

CALL FOR PAPERS

IS&T International Symposium on

Electronic Imaging 2019

SCIENCE AND TECHNOLOGY

13–18 January 2019 • Burlingame, California USA



Short Courses | Exhibits | Demonstration Session | Plenary Talks
Interactive Paper Session | Special Events | Technical Sessions

LEADERSHIP**EI 2019 SYMPOSIUM LEADERSHIP**

IS&T expresses its deep appreciation to the symposium chairs, conference chairs, program committee members, session chairs, and authors who generously give their time and expertise to enrich this Symposium. The Symposium would not be possible without the dedicated contributions of attendees and members.

EI 2019 SYMPOSIUM COMMITTEE**Symposium Co-chairs**

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Curtin University (Australia)

Radka Tezaur
Intel Corporation (US)

Past Symposium Chair

Joyce Farrell
Stanford University (US)

Short Course Co-Chairs

Jonathan B. Phillips
Google, Inc. (US)

Susan Farnand
Rochester Institute of Technology (US)

Arnaud Darmont
APHESA SPRL (Belgium)

**At-large Conference
Chair Representative**

Adnan Alattar
Digimarc (US)

IS&T Executive Director

Suzanne E. Grinnan
IS&T (US)

The International Symposium on Electronic Imaging is organized and sponsored by the Society for Imaging Science and Technology (IS&T), 7003 Kilworth Lane • Springfield, VA 22151 • 703/642-9090 • ei@imaging.org • electronicimaging.org

EI 2019 TECHNICAL PROGRAM COMMITTEE

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Björn Sommer, University of Konstanz

Robert L. Stevenson, Univ. of Notre Dame

Ingeborg Tastl, HP Labs, HP Inc.

Ralf Widenhorn, Portland State Univ.

Thomas Wischgoll, Wright State Univ.

Andrew J. Woods, Curtin Univ.

Buyue Zhang, Intel Corp.

Song Zhang, Mississippi State Univ.

Fengqing Maggie Zhu, Purdue Univ.

OVERVIEW**EI 2019 SYMPOSIUM OVERVIEW**

Come to EI 2019, where leading researchers, developers, and entrepreneurs from around the world discuss, learn about, and share the latest imaging developments from industry and academia.

EI 2019 highlights the themes of augmented, virtual, and mixed reality imaging, 3D imaging, and autonomous vehicles with joint conference sessions, invited plenary speakers, and short courses taught by experts from academia and industry.

The 2019 event features 18 technical conferences covering all aspects of electronic imaging, including:

- Augmented and virtual reality
- Autonomous machine imaging algorithms
- Computational and digital photography
- Human vision, perception, and cognition
- Image and video processing & communication
- Mobile imaging
- Imaging sensors
- Image quality

- Display and hardcopy
- Media security and forensics
- Machine vision and machine learning
- Stereoscopic displays and their applications
- Applications of these technologies in communications, security, transportation, education, space exploration, medicine, entertainment, and more

Technology demonstrations by industry and academia participants and a focused industry exhibition showcase the latest developments driving next generation electronic imaging products.

IS&T EI PROCEEDINGS ARE OPEN ACCESS

- For IS&T EI proceedings, open access means that papers will be downloadable in their entirety for free in perpetuity.
- Copyright restrictions on papers may vary, please see individual papers for copyright details.



WHAT TO EXPECT**WHAT YOU CAN EXPECT AT EI 2019**

Each year we listen to the great feedback we receive from EI attendees and incorporate the leading suggestions into the following year's event.

- Delve into content aligned with the EI 2019 themes: 3D imaging, autonomous vehicles, and augmented and virtual reality.
- Explore more than 150 highly-relevant sessions, led by some of the industry's top experts. Look for joint sessions on topics that span multiple conferences, creating synergies among technology topics.
- Attend keynotes in each conference. Be inspired by presentations from thought leaders representing a wide range of emerging applications from across both academia and industry.
- Attend three symposium plenaries, presenting breakthrough technologies that are reshaping, not just the fields of imaging science, but the world around us.
- Take short courses directly from the innovators.
- Meet colleagues and innovators at the EI 2019 social events. Engage one-on-one with authors during the interactive poster session. Interact with imaging products hands-on during the demonstration session and see the latest image products at the Industry Exhibition.

