

PROCEEDINGS OF SPIE

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

Front Matter: Volume 7513

, "Front Matter: Volume 7513," Proc. SPIE 7513, 2009 International Conference on Optical Instruments and Technology: Optoelectronic Imaging and Process Technology, 751301 (3 December 2009); doi: 10.1117/12.853043

SPIE.

Event: International Conference on Optical Instrumentation and Technology, 2009, Shanghai, China

PROCEEDINGS OF SPIE

*2009 International Conference on Optical
Instruments and Technology*

Optoelectronic Imaging and Process Technology

Toru Yoshizawa
Ping Wei
Jesse Zheng
Editors

19–21 October 2009
Shanghai, China

Sponsored by
CIS—China Instrument and Control Society
COS—The Chinese Optical Society
SPIE

Cooperating Organizations
Optoelectronic-Mechanic Technology and System Integration Chapter, CIS (China) • Beijing Institute of Technology (China) • University of Shanghai for Science and Technology (China) • Instrument Society of America (United States) • Institute of Measurement and Control (United Kingdom) • Hong Kong Institution of Engineers (Hong Kong, China) • The Society of Instrument and Control Engineers (Japan) • Capital Normal University (China) • Optical Instrument Chapter, CIS (China) • Hamamatsu Photonics K.K. (Japan) • Chongqing University (China) • Tsinghua University (China) • Tianjin University (China) • Zhejiang University (China) • Nanjing University (China)

Published by
SPIE

Volume 7513

Proceedings of SPIE, 0277-786X, v. 7513

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 *2009 International Conference on Optical Instruments and Technology: Optoelectronic Imaging and Process Technology*, edited by Toru Yoshizawa, Ping Wei, Jesse Zheng, Proceedings of SPIE Vol. 7513 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X
ISBN 9780819478993

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 © 2009, 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/09/\$18.00.

Printed in the United States of America.

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

The logo for SPIE Digital Library features the word "SPIE" in a bold, sans-serif font above the words "Digital Library" in a smaller, lighter font. To the right of the text is a stylized graphic consisting of three vertical bars of increasing height, resembling a bar chart or a signal waveform.

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

Part One

xiii	<i>Symposium Committees</i>
xv	<i>Conference Committee</i>
xvii	<i>Introduction</i>

SESSION 1 3D SHAPE MEASUREMENT AND PROFILOMETRY

7513 02	All-fiber optical dynamic Fourier transform profilometry [7513-89] C. Zhang, F. Duan, C. Zhang, H. Xiao, Tianjin Univ. (China)
7513 03	Stripes extraction technique of projection pattern in frequency domain for 3D shape measurement based pattern projection technique [7513-126] K. Sun, C. Lu, Fukuoka Institute of Technology (Japan)
7513 04	Compact camera system for 3D profile measurement [7513-165] T. Yoshizawa, T. Wakayama, Saitama Medical Univ. (Japan)
7513 05	Spatial phase-shifting moiré deflectometry [7513-92] Y. Song, Nanking Univ. of Science and Technology (China) and Nanking Univ. of Aeronautics and Astronautics (China); Y. Chen, A. He, Nanking Univ. of Science and Technology (China); Z. Zhao, Nanking Univ. of Aeronautics and Astronautics (China)
7513 06	Measurement of inner and/or outer profiles of pipes using ring beam devices [7513-151] T. Wakayama, T. Yoshizawa, Saitama Medical Univ. (Japan)
7513 07	Study on measurement accuracy of stereo visual sensor based on experimental design [7513-181] Y. Wang, X. Li, D. Zhang, R. Zhang, H. Huang, S. Jia, Tianjin Univ. of Science and Technology (China)
7513 08	Study on removal of phase lines in welding pool surface shape sensing [7513-167] Y. Wei, N. Liu, X. Hu, X. Ai, S. Wei, X. Liu, Nanchang Univ. (China)
7513 09	Exposing digital image forgeries by 3D reconstruction technology [7513-155] Y. Wang, X. Xu, Z. Li, H. Liu, Z. Li, W. Huang, Ministry of Public Security (China)
7513 0A	Face detection and face authentication using 3D shape measurement system [7513-125] H. Kamitomo, C. Lu, Fukuoka Institute of Technology (Japan)
7513 0B	Extraction of tire size code using local phase [7513-191] H. Zhang, J. He, Z. Huang, Tianjin Univ. (China)

