Dimensional Optical Metrology and Inspection for Practical Applications XII (DCS112)

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This conference will focus on methods, analysis, and applications of optical metrology and inspection as applied to various industries, with particular emphasis on practical applications for non-optical parts. The field of optical metrology and inspection has grown to wide acceptance for many applications in industry. The advances in machine vision have provided compact, smart camera systems, new cameras and lighting systems, and better ways of communicating with the outside world. Two- and three-dimensional methods have seen wide use in the electronics industry but have also made advances in traditional areas such as automotive and aerospace metrology and manufacturing. The growth of additive manufacturing methods is demanding new, fast measurement tools for both monitoring the build process as well as checking the final parts. Additive metrology tools are being used for defect inspection, precision measurements, and the monitoring of automated processes. Modern computing power has made analysis methods such as phase shifting a viable tool for fast on-line monitoring and metrology applications. This conference is intended to address the latest advances and future developments in the areas of optical inspection and metrology as they are applied to practical applications. Imaging and calibration techniques used in industrial automation are also welcome to this conference.

- machine/robot vision methods, architectures, and applications
- lighting methods and systems for inspection
- surface inspection methods and applications
- special optical systems for inspection and measurements
- 2D and 3D machine vision methods and applications
- structured light methods and applications
- image-based range measurement methods
- micro- and nano-scale measurement methods
- interferometric techniques applied to non-optical parts
- phase shifting methods applied to industrial inspection of non-optical parts
- optical methods for surface metrology
- mechano-optics and photonics for metrology and inspection
- system calibration and error analysis
- dimensional standards and artifacts
- 3D data manipulation
- on-line and process control measurements
- reverse engineering applications
- on-machine measurements of shape and finish
- metrology of additively manufactured parts
- optical methods for monitoring additive manufacturing
- high-resolution and high-speed inspection and monitoring applications.
ORBBEC BEST PAPER AWARDS

The Orbbec best paper, best student paper, and best oral presentation awards are sponsored by Orbbec Inc., and are presented annually to participants of Dimensional Optical Metrology and Inspection for Practical Applications conference at SPIE DCS. Papers will be selected for the best paper awards among the papers accepted, presented, and published in this conference. A panel of experts will evaluate all the papers for technical quality and merit. The criteria for evaluation will include: 1) innovation; 2) clarity and quality of the manuscript submitted for publication and presented at the conference; and 3) the significance and impact of the work reported.

In order to be considered for a best paper award, authors must make their oral presentation as scheduled and submit their manuscript by the advertised due date. All decisions regarding selection of the best papers will be made by an evaluation committee. The best student paper award is open to undergraduate, graduate, and doctoral students. The student must mark themselves as student during submission of the abstract, and be marked as the speaker.

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Below are abstract submission instructions, the accompanying submission agreement, conference presentation guidelines, and guidelines for publishing in the Proceedings of SPIE on the SPIE Digital Library. Submissions subject to chair approval.

### Important dates

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<tr>
<td>Abstracts Due</td>
<td>19 October 2022</td>
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<tr>
<td>Registration open</td>
<td>January 2023</td>
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<tr>
<td>Authors notified and program posts online</td>
<td>16 January 2023</td>
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<tr>
<td>Submission system opens for manuscripts and poster PDFs*</td>
<td>27 February 2023</td>
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<tr>
<td>Poster PDFs due for spie.org preview and publication</td>
<td>5 April 2023</td>
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<tr>
<td>Manuscripts due</td>
<td>12 April 2023</td>
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<tr>
<td>Advance upload deadline for oral presentation slides**</td>
<td>28 April 2023</td>
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*Contact author or speaker must register prior to uploading  
**After this date slides must be uploaded onsite at Speaker Check-in

### What you will need to submit

- **Title**
- **Author(s) information**
- 250-word abstract for technical review  
- 100-word summary for the program  
- Keywords used in search for your paper (optional)  
- Check the individual conference call for papers for additional requirements (for example, some conferences require two- to three-page extended summary for technical review, or have instructions for award competitions)

**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.

### How to submit your abstract

- Visit the conference page: [www.spie.org/DCS112call](http://www.spie.org/DCS112call)  
- You may submit more than one abstract but submit each abstract only once.  
- Click the "Submit An Abstract" button on the conference page.  
- Sign in to your SPIE account or create an account if you do not already have one.  
- Follow the steps in the submission wizard until the submission process is completed.

If your submission is related to an application track below, indicate the appropriate track when prompted during the submission process.

### Application tracks

- **AI/ML:** Papers that showcase the use of artificial intelligence, machine learning, and deep learning to create and implement intelligent systems
- **Net Zero:** Papers that feature solutions to achieving net zero energy consumption, waste, and carbon emissions within optics and photonics

### Submission agreement

All 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  
- Oral presenters: recording and publication of your onsite presentation (slides synched with voice) for publication in the Proceedings of SPIE on the SPIE Digital Library  
- Poster presenters: submit a poster PDF and optional preview video, by the advertised due dates, for publication in the Proceedings of SPIE in the SPIE Digital Library; poster PDFs may also be published and viewable in the spie.org program during and immediately after the event
- Submit a 4-page-minimum manuscript, by the advertised due date, for publication in the Proceedings of SPIE on the SPIE Digital Library  
- Obtain 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  
- Attend the meeting.  
- Present at the scheduled time.

### 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 chair discretion

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<tr>
<td>Doug Droge</td>
<td>Sr. Director Technology Systems, L3Harris (USA)</td>
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