EI 2019 SYMPOSIUM-WIDE THEMES

- 3D Imaging (scene reconstruction, quality, 3D printing)
- Autonomous vehicles
- Augmented, virtual, and mixed reality

EI 2019 JOINT SESSION CONFERENCE TOPICS

- Astronomy / astrophysics
- Data analytics and visualization
- Deep learning
- HDR imaging and displays
- HMI (human machine interface)
- Light field imaging
- Medical /diagnostic imaging
- Multi-sensor fusion
- Multi-scale data integration
- Scientific imaging

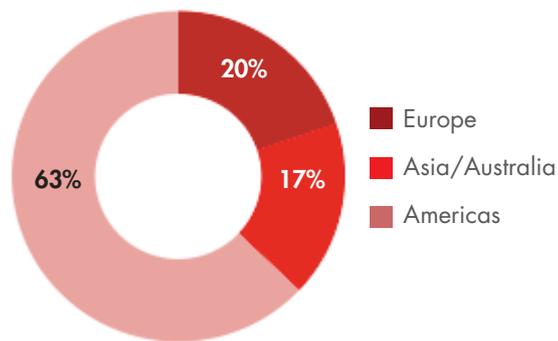
Are you working or studying in any of these areas?

Join us to present your work to a worldwide community of your peers, advancing the science and technology of imaging from personal photographs taken every day with mobile devices to autonomous imaging algorithms in self-driving cars to the mixed reality technology that underlies new forms of entertainment.



DEMOGRAPHICS**WHO ATTENDS****AN INTERNATIONAL EVENT****PARTICIPANTS FROM MORE THAN 35 COUNTRIES and TERRITORIES**

Australia, Austria, Belarus, Belgium, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Iceland, India, Ireland, Israel, Italy, Japan, Korea, Kuwait, Latvia, Mexico, Morocco, Netherlands, New Zealand, Norway, Pakistan, Poland, Russia, Spain, Sweden, Switzerland, Taiwan, Turkey, UK, USA*

and more than 35 US STATES

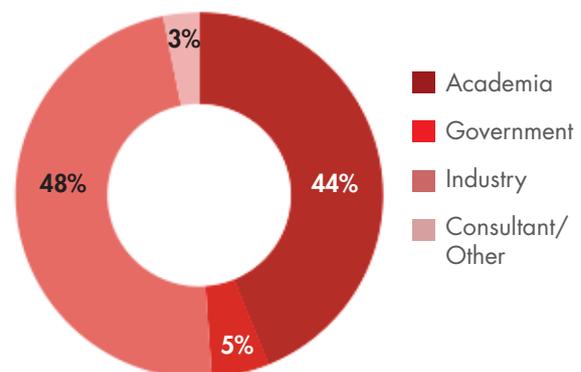
32% of attendees come from the greater Silicon Valley

WHERE INDUSTRY AND ACADEMIA MEET**FROM INDUSTRY**

Amazon, Adobe, Apple, BAE Systems, Canon, Cisco, Digimarc, Disney, Dolby, Draper, DxO, Facebook, Fairchild, FutureWei/Huawei, Google, GoPro, HP, Intel, Image Engineering, Imatest, Intuitive Surgical, Karl Storz, LG, Logitech, Lyft, Microsoft, Netflix, Karl Storz, LG, Logitech, Lyft, Microsoft, Netflix, Nikon, Nokia, NVIDIA, Océ, OmniVision, ON Semiconductor, Pixelteq, Qualcomm, Samsung, Sony, SRI, Uber, Valeo, and 200+ more.*

FROM ACADEMIA

Beijing Inst. of Tech., Binghamton Univ., Chiba, Chukyo, Chung-Ang, Chungbuk, Columbia, EPFL, Fraunhofer, Gwangju Institute, Harvard, Hong Kong Baptist Univ., Inha, Iowa State, Keio, KAIST, Kyungpook Nat'l. Univ., McGill, Northwestern, NTNU, NYU, Notre Dame, Ohio State, Purdue, RPI, RIT, Shizuoka Univ., Simon Fraser, Stanford, Taiwan Univ. of Science & Tech., Tampere Univ. of Tech., Tech. Univ. Delft, Tech. Hochschule Brandenburg, Tohoku, Tokyo Inst. of Tech., UC Berkeley, UCSD, Univ. degli Studi di Milano, Univ. of Kentucky, Univ. of Rochester, USC, Warsaw Univ. of Tech., Waseda, Yale, Yonsei, and 100+ more.*



*Attendee countries and institutions from past 3 years. Charts show attendee % from EI2018.