SESSION 2 OPTICAL METHODS FOR INDUSTRIAL APPLICATIONS

- 7513 0C **Motion blurred image restoration algorithm for IC wire bonder** [7513-142]
Y. Zhang, S. Wang, X. Zhang, X. Lu, Nanjing Univ. (China)
- 7513 0D **Study on visual image information detection of external angle weld based on arc welding robot** [7513-168]
X. Liu, N. Liu, W. Sheng, X. Hu, X. Ai, Y. Wei, Nanchang Univ. (China)
- 7513 0E **Fault diagnosis system for the inspection robot in power transmission lines maintenance** [7513-106]
L. Zheng, Univ. of Shanghai for Science and Technology (China) and Shanghai Univ. (China); R. Yi, Shanghai Univ. (China)
- 7513 0F **Study on fruit quality measurement and evaluation based on color identification** [7513-180]
Y. Wang, Y. Cui, Tianjin Univ. of Science and Technology (China); S. Chen, P. Zhang, National Engineering and Technology Research Ctr. for Preservation of Agricultural Products (China); H. Huang, Tianjin Univ. of Science and Technology (China); G. Q. Huang, The Univ. of Hong Kong (Hong Kong, China)
- 7513 0G **Method of detecting underwater bubbles film based on distilling the characteristics of laser signal** [7513-122]
Y. Yu, J. Wang, Z. Ma, S. Liang, P. Cheng, C. Liu, Naval Univ. of Engineering (China)
- 7513 0H **The election-pass filtering and image fusion algorithm based on the wavelet transform for CW THz image processing** [7513-25]
Q. Song, F. Yu, Y. Zhao, Beijing Institute of Technology (China); C. Zhang, Capital Normal Univ. (China); M. Hui, X. Liu, Beijing Institute of Technology (China)
- 7513 0I **Ascertaining the relation between underwater bubbles' parameters and valve's outlet pressure with the application of a high-speed camera** [7513-123]
Y. Yu, J. Wang, Z. Ma, S. Liang, P. Cheng, C. Liu, Naval Univ. of Engineering (China)
- 7513 0J **Process monitor in thermal denaturation of albumin using dynamic speckle method based on wavelet entropy** [7513-03]
X. Li, Q. Chen, Z. Zhen, H. Yan, H. Liu, L. Li, Henan Univ. of Science and Technology (China)
- 7513 0K **Image enhancement for liver CT images** [7513-35]
Y. Liang, L. Yang, Nankai Univ. (China); H. Fan, Tianjin Medical Univ. General Hospital (China)

SESSION 3 REMOTE SENSING, LIDAR, AND ENVIRONMENTAL APPLICATIONS

- 7513 0L **Application of satellite remote sensing images in urbanization and surface energy balance of Beijing** [7513-47]
C. L. Meng, L. P. Lu, China Meteorological Administration (China)
- 7513 0M **Efficient visualization of LIDAR datasets** [7513-99]
D. Mongus, S. Pečnik, B. Žalik, Univ. of Maribor (Slovenia)

- 7513 0N **Image quality degradation analysis induced by satellite platform harmonic vibration** [7513-70]
B. Xue, X. Chen, G. Ni, Beijing Institute of Technology (China)

