PROCEEDINGS OF SPIE

Sixth Conference on Frontiers in Optical Imaging and Technology: Novel Imaging Systems

Yan Zhou
Qiang Zhang
Feihu Xu
Bo Liu
Editors

22–24 October 2023
Nanjing, China

Organized by
Imaging and Detection Technology Committee, CSOE (China)
Nanjing University of Science and Technology (China)
Nanjing University (China)
Xi'an Technological University (China)
Beihang University (China)
Science and Technology on Low-Light-Level Night Vision Laboratory (China)

Sponsored by
The Chinese Society for Optical Engineering (China)

Published by
SPIE

Volume 13155

Proceedings of SPIE 0277-786X, V. 13155

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

The papers 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. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers 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 these proceedings:
Author(s), "Title of Paper," in *Sixth Conference on Frontiers in Optical Imaging and Technology: Novel Imaging Systems*, edited by Yan Zhou, Qiang Zhang, Feihu Xu, Bo Liu, Proc. of SPIE 13155, Seven-digit Article CID Number (DD/MM/YYYY); (DOI URL).

ISSN: 0277-786X
ISSN: 1996-756X (electronic)

ISBN: 9781510679702
ISBN: 9781510679719 (electronic)

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time)
SPIE.org
Copyright © 2024 Society of Photo-Optical Instrumentation Engineers (SPIE).

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 fees. To obtain permission to use and share articles in this volume, visit Copyright Clearance Center 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.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

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

SPIE. DIGITAL LIBRARY
SPIEDigitalLibrary.org

Paper Numbering: A unique citation identifier (CID) number is assigned to each article in the Proceedings of SPIE at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five 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.

Contents

vii *Conference Committee*

NOVEL IMAGING SYSTEMS

13155 02 **Image restoration using dual-domain fusion network for rotating rectangular synthetic aperture system** [13155-2]

13155 03 **Influence of reference mirror tilting on the performances of a Michelson-type interference-microscope objective** [13155-3]

13155 04 **Optical simulation analysis of a Fizeau-type Y-4 prototype** [13155-4]

13155 05 **Enhancing single-pixel imaging by balancing wavelet coefficients weight with an exponentially increasing diagonal matrix** [13155-6]

13155 06 **Windowed Fourier transform for non-line-of-sight imaging algorithms** [13155-7]

13155 07 **High-resolution beam profile diagnostic based on OTR for HALF injector** [13155-8]

13155 08 **Establishment and verification of energy simulation model of time-of-flight depth camera** [13155-9]

13155 09 **A method for measuring diffraction efficiency of Fresnel zone plates** [13155-14]

13155 0A **Study on preparation process and emission performance of $Al_xGa_{1-x}As$/GaAs photocathodes with distributed Bragg reflector** [13155-16]

13155 0B **Exploration and research of high contrast and high resolution two-dimensional x-ray grids** [13155-17]

13155 0C **Hybrid total variation and L_0-norm regularized non-blind deconvolution for Poissonian blurred image restoration** [13155-19]

13155 0D **Research on fingerprint recognition materials under ultra-thin screen** [13155-20]

13155 0E **Blurred image restoration conditional generative adversarial network based on hybrid channel and spatial attention** [13155-22]

13155 0F **Image denoising based on hybrid L0 and L1-norm regularization** [13155-23]

13155 0G **Active non-line-of-sight imaging through dense fog via hybrid intelligent enhancement perception system** [13155-24]

13155 0H **Research on light small and high-performance airborne oblique sweeping imaging system** [13155-25]

13155 0I **A high resolution TDI-CCD system with measurement matrix coding** [13155-27]

13155 0J **Coherent light scattering and imaging in disordered media** [13155-29]

13155 0K **Feasibility analysis of space-based active and passive fusion detection** [13155-30]

13155 0L **Design of circular polarization imaging system for underwater laser gating** [13155-32]

13155 0M **Design of high power 532nm solid pulse laser** [13155-33]

13155 0N **Surface passivation film optimization and electronic sensitivity characteristic test of back-illuminated CMOS** [13155-34]

13155 0O **Compressed hyperspectral imaging based on Fabry-Perot structures** [13155-35]

13155 0P **Experimental research of 256×128 InGaAs Gm-APD arrays laser imaging** [13155-36]

13155 0Q **Single particle imaging of biological specimens** [13155-37]

13155 0R **Intelligent imaging platform for control and data acquisition** [13155-38]

13155 0S **Aperture masking observations in binary stars detection with 1.56-m telescope** [13155-40]

13155 0T **Design of a four-zone amplitude random mask for lensless imaging systems** [13155-41]

13155 0U **Computational imaging through chromatic aberration corrected diffractive optical element** [13155-42]

13155 0V **Study of depth NLOS imaging by TOF camera using deep learning** [13155-43]

13155 0W **Exploratory research on multidimensional information modulation and calibration methods in infrared computational imaging** [13155-44]

13155 0X **Thermal analysis of TeO2-based acousto-optic tunable filters for spectral imaging** [13155-45]

13155 0Y **Miniature interferometry systems** [13155-46]

13155 0Z **TV-enhanced deep unfolding network for multispectral image demosaicing** [13155-48]

13155 10 **Real-time FPGA-based half-duplex underwater wireless optical communication system with high-loss link** [13155-50]

13155 11 **Application of clean algorithm based on odd-even arm SPIDER system** [13155-52]

13155 12 **Characteristics of photonic nanojet generated by patchy microspheres** [13155-53]

13155 13 **Real-time snapshot fractional Fourier phase retrieval via deep unfolding network** [13155-54]

13155 14 **Research on the estimation of near-surface turbulent kinetic energy dissipation rate and temperature variance dissipation rate** [13155-55]

13155 15 **A design of 3D laser projection system based on binocular vision** [13155-56]

13155 16 **Joint interference imaging spectral super-resolution technology based on FPI modulation** [13155-57]

13155 17 **Tiled and layer-adaptive three-dimensional structured illumination microscopy based on principal component analysis** [13155-58]

13155 18 **Design of a full-filed transmission x-ray microscope with 30nm resolution** [13155-59]

13155 19 **PDMS gel-type adaptive lens array driven by piezoelectric ceramics** [13155-60]