SUBMIT A PAPER**SUBMISSION INFORMATION / CRITICAL DATES**

Target your submission for a joint or special topic session—select the appropriate topic in the Focus Topic list in the submission form.

SUBMISSION OPTIONS**Journal-first Option**

Authors who wish to have their EI paper appear in and therefore be cited as a journal manuscript (vs. citation as a proceedings paper) may submit a complete, final manuscript-length paper (typically 8-12 pages) of original work directly to the *Journal of Imaging Science and Technology* (JIST) or to the *Journal of Perceptual Imaging* (JPI) by 30 June 2018. Papers submitted using this option progress through the journal peer-review process, with the additional requirement that, as the time to publication is shortened to accommodate the EI conference dates, the submissions must be publication-ready. Papers that require more than minor revisions are not accepted for publication in time for EI 2019. *Note: Papers accepted for JIST- or JPI-first are presented as oral papers at EI and published as reprints in the conference proceedings.*

Proceedings Paper Option

Each EI conference has its own submission requirements, please refer to the individual conference calls and webpages for required review formats and topics of interest.

You may also submit a paper to the Symposium directly and let the chairs select where it fits best. To do this, use the Word or LaTeX template and submit a 4-page draft paper. In the submission system, choose "Put my paper where it fits best" when asked to define the conference.

Presentation-only Option

Presentation-only submissions are typically by invitation or permission of the conference and are suitable for industry contributors restricted from submitting proceedings papers. Note that certain conferences do not accept presentation-only submissions.

SUBMISSION TEMPLATES**Presentation-only Option**

Word and LaTeX templates, as well as a template for the Extended Abstract option are found at the Symposium website under the Author Information tab. Copyright options are also found here.

EARLY DECISION AND JOURNAL-FIRST SUBMISSION DEADLINE**30 June 2018**

Authors of submissions received during the Early Decision Submission Period will be notified by 1 September.

- Authors choosing the *JIST-* or *JPI-first* submission option (details below) must submit by this deadline.
- Authors who require a VISA to enter the United States should submit during this period.
- Authors who plan to take advantage of the Fast Track posting option for accepted papers should submit by this deadline. Fast Track allows your paper to be posted in the Digital Library prior to the start of the Symposium (more details below).
- Early decision acceptance can improve the timing for obtaining budget support from within your sponsoring organization.

REGULAR SUBMISSION DEADLINE**8 September 2018**

Authors of submissions received during the Regular Submission Period will be notified as the conference programs are finalized.

ACCEPTED SUBMISSIONS

Accepted works will be assigned to an oral presentation slot (typically 20 minutes) or to the Interactive (poster) Presentation Session (presented during the 90-minute poster session). *Note: Interactive poster presenters may also be asked to give a short oral preview during a technical session depending on the conference.*

All EI authors are invited to participate in the **Demonstration Session** held on Tuesday evening. During the Demonstration Session, authors present "material" supplemental to their paper in an "exhibit hall" atmosphere. "Materials" presented may include hardware, software, physical items, integrated systems, etc.

ACCEPTED PAPERS

ACCEPTED PAPER DEADLINES

For those using the JIST-first or JPI-first options, revised papers incorporating changes requested by the editor and the peer-review comments must be submitted by 19 Oct 2018.

ANNOUNCING THE EI PROCEEDINGS FAST TRACK OPTION

Final manuscripts for conference proceedings, typically 4-6 pages in length, are due either:

- 16 November 2018 (Early publication via FAST TRACK), or
- 1 February 2019 (Post-conference proceedings publication)

Fast-tracked papers will then be published post-conference in the conference proceedings.