SESSION 4 IMAGING, PROCESSING ALGORITHM, AND ANALYSIS

- 7513 0O **A color image analysis approach using fusion of Markov random fields in different color spaces** [7513-77]
G. Hou, P. Wei, Beijing Institute of Technology (China)
- 7513 0P **Level 0 and Level 1 data processing for a type of hyperspectral imager** [7513-67]
X. Li, C. Yan, Changchun Institute of Optics, Fine Mechanics and Physics (China)
- 7513 0Q **Optical image hiding based on interference** [7513-07]
Y. Zhang, B. Wang, Capital Normal Univ. (China)
- 7513 0R **Light source target recognition based on horizontal projection and differential algorithm** [7513-40]
L. Zhang, W. Chen, P. Zhang, Chongqing Univ. (China)
- 7513 0S **Motion clustering and object detection via modulated integral imaging** [7513-84]
P. Wang, Anhui Univ. of Technology (China); S. Ando, T. Kurihara, Univ. of Tokyo (Japan);
H. Dong, X. Mao, Anhui Univ. of Technology (China)
- 7513 0T **SoPC implementation of combined real-time non-uniformity correction of IRFPA** [7513-194]
K. Gao, Z. Nie, H. Yang, G. Ni, Beijing Institute of Technology (China)

POSTER SESSION

- 7513 0U **Study on the particle-filter-based motion filtering algorithm for digital image stabilization systems** [7513-01]
L. Dong, D. Yin, Y. Zhao, M. Hui, X. Zhou, Beijing Institute of Technology (China)
- 7513 0V **Fuzzy synthesis evaluation for image target recognition performance** [7513-02]
Y. Zhang, T. Wu, Chong Qing Technology and Business Univ. (China)
- 7513 0W **Ultraweak bioluminescence of maize under NaCl stress** [7513-05]
Z. Xie, DeZhou Univ. (China)
- 7513 0X **Free space optical communication system based on wavefront sensorless adaptive optics** [7513-06]
L. Han, Harbin Institute of Technology (China) and Yanshan Univ. (China); K. Shida, Q. Wang, Harbin Institute of Technology (China); Z. Li, Yanshan Univ. (China)
- 7513 0Y **Interline transfer area CCD imaging system with FPGA for real-time processing** [7513-09]
F. Ran, H. Yang, Shanghai Univ. (China)
- 7513 0Z **Determining the optimal imaging position in tomographic interference microscopy** [7513-10]
L. Xue, J. Lai, Z. Li, Nanjing Univ. of Science and Technology (China)

- 7513 10 **Meaningful region extraction based on three-stage unsupervised segmentation algorithm** [7513-24]
Z. Ben, X. Zhao, C. Li, Soochow Univ. (China)
- 7513 11 **The design and experiments of the super-resolving annular binary filters based on genetic algorithm** [7513-27]
M. Zhang, B. Quan, Q. Yu, H. Zhu, Z. Le, Zhejiang Univ. of Technology (China)
- 7513 12 **3D reconstruction based on wavelet pyramid image fusion algorithm for digital microscope** [7513-29]
L. Zhang, P. Liu, Y. Liu, F. Yu, Zhejiang Univ. (China)
- 7513 13 **Two-wavelength moiré deflection tomography in studying the dispersive characteristic for flame flow fields** [7513-32]
Y. Chen, Y. Song, A. He, Z. Li, Nanjing Univ. of Science and Technology (China)
- 7513 14 **Study on preparation and electrical properties of Mo-doped vanadium oxide thin films by organic sol-gel** [7513-38]
Q. Zhang, Z. Wu, Y. Jiang, K. Zhao, Univ. of Electronic Science and Technology of China (China)
- 7513 15 **Investigations on titanium oxide film as an alternative heat sensitive material** [7513-39]
J. Jiang, Z. Wu, Y. Jiang, T. Wang, H. Yu, Univ. of Electronic Science and Technology of China (China)
- 7513 16 **Study on aero-optical effect of a hypersonic missile infrared image guide** [7513-43]
W. Han, Y. Zhao, X. Hu, Beijing Institute of Technology (China)
- 7513 17 **TOCM digital color photography** [7513-46]
B. Zhang, Academy of Military Transportation (China); G. Mu, Z. Fang, Nankai Univ. (China); Z. Li, Academy of Military Transportation (China); H. Fang, Y. Yang, Nankai Univ. (China)
- 7513 18 **Detection technique of targets for missile defense system** [7513-48]
H. Guo, Beijing Institute of Technology (China) and North Univ. of China (China); J. Deng, K. Cai, Beijing Institute of Technology (China)
- 7513 19 **Research on application of LADAR in ground vehicle recognition** [7513-50]
J. Lan, Z. Shen, Univ. of Science and Technology Beijing (China)
- 7513 1A **Image sharpness function based on edge feature** [7513-51]
N. Jun, China Jiliang Univ. (China)
- 7513 1B **Image restoration for sparse aperture systems based on wavelet-Wiener algorithm** [7513-52]
X. Zhu, F. Wu, Changzhou Institute of Technology (China); Q. Wu, Suzhou Univ. of Science and Technology (China); L. Qian, Soochow Univ. (China)
- 7513 1C **Infrared small target detection based on Danger Theory** [7513-54]
J. Lan, X. Yang, Univ. of Science and Technology Beijing (China)

