (2007).

Jeff J. Güell
Maarten Uijt de Haag