ACCEPTED INTERACTIVE POSTER PRESENTATIONS

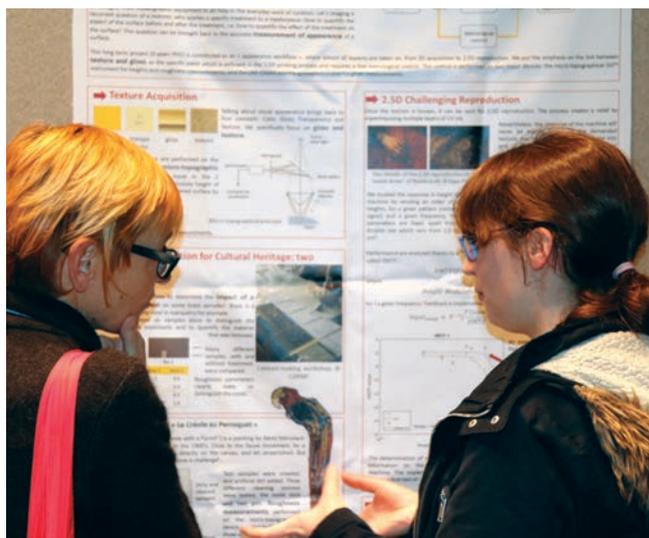
Authors presenting their work during the Interactive Session on Wednesday evening are required to be available during the session to answer questions and engage in in-depth discussions with the session attendees.

- Poster materials must be designed to display on a 4 ft by 4 ft poster board.
- IS&T will provide the board and pins.

AUTHOR OBLIGATIONS

Authors submitting to EI agree to the following.

- Submit your work for review in the format required by your chosen conference. Note that the JIST-first JPI-first options use the specific journal format. Submission equals authorization for IS&T to circulate the submission to conference committee members (or journal reviewers) for peer-review and/or selection purposes.
- If your work is accepted, you are obligated to register and present your work at EI as scheduled. Publication is conditional on your presentation. Register at the required registration rate by the early registration deadline. At least one full (non-student) registration is required with each accepted paper or presentation. Authors accepted under the Journal-first option must register for the conference AND pay the journal publication charges. Reduced rates apply. See journal-first information for details.
- Obtain funding for their registration fees, travel, and accommodations, independent of IS&T.
- If you require a visa to travel to the US, choose the early decision submission option and complete the visa letter request form as soon as you are notified of acceptance.
- Ensure that all clearances, including government and company clearance, have been obtained to present and publish the work. If you are a DoD contractor in the USA, allow at least 60 days for clearance.
- Sign and submit the IS&T copyright agreement. Please note that accommodations are made for authors who need to sign creative commons copyright forms such as CC BY and other options.
- Submit a full-length manuscript (typically 4-6 pages) for publication in the IS&T Digital Library by the stated deadlines.
- Attend EI and give a high-quality presentation as scheduled in the technical program. Prior to the conference, carefully construct and practice your presentation to faithfully represent your work to other attendees. Be prepared to answer questions about the work.



Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation.

STUDENTS**STUDENT FOCUS**

Connect with innovation. Connect with peers. Connect with knowledge.

2019 marks the 31st anniversary of IS&T International Symposium on Electronic Imaging. Over the course of the past 30 years, many thousands of electronic imaging students, engaged in the myriad facets of imaging science and engineering, have enhanced their skills and launched their careers through the connections that have been made here. EI offers a number of special opportunities for students:

MEET THE FUTURE: A SHOWCASE OF STUDENT AND YOUNG PROFESSIONALS RESEARCH

Wednesday 16 January 2019 5:30 – 7:00 pm

Call for poster presentations on topics in electronic imaging by graduate students and postdoctoral researchers.

You may show work accepted at any peer-reviewed conference during this event.

DURING THE SHOWCASE

- Present your work to senior researchers and engineers in an casual interactive setting
- Get feedback on your thesis
- Discuss your interests with potential employers
- Augment your oral presentation with a longer Q&A

The audience for this event includes researchers, engineers, business leaders, and recruiters from companies like Apple, Google, Huawei, Intel, Microsoft, Oculus, NVIDIA, Qualcomm, Samsung, and many others interested in meeting the students and young professionals who are advancing digital imaging technologies.