- 7513 1D **Generation and optoelectronic reconstruction of binary CGH based on detour phase encoding** [7513-57]
S. Huang, X. Liu, S. Wang, X. Jiang, Shanghai Univ. (China)
- 7513 1E **Three-dimensional scene reconstruction by using lenslet array model in computational integral imaging** [7513-58]
Y. Huang, J. Xia, H. Yin, Southeast Univ. (China)
- 7513 1F **Color sorting algorithm based on K-means clustering algorithm** [7513-60]
B. Zhang, Q. Huang, Tianjin Univ. of Technology (China)
- 7513 1G **Nondestructive quality inspection of fruits based on multispectral imaging** [7513-62]
B. Zhang, X. Li, Tianjin Univ. of Technology (China)
- 7513 1H **Tracking device of multiple targets based on IR fish-eye system** [7513-63]
G. Li, X. Lu, Y. He, H. Shen, Y. Wang, L. Li, Shijiazhuang Mechanical Engineering College (China)
- 7513 1I **An experimental device to track multiple targets on IR fish-eye lens system** [7513-64]
G. Li, X. Lu, Y. He, H. Shen, C. Xu, S. Mao, Shijiazhuang Mechanical Engineering College (China)
- 7513 1J **Multiple target tracking algorithm research on IR fish-eye lens system** [7513-65]
G. Li, X. Lu, Y. He, H. Shen, C. Xu, Y. Wang, Shijiazhuang Mechanical Engineering College (China)
- 7513 1K **Double-layer PMN bimorph deformable mirror system optimization design and fabrication technology** [7513-66]
Q. Sun, Z. Jiang, National Univ. of Defense Technology (China)
- 7513 1L **Front-based image edge detection** [7513-71]
Y. Zheng, L. Zhang, Y. Zhu, L. Jia, J. Kang, Shijiazhuang Univ. of Economics (China)

Part Two

- 7513 1M **Modeling and analyzing stripe patterns in fish skin** [7513-72]
Y. Zheng, L. Zhang, Y. Wang, P. Liang, J. Kang, Shijiazhuang Univ. of Economics (China)
- 7513 1N **A study of moment invariants based on pattern recognition** [7513-73]
Y. Wang, J. Ma, J. Sun, Univ. of Shanghai for Science and Technology (China)
- 7513 1O **A study of optical system and image processing in Vickers hardness photoelectric detection system** [7513-74]
Z. Xiao, G. Guo, X. Wang, Guilin Univ. of Electronic Technology (China)
- 7513 1P **The research of underwater imaging based on the wavefront coding system** [7513-76]
Q. Liu, T. Zhao, Y. Chen, F. Yu, Zhejiang Univ. (China)

