Emerging Digital Micromirror Device Based Systems and Applications XIII (OE403)

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Conference Co-Sponsor:

Texas Instruments

The Digital Micromirror Device (DMD) was conceived at Texas Instruments in 1987, following a decade of work on analog deformable-mirror and cantilever-mirror devices. This particular optical MEMS or MOEMS device has been applied most famously to digital cinema projection systems, enterprise projectors and highly portable personal displays, all of which were enabled by DLP® technology. The DMD has been commercially available since 1996 leading to hundreds of products and innovative research projects spanning consumer, industrial, medical and automotive markets.

As was evident by this well-attended conference at Photonics West 2020, the DMD and associated evaluation modules are enabling many exciting new applications and equipment beyond traditional display systems. By bringing together scientists, technologists, and developers, the goal of this conference is to highlight new and interesting means of applying DLP technology to solve problems across various markets.

Technical areas of particular interest include, but are not limited to:

PROGRAMMABLE PATTERNING AND ADVANCED IMAGING SOLUTIONS
- 3D metrology, machine vision, and factory automation
- compressive sensing
- computational imaging
- hyperspectral imaging
- security and surveillance
- spectroscopy (including mobile spectroscopy)
- volumetric scanning.

DISPLAY SOLUTIONS
- 3D displays (light-field, autostereoscopic, volumetric, multi-views, and holographic)
- augmented reality, virtual reality, and mixed reality
- automotive interior (head-up displays, interior displays, interior lighting)
- automotive exterior (headlight illumination, exterior lighting)
- intelligent lighting or displays.

MANUFACTURING SOLUTIONS
- additive manufacturing / 3D printing
- coding and marking
- direct imaging lithography
- industrial printers and exposure systems.

MEDICAL DEVICES
- biochemical visualization
- microscopy
- ophthalmology.

LIGHT MANIPULATION
- beam steering / wave-front shaping
- optical micromanipulation
- spectrally tunable light sources.

OTHER
- NIR applications
- optical telecommunications
- UV applications.
JOINT SESSION WITH BIOS BO500 AND OE403

Biomedical Imaging and Cell Manipulation using a Digital Micromirror Device or MEMS Array

This special joint session is in conjunction with BiOS conference BO500: Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues. The utilization of the DMD and other Optical MEMS arrays to manipulate light has numerous medical applications ranging from cancer detection to operating room aids to the manipulation of individual cells.

Papers are solicited that address the uses of a DMD and other Optical MEMS arrays with:
• 3D medical visualization
• confocal microscopes
• cytometers
• hyperspectral imaging
• image-guided intervention
• microscopy
• optoelectronic tweezers
• ophthalmology
• organs on a chip
• oxygenation measurements
• phototherapy
• selectable wavelength light sources
• spectroscopy (including mobile spectroscopy)
• structured light or 3D imaging
• tissue illumination.

JOINT SESSION WITH OE401 AND OE403

Advanced Fabrication using a Digital Micromirror Device or MEMS Array

Active research in the fields of advanced fabrication and MEMS Arrays, such as the digital micromirror device, have shown application and promise for implementing lithography and other forms of high precision printing. The purpose of this joint session is to explore the relationships between MEMS technology and fabrication as they relate to:
• 3D printing
• additive manufacturing
• lithography.

JOINT SESSION WITH OE702 AND OE403

AR/VR Displays using DMDs or other SLM Devices

AR/VR is an exciting area of development. Much progress hinges on the capabilities of light modulators. The purpose of this joint session is to explore and demonstrate the capabilities of different light modulators.

BEST PAPER AWARDS

We are pleased to announce that a cash prize, sponsored by Texas Instruments DLP Products, will be awarded to the best paper and best student paper in Emerging DMD-Based Systems and Applications. Qualifying papers will be evaluated by the awards committee. Manuscripts will be judged based on scientific merit, impact, and clarity. The winners will be announced during the conference and the presenting authors will be awarded a cash prize.

To be eligible for the Best Paper Award, you must:
• be listed as an author on an accepted paper within this conference
• have conducted the majority of the work to be presented
• submit your manuscript online by 16 February 2021
• present your paper as scheduled.

To be eligible for the Best Student Paper Award, you must:
• be a student without a doctoral degree (undergraduate, graduate, or PhD student)
• submit your abstract online, and select “Yes” when asked if you are a full-time student, and select yourself as the speaker
• when submitting your abstract, under TOPIC selection, choose “Consider for Best Student Paper Award”
• be the presenting author on an accepted paper within this conference
• have conducted the majority of the work to be presented
• submit your manuscript online by 16 February 2021
• present your paper as scheduled.
Present your research at SPIE Photonics West

Follow these instructions to develop a successful abstract and accompanying manuscript for the conference and for publication in the Proceedings of SPIE in the SPIE Digital Library.

How to submit an abstract

1. Browse the conference program and select the conference(s) that most closely matches the topics of the research you wish to present. Important: each abstract may be submitted to one conference only.
2. Click “Submit an Abstract” from within the conference you’ve chosen, and you’ll be prompted to sign in to your spie.org account to complete the submission wizard.
3. If your submission is related to an application track, indicate the appropriate track when prompted during the submission process.

What you will need to submit

A completed electronic submission should include the following:
- Title
- Author(s) information
- 250-word abstract for technical review
- 100-word summary for the program
- Keywords used in search for your paper (optional)
- Your decision on publishing your presentation recording to the SPIE Digital Library (slide capture and audio)
- Check the individual conference Call for Papers for additional requirements (for example, some conferences require 2- to 3-page extended summary for technical review, or have instructions for competing for awards)

Note: Only original material should be submitted. Commercial papers, papers with no new research/development content, and papers with proprietary restrictions will not be accepted for presentation.

Important dates

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<td>Abstracts Submission Deadline</td>
<td>26 August 2020</td>
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<td>Acceptance Notification Sent to Contact Author</td>
<td>2 November 2020</td>
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<td>Manuscripts Due (Conferences OE506, and OE801-OE803 Only)</td>
<td>20 January 2021</td>
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<td>Manuscripts Due (All Conferences EXCEPT OE506, and OE801-OE803)</td>
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Submission agreement

Presenting authors, including keynote, invited, oral, and poster presenters, agree to the following conditions by submitting an abstract:
- Register and pay the author registration fee
- Attend the meeting
- Present at the scheduled time
- Publish their manuscript in the SPIE Digital Library
- 6-page manuscript minimum for LASE and OPTO; 4-page minimum for BIOS; 20-page maximum
-既要 funding for registration fees, travel, and accommodations, independent of SPIE, through their sponsoring organizations
- Ensure that all clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor in the USA, allow at least 60 days for clearance.

Review and program placement

- To ensure a high-quality conference, all submissions will be assessed by the Conference Chair/Editor for technical merit and suitability of content.
- Conference Chairs/Editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations.
- Final placement in an oral or poster session is subject to Chairs’ discretion.

Publication of Proceedings in the SPIE Digital Library

- Conference Chairs/Editors may require manuscript revision before approving publication and reserve the right to reject for publication any paper that does not meet acceptable standards for a scientific publication.
- Conference Chair/Editor decisions on whether to allow publication of a manuscript are final.
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Contact information

For questions about submitting an abstract, or the meeting, contact the Conference Program Coordinator.

www.spie.org/oe403call