The Showcase is designed to help you introduce yourself to our community of industry researchers and engineers and to build a professional network that includes colleagues from around the world with shared interests and expertise.

Your poster should describe research on topics relevant to electronic imaging that you are pursuing or have worked on in the past. The research may be previously presented and/or published.

Note: If you are unable to attend the EI 2019 Symposium for the week, but still wish to present at the Student Showcase, you may do so. Just include that information when you email us about participating in the event.

DEADLINE TO SIGN UP

WEDNESDAY 2 JANUARY 2019 11:59 PM EST

STUDENT TRAVEL GRANT

Students who submit their research together with the required information will be considered for a cash travel grant and/or a free EI 2019 registration. Grants are financed by companies sponsoring EI's Student Support Activities. These companies are also looking to hire students for internships or jobs. Grants will be disbursed on-site during the conference to avoid currency issues and ensure participation at the conference.

The complete application is a single PDF file with multiple pages containing the following:

1. A cover letter containing your name, complete contact information (email, phone, etc.), university, department, research program, if applicable, and your topic of study. Indicate whether you are submitting a paper to one of the EI conferences. (Note: This grant is open to all students; you do not need to be giving a talk at EI to apply.)
2. Include either a detailed abstract of your research project OR the abstract/paper you submitted to an EI conference OR the final paper you submitted to another conference or journal if your work has already been published. Co-author name and affiliation must be included. (Note: You still have to officially submit your paper to the EI conference if you plan to present or publish it there.)
3. Your resume.
4. A letter of recommendation from your professor.
5. A signed (yes, your handwritten signature) commitment that you will attend the conference if your showcase presentation is accepted.

To begin your application: Submit the application form on the Student Showcase page at <https://electronicimaging.org>, selecting the Travel Grant option. Upon receipt of the completed form, we will provide you with instructions on how to upload the required files.

Please note that if you are awarded a travel grant you will have to pre-finance your travel because the payment will be made in cash on-site during the conference.

Questions? Contact: amccarthy@imaging.org

VENUE

CONFERENCE VENUE

Electronic Imaging 2019 will be held at the Hyatt Regency San Francisco Airport, located approximately 2 miles south of San Francisco International Airport (SFO).

Hyatt Regency San Francisco Airport

1333 Bayshore Highway, Burlingame, CA 94010
+1-650 347 1234

Located in Burlingame on the San Francisco Peninsula, the Hyatt is conveniently situated between downtown San Francisco and Silicon Valley businesses, providing easy access for both local attendees and those traveling from across the globe.

Rates

Single/Double \$209; Triple \$239; Quadruple \$249 plus 12% occupancy tax and \$2.00 per night local tourism fee (tax/fees subject to change). **Reservation deadline: December 21, 2018.**

Check In/Check Out

3:00 pm/noon

Early Departure

Charge of one night room and tax if guest departs earlier than confirmed departure. No charge if hotel contacted forty-eight hours in advance.

Cancellation

Cancel by 3:00 pm forty-eight hours prior to arrival to avoid a one night room and tax penalty.

Online Reservations

Via URL: <https://aws.passkey.com/go/EI2019>

By phone: +1 888 421 1442 and mention group name: EI2019 and/or IS&T

Interested in room sharing?

IS&T has partnered with conferenceshare.co to help students and others find potential roommates to reduce the cost of lodging. Use of this service is at your discretion; IS&T assume no responsibility for decisions made as a result of using it. If you are interested in sharing a room, ride, etc. with other conference attendees, sign up at conferenceshare.co to connect with each other. The meeting is listed as Electronic Imaging (EI) 2019 in the "select conference" tab. We appreciate your staying at the conference hotel, as doing so helps us keep registration costs down.

Parking Fees

- Valet Parking: \$30 for overnight
- Self-parking: \$25 for overnight; hourly rates based on length of stay
- 25% discount on self-parking rate for attendees

GETTING THERE

The Hyatt Regency San Francisco Airport is located approximately 2 miles south of San Francisco International Airport (SFO); and 30 miles from Oakland (OAK) and San Jose (SJC) International Airports.