- 7513 1Q **The effect of sampling on FFT-based direct integration method in digital holography** [7513-79]
C. Liu, D. Wang, Y. Li, Y. Wan, Z. Jiang, Beijing Univ. of Technology (China)
- 7513 1R **Multiple spiral patterns in a cardiac tissue** [7513-87]
Z. Bai, Hebei Univ. of Science and Technology (China); X. Li, Tangshan Labor Technician College (China)
- 7513 1S **Research on scene-based Narcissus correction algorithm in infrared focal plane arrays** [7513-88]
Y. Cao, W. Jin, C. Liu, X. Liu, F. Li, W. Chen, Beijing Institute of Technology (China)
- 7513 1T **Research and development on embedded omnidirectional vision tracker for vision navigation** [7513-90]
J. Zhu, Tianjin Univ. of Technology (China); W. Feng, Tianjin Univ. (China); Z. Cao, B. Zhang, Tianjin Univ. of Technology (China)
- 7513 1U **Target recognition and tracking method for one-off aerial imaging system** [7513-93]
S. Ge, T. Xu, G. Ni, Y. Liu, Beijing Institute of Technology (China)
- 7513 1V **A novel compact parallel optical correlator** [7513-97]
G. Xiao, P. Zhou, X. Li, H. Jia, Z. Fan, National Univ. of Defense Technology (China); S. Yu, AVIC Zhongnan Transmission Machinery Works (China)
- 7513 1W **Fast target recognition and tracking in optical correlator using genetic algorithm** [7513-100]
H. Jia, P. Zhou, G. Xiao, X. Li, Z. Fan, National Univ. of Defense Technology (China); D. Sheng, Wuhan Ordnance N.C.O Academy (China)
- 7513 1X **Online measurement for geometrical parameters of locomotive wheel set** [7513-102]
K. Wu, Z. Li, T. Ban, Hangzhou Dianzi Univ. (China)
- 7513 1Y **Micro-structure imaging and measurement based on digital holographic system** [7513-109]
H. Wang, A. Qin, B. Zhao, Hebei Univ. of Engineering (China)
- 7513 1Z **Autofocus method for amplitude and pure phase objects reconstruction in digital holography** [7513-110]
H. Wang, A. Qin, B. Zhao, Hebei Univ. of Engineering (China)
- 7513 20 **Study on the depth of focus of lensless Fourier transform digital holographic imaging system** [7513-111]
H. Wang, A. Qin, Y. Wang, Hebei Univ. of Engineering (China)
- 7513 21 **Digital holographic imaging technology** [7513-112]
X. Song, A. Qin, Y. Wang, Hebei Univ. of Engineering (China)
- 7513 22 **Shape measurement of microscopic object by using digital lateral shearing holography** [7513-113]
X. Song, B. Zhao, Y. Wang, Hebei Univ. of Engineering (China)

- 7513 23 **Lifting wavelet method of target detection** [7513-114]
J. Han, C. Zhang, Xi'an Technological Univ. (China); X. Jiang, F. Wang, Xi'an Institute of Applied Optics (China); J. Zhang, Xi'an Technological Univ. (China)
- 7513 24 **Image denoising method based on 3D transform and local noise analysis** [7513-115]
Z. Li, X. Xu, H. Liu, Y. Wang, Ministry of Public Security (China)
- 7513 25 **Estimation method of CCD and CMOS response functions based on a single image** [7513-116]
S. Qiu, W. Jin, Beijing Institute of Technology (China)
- 7513 26 **Design of a novel micro-detection system based on image dynamic range enhancement** [7513-117]
P. Zhong, T.-T. Zhang, C.-J. Song, Donghua Univ. (China)
- 7513 27 **MCP gated x-ray framing camera** [7513-118]
H. Cai, J. Liu, L. Niu, H. Liao, J. Zhou, Shenzhen Univ. (China)
- 7513 28 **Variable-step constant statistics algorithm for removing residual fixed pattern noise of infrared images as second non-uniformity correction** [7513-121]
W. Zhang, H.-B. Nie, Q.-Y. Hou, Y.-M. Cao, Harbin Institute of Technology (China)
- 7513 29 **Study on laser backscattering of cone-shaped objects** [7513-124]
C. Yang, M. Kang, C. Zhen, J. Wu, Univ. of Electronic Science and Technology of China (China)
- 7513 2A **A wavelet and least square filter based spatial-spectral denoising approach of hyperspectral imagery** [7513-129]
T. Li, X. Chen, G. Chen, B. Xue, G. Ni, Beijing Institute of Technology (China)
- 7513 2B **Research on microscopy automatic focusing based on gradient function** [7513-132]
T. Zhang, Z. Xiao, R. Xiao, Guilin Univ. of Electronic Technology (China)
- 7513 2C **A universal denoising algorithm with trilateral filter and impulse detector** [7513-134]
Y. Liu, K. Gao, G. Ni, S.-L. Ge, Beijing Institute of Technology (China)
- 7513 2D **A new algorithm for image denoising** [7513-138]
Y. Ha, Hebei Univ. (China); Y. Xu, Ningbo Dahongying Polytechnics of Software (China); B. Yang, X. Wang, Hebei Univ. (China)
- 7513 2E **Image denoising algorithm based on the relevance of wavelet coefficients** [7513-139]
Y. Ha, Hebei Univ. (China)
- 7513 2F **High-resolution linear CCD application in the recognition of cuttings' lithology category** [7513-148]
B. Mu, W. Li, K. Cheng, M. Ding, Z. Sun, L. Ren, Ocean Univ. of China (China); X. Ci, Shengli Geological Drilling Co. (China); R. Zheng, Ocean Univ. of China (China)
- 7513 2G **Performance estimation of optical system simulation based on MTF** [7513-150]
G. Chen, Beijing Institute of Technology (China) and Polytechnic Institute of New York Univ. (United States); X. Chen, G. Ni, Beijing Institute of Technology (China)

- 7513 2H **Research and application of edge detection technology in costume pattern cutting** [7513-152]
W. Zhang, J. Qiu, Shanghai Univ. of Engineering Science (China)
- 7513 2I **Degraded parameter estimation using quantum neural network** [7513-154]
Y. Zhang, K. Gao, G. Ni, T. Bai, Beijing Institute of Technology (China)
- 7513 2J **Reconstructing photorealistic 3D models from image sequence using domain decomposition method** [7513-157]
H. Xiong, M. Pan, X. Zhang, Guangdong Univ. of Technology (China)
- 7513 2K **A semi-automatic 3D laser scan system design** [7513-158]
H. Xiong, M. Pan, X. Zhang, Guangdong Univ. of Technology (China)
- 7513 2L **Simulation on effects of atmospheric transmission on remote sensing images** [7513-159]
X. Chen, G. Chen, B. Xue, G. Ni, Beijing Institute of Technology (China)
- 7513 2M **Imaging system design and image interpolation based on CMOS image sensor** [7513-161]
Y. Li, F. Liang, R. Guo, Shenyang Institute of Aeronautical Engineering (China)
- 7513 2N **Image denoising based on wavelet cone of influence analysis** [7513-162]
W. Pang, Y. Li, Changchun Institute of Technology (China)
- 7513 2O **A method to obtain distance resolution information based on streak-tube camera** [7513-166]
L. Ma, S. Han, C. Ma, Beijing Institute of Technology (China)
- 7513 2P **Application of digital pulse delay device in range-gated control for range-gated imaging lidar** [7513-169]
C. Yuan, S. Chen, Y. Zhang, Z. Qiu, G. Ni, Beijing Institute of Technology (China)
- 7513 2Q **Research on width detection of building crack algorithm in embedded system based on image** [7513-171]
Z. Huang, J. Li, Y. Jiang, M. You, M. Zhu, Tianjin Univ. (China)
- 7513 2R **Research on obtaining multiband laser source using spectral beam combining** [7513-172]
Y. Li, Q. Li, S. Zhan, W. Meng, S. Zhao, Air Force Engineering Univ. (China)
- 7513 2S **An evaluation of stereo feature matching with enhanced Hough transform** [7513-174]
T. Fan, S. Yu, Dalian Maritime Univ. (China)
- 7513 2T **Augmented reality based surgery navigation system** [7513-176]
X. Zang, J. Yang, D. Weng, Y. Wang, Y. Liu, Beijing Institute of Technology (China)
- 7513 2U **Novel interactive virtual showcase based on 3D multitouch technology** [7513-177]
T. Yang, Y. Liu, Y. Lu, Y. Wang, Beijing Institute of Technology (China)
- 7513 2V **Infrared marker-based tracking in an indoor unknown environment for augmented reality applications** [7513-178]
Y. Huang, D. Weng, Y. Liu, Y. Wang, Beijing Institute of Technology (China)

- 7513 2W **Camera calibration method with a coplanar target and three-dimensional reconstruction** [7513-179]
K. Nie, W. Liu, J. Wang, Tianjin Univ. (China)
- 7513 2X **A new method for the extraction of region-of-interest based on visual attention** [7513-184]
X. Shao, K. Gao, G. Ni, Beijing Institute of Technology (China)
- 7513 2Y **Common hyperspectral image database design** [7513-185]
L. Tian, N. Liao, Beijing Institute of Technology (China); A. Chai, Institute of Vegetables and Flowers (China)
- 7513 2Z **System analysis and simulation of airborne scannerless 3D imaging lidar** [7513-188]
P. Guo, Q. Hao, S. Chen, Beijing Institute of Technology (China)
- 7513 30 **Modeling and tracing of errors caused by coordinate conversions with Dopplerlet transform analysis in airborne lidar system** [7513-189]
S. Chen, T. Lan, Y. Zhang, G. Ni, Beijing Institute of Technology (China)
- 7513 31 **Analyzing and modeling on coordinate conversion errors of airborne lidar detection data** [7513-190]
L. Jiang, T. Lan, Y. Zhang, G. Ni, Beijing Institute of Technology (China)
- 7513 32 **Simulation of atmospheric brightness distributions from a visible earth sensor using MODTRAN4** [7513-193]
M. Han, J. Chang, Beijing Institute of Technology (China); Y. Hao, Beijing Institute of Control Technology, National Lab. of Space Intelligence Control (China); T. Zhang, F. Yu, Beijing Institute of Technology (China)
- 7513 33 **A method of automatic recognition of airport in complex environment from remote sensing image** [7513-195]
Q. Hao, G. Ni, P. Guo, X. Chen, Y. Tang, Beijing Institute of Technology (China)
- 7513 34 **Fringe image processing based on structured light series** [7513-196]
S. Gai, F. Da, H. Li, Southeast Univ. (China)

Author Index

Symposium Committees

General Chair

Songlin Zhuang, University of Shanghai for Science and Technology
(China)

General Cochairs

Yuri Chugui, New Siberia Academy of Sciences (Russian Federation)
Arthur E. T. Chiou, National Yan-Ming University (Taiwan, China)

Honorary Chairs

Daheng Wang, Chinese Academy of Sciences (China)
Teruo Hiruma, Hamamatsu Photonics K.K. (Japan)
Guoguang Mu, Nankai University (China)
Bingkun Zhou, Tsinghua University (China)

Technical Program Chair

Guofan Jin, Tsinghua University (China)

Technical Program Cochairs

Yimo Zhang, Tianjin University (China)
Sien Chi, National Chiao Tung University (Taiwan, China)

Local Organizing Committee Chair

Youhua Wu, China Instrument and Control Society (China)

Local Organizing Committee Cochairs

Guoqiang Ni, Beijing Institute of Technology (China)
Daoyin Yu, Tianjin University (China)
Yulin Xi, Beijing Hamamatsu Photon Techniques Inc. (China)
Zhengji Ni, Shanghai University of Science and Technology (China)
Jinxue Wang, SPIE (United States)

General Secretary

Youhua Wu, China Instrument and Control Society (China)

Administrative Vice General Secretary

Boyu Ding, Beijing Institute of Technology (China)

Vice General Secretaries

Hanquan Zhang, China Instrument and Control Society (China)

Yuejin Zhao, Beijing Institute of Technology (China)

Xiongwen Qin, China Instrument and Control Society (China)

Tiegen Liu, Tianjin University (China)

Qionghui Feng, Shanghai University of Science and Technology
(China)

Cunlin Zhang, Capital Normal University (China)

Local Organizing Committee

Weimin Chen, Chongqing University (China)

Hongda Chen, Institute of Semiconductors, CAS (China)

Yan Zhang, Capital Normal University (China)

Shangzhong Jin, Chinese Jiliang University (China)

Boshun Hu, Modern Scientific Instruments (China)

Libo Yuan, Harbin Engineering University (China)

Tian Lan, Beijing Institute of Technology (China)

Conference Committee

Conference Chairs

Toru Yoshizawa, Saitama Medical University (Japan)
Ping Wei, Beijing Institute of Technology (China)
Jesse Zheng, Photontech Instruments Corporation (Canada)

Program Committee

Tingzhu Bai, Beijing Institute of Technology (China)
Ruwei Gu, Opton Company, Ltd. (Japan)
Tangjun Li, Beijing Jiaotong University (China)
Peilin Liu, Shanghai Jiaotong University (China)
Yinglong Liu, Central South University (China)
Cunwei Lu, Fukuoka Institute of Technology (Japan)
Tsutomu Shimura, The University of Tokyo (Japan)
Pingtao Wang, O&E Company Ltd. (Japan)
Shengli Wu, Xi'an Jiaotong University (China)
Jingyun Zhang, Aero-creative Corporation (United States)

Introduction

These proceedings result from the 2009 International Conference on Optical Instrument and Technology (OIT'09), held in Shanghai, China, 19–21 October 2009. The conference was the second event following the success of OIT'08 and it was sponsored and supported by SPIE, China Instrument and Control Society (CIS), and the Chinese Optical Society (COS).

OIT'09 was a professional conference which was combined with the exhibition of The 20th Fair for Measurement Instrumentation and Automation (MICONEX).

OIT'09 focused on instrument science and related technology involved in many technical aspects such as detection; observation; information collection, transfer and storage; communication; economization on energy; environmental protection; inspection and prevention of food security, traffic safety and mine safety; measure and control for aviation and space engineering, etc.

These proceedings, a collection of eight volumes, contain the accepted oral and poster papers presented at OIT'09. It is truly a great pleasure for me that the most recent progress in optical instrumentation technology is reported in the OIT'09 proceedings. I firmly believe that the papers included in these volumes will provide reference information in up-to-date techniques of optical instrumentation technology.

The OIT'09 conference collected over 630 papers from different countries or regions of the world. Over 400 authors came from more than 14 countries, including Canada, Iran, Japan, Russia, Singapore, USA, Sweden, Switzerland, Pakistan, the Netherlands, Republic of Korea, Slovenia, Germany and China. Published in these eight volumes of the Proceedings of SPIE are close to 455 papers. The technical fields of the presented papers at the conference cover a lot of current advanced technologies. The cutting-edge technologies and applications of optical instruments are discussed. Quite a few invited papers describe exciting achievements in the fields of optical instrument technology. It is evident that the OIT'09 conference has provided an excellent platform for participants and colleagues in research and development to share the technical progress and to develop new partnerships or broaden new markets.

SPIE has given great support to organize this international conference by collaborating with us in the whole organizing process from paper collection to the proceedings publication. COS has provided enough support and assistance.

Finally, on behalf of CIS and conference general chairs, I would like to heartily thank our supporters and committee members for all they have done for this conference. Thanks also go to all authors for their contributions; to all of the

participants and friends for their interest, especially those who have traveled great distances and taken time from their busy schedules to attend the conference. Thanks also go to the staff of COS for their support. I am also grateful to the SPIE staff for their support and collaboration in publishing these eight volumes.

Songlin Zhuang

Chairman, China Instrument and Control Society (CIS)