PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11698

, "Front Matter: Volume 11698," Proc. SPIE 11698, Emerging Digital
Micromirror Device Based Systems and Applications XIII, 1169801 (21 April
2021); doi: 10.1117/12.2596730

SPIE.

Event: SPIE OPTO, 2021, Online Only

PROCEEDINGS OF SPIE

Emerging Digital Micromirror Device Based Systems and Applications XIII

**John Ehmke
Benjamin L. Lee**
Editors

**6–11 March 2021
Online Only, United States**

Cosponsored by
DLP Texas Instruments (United States)

Published by
SPIE

Volume 11698

Proceedings of SPIE 0277-786X, V. 11698

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

Emerging Digital Micromirror Device Based Systems and Applications XIII, edited by John Ehmke,
Benjamin L. Lee, Proc. of SPIE Vol. 11698, 1169801 · © 2021 SPIE
CCC code: 0277-786X/21/\$21 · doi: 10.1117/12.2596730

Proc. of SPIE Vol. 11698 1169801-1

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 *Emerging Digital Micromirror Device Based Systems and Applications XIII*, edited by John Ehmke, Benjamin L. Lee, Proceedings of SPIE Vol. 11698 (SPIE, Bellingham, WA, 2021) Seven-digit Article CID Number.

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

ISBN: 9781510642317
ISBN: 9781510642324 (electronic)

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 © 2021, 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 \$21.00 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/21/\$21.00.

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: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article 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

ADVANCED MANUFACTURING USING DMD OR SLM: JOINT SESSION WITH 11696/11698

- 11698 04 **Mitigating scattering effects in DMD-based microscale 3D printing using machine learning**
[11698-1]
- 11698 05 **Volumetric additive manufacturing system optics** [11698-2]

BIOMEDICAL FABRICATION & IMAGING USING DMD / ADVANCED TECHNIQUES: JOINT SESSION WITH 11647/11698

- 11698 0A **Real-time structured polarized light imaging of dynamics of thick collagenous tissues** [11698-7]

BIOMEDICAL MICROSCOPY USING A DMD OR SLM: JOINT SESSION WITH 11647/11698

- 11698 0B **A single-shot synthetic aperture phase microscope** [11698-8]
- 11698 0D **Digital micro-mirror device based laser-illumination Fourier ptychographic microscopy for high-speed and high-resolution Imaging** [11698-10]
- 11698 0E **Dispersion-eliminated coded-aperture light field imaging using digital micromirror devices**
[11698-29]

NOVEL AND ADVANCED APPLICATIONS

- 11698 0G **Single-chip DMD-based hybrid holographic beam steering for lidar** [11698-12]
- 11698 0H **Frequency modulation as a tool to distinguish between particles and stray light during inspection of EUV/DUV reticles** [11698-13]
- 11698 0I **Stability of diffractive beam steering by a digital micromirror device** [11698-14]

COMPUTATIONAL IMAGING

- 11698 0K **Digital twin-trained deep convolutional neural networks for fringe analysis** [11698-16]
- 11698 0L **Single-pixel three-dimensional dual photography** [11698-17]

11698 OM **Accelerating beam with multiple types of main lobes** [11698-18]

DISPLAY SOLUTIONS

11698 ON **Integration of LiDAR with smart headlight using a single DMD** [11698-19]

11698 OO **Recent advances in the development of the Texas Instruments phase-only microelectromechanical systems (MEMS) spatial light modulator** [11698-20]

11698 OP **Time multiplex phase only sub holograms (Best Paper Award)** [11698-21]

11698 OQ **Speckle-reduced holographic projection with a piston-mode spatial light modulator** [11698-22]

3D METROLOGY

11698 OS **Improved defect segmentation by combining fiber optic fringe projection profilometry with directional variable brightfield illumination** [11698-24]

11698 OU **Miniaturization of borescopic fringe projection systems for the inspection in confined spaces: a methodical analysis** [11698-26]

11698 OV **High-speed three-dimensional surface measurement using band-limited illumination profilometry (BLIP) (Best Student Paper Award)** [11698-27]

POSTER SESSION

11698 OW **Error diffusion hologram binarization for DMD applications** [11698-28]