Free Shuttle to/from SFO

A complimentary hotel shuttle runs every 10-15 minutes from SFO. Take your luggage to the Departures Level center island and look for the area marked "Hotel Shuttle." The shuttle bus is marked "Hyatt Regency and Marriott." For arrivals and departures between midnight and 4:46 am, free shuttles pick up hotel guests every 30 minutes.



CALL FOR PAPERS

3D MEASUREMENT AND DATA PROCESSING 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Deep learning
- HMI (human machine interface)
- Medical / diagnostic imaging
- Multi-sensor fusion
- Multi-scale data integration

CONFERENCE TOPICS*

- 3D, 4D, and multimodal imaging systems
- 3D/4D imaging metrology
- 3D/4D data preprocessing and filtering
- Multi-view data integration
- Representations: models, tools for transformation, simplification
- Analysis: feature extraction, segmentation, classification, pattern recognition
- 3D shape indexing and retrieval
- Scene analysis: from 2D views to 3D reconstruction and interpretation
- Medical imaging and analysis
- 3D imaging technology

* See conference webpage for detailed listing of subtopics.

AWARDS

- Best Paper Award
- Best Student Paper Award

ABOUT THE SYMPOSIUM

A week of interconnected imaging science events allowing you to expand your knowledge and network, including:

- Short courses taught by international experts
- 18 conferences—from Autonomous Vehicles to VR to Image Quality
- Opportunities for Students and Young Professionals
- 3 engaging Plenary Talks
- Joint sessions to increase knowledge across areas
- 3D Theater, Demonstration Session, Exhibition, Receptions, and more

CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_3DMP

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 1,000-word structured abstract (template provided). Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

Presentation-only: Submit a 500-word short abstract. Accepted authors present work, but do not write a proceedings paper.

Journal-first paper: Submit a full, journal-ready paper, for Open Access publication in the selected journal (provides journal citation) and inclusion in the conference proceedings. Authors present their papers at EI. Select either the *Journal of Imaging Science and Technology (JIST)* or *Journal of Perceptual Imaging (JPI)*.

SUBMISSION DEADLINES

Early decision: 30 June 2018

JIST- /JPI-first: 30 June 2018

Regular submission: 8 September 2018

FINAL PROCEEDINGS MANUSCRIPT DEADLINE

Typical length: 4-6 pages

- **FastTrack viewing** (available online at EI): 16 November 2018
- **Post-EI viewing:** February 2019

To register or learn more, visit
www.ElectronicImaging.org



CALL FOR PAPERS

AUTONOMOUS VEHICLES AND MACHINES 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Deep learning
- HDR imaging and displays
- Light field imaging
- Multi-sensor fusion
- Image quality for autonomous vehicles

CONFERENCE TOPICS*

- Perception for autonomous vehicles
- Computer vision, machine vision, analytics
- Multi-modal sensing (Radar, Lidar, Imager, etc)
- Sensor fusion (Radar, Lidar, camera, ultrasound, GPS, thermal, TOF, etc.)
- Mapping and localization. Map for autonomous vehicles
- Deep convolution neural networks. Machine learning
- 3D reconstruction. Surround perception
- Image signal processors (ISP). Vision processors. DNN accelerators
- The evolution of ISP with new techniques such as CNN. Vision pipe
- Autonomous Driving and Sensor Simulation
- Validation of autonomous vehicles
- Validation of perception processors and algorithms
- Autonomous driving system architecture

* See conference webpage for detailed listing of subtopics.

AWARDS

- Best Paper Award
- Best Student Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_AVM

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 1,000-word structured abstract (template provided). Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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SUBMISSION DEADLINES

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CALL FOR PAPERS

COLOR IMAGING XXIV: DISPLAYING, PROCESSING, HARDCOPY, AND APPLICATIONS

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Astronomy / astrophysics
- HDR imaging and displays

SPECIAL SESSION

- Dark Side of Color

CONFERENCE TOPICS*

- Image processing for color input, soft and hard copy output, and electronic publishing
- Color reproduction
- Systems and architectures
- Device modeling and characterization
- Effects of extra-spectral attributes
- Applications of color hard and soft copy
- Color image encoding and standards
- Representation and encoding of compound documents
- Spatial processing
- Color vision models

* See conference webpage for detailed listing of subtopics.

AWARDS

- First paper submitted

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_COLOR

SUBMISSION OPTIONS

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To register or learn more, visit
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CALL FOR PAPERS

COMPUTATIONAL IMAGING XVII

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Deep learning
- Medical / diagnostic imaging
- Multi-sensor fusion
- Scientific imaging

CONFERENCE TOPICS***Algorithms and methodologies**

- Model-based imaging and compressed sensing
- Multiscale image processing and modeling
- Statistical learning and analysis methods

Key problem areas

- Tomography, transmission, and emission
- Microscopy, light, EM, and non-classical
- Optical coherence imaging
- Synthetic aperture radar
- Coded aperture and compressed sensing

Current and future applications

- Consumer imaging and computational photography
- Super-resolution and enhancement
- Medical imaging and image-guided surgery
- Non-destructive evaluation for additive manufacturing

* See conference webpage for detailed listing of subtopics.

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- 3 engaging Plenary Talks
- Joint sessions to increase knowledge across areas
- 3D Theater, Demonstration Session, Exhibition, Receptions, and more

CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_COIMG

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 1,000-word structured abstract (template provided). Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

Presentation-only: Submit a 500-word short abstract. Accepted authors present work, but do not write a proceedings paper.

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SUBMISSION DEADLINES

Early decision: 30 June 2018

JIST- /JPI-first: 30 June 2018

Regular submission: 8 September 2018

FINAL PROCEEDINGS MANUSCRIPT DEADLINE

Typical length: 4-6 pages

- **FastTrack viewing** (available online at EI): 16 November 2018
- **Post-EI viewing:** February 2019

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CALL FOR PAPERS

THE ENGINEERING REALITY OF VIRTUAL REALITY 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- HMI (human machine interface)
- Medical / diagnostic imaging
- Scientific imaging

CONFERENCE TOPICS*

- Advances in AR: Hardware, software, content, and cultural context behind cutting-edge AR
- AR UI and UX, AR in education/learning, gaming, art, and the future of AR
- Compelling experiences: The delicate balance between technological and creative disciplines are desired
- Stubborn problems: Interaction, tracking, lag, rendering speed, field of view, resolution
- Aesthetics and interaction in 3D environments
- Industrial applications: Real-world problems from a variety of disciplines
- Women in VR: Feminine perspectives on discovery, examination, and designs of virtual reality systems

* See conference webpage for detailed listing of subtopics.

ABOUT THE SYMPOSIUM

A week of interconnected imaging science events allowing you to expand your knowledge and network, including:

- Short courses taught by international experts
- 18 conferences—from Autonomous Vehicles to VR to Image Quality
- Opportunities for Students and Young Professionals
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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_ERVR

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 500-word structured abstract with optional figures using the symposium template. Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

Presentation-only: Submit a 500-word short abstract. Accepted authors present work, but do not write a proceedings paper.

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CALL FOR PAPERS

HUMAN VISION AND ELECTRONIC IMAGING 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Color
- HDR imaging and displays
- HMI (human machine interface)
- Material appearance perception

CONFERENCE TOPICS*

- Fundamental and applied research in human perception and cognition
- Visual, auditory, haptic, olfactory, and taste perception, and cross-sensory interactions
- Perceptually-based algorithms, metrics, and methods for image and video quality and compression
- Image and video analysis and understanding
- Visual cognition, including visual attention and saliency, visual search, pattern recognition, perceptual organization, and semantics
- Higher-level issues in image quality, include quality of experience, aesthetics, emotion, and context
- Perceptual and cognitive opportunities for emerging technologies
- Perception, art, and aesthetics, including fine arts and design, integrating artistic and scientific insights on perceptual phenomena

* See conference webpage for detailed listing of subtopics

SPECIAL EVENT

- HVEI Banquet and Talk

AWARDS

- Best Student Paper Award

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CONFERENCE WEBSITE

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SUBMISSION OPTIONS

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CALL FOR PAPERS

IMAGE PROCESSING: ALGORITHMS AND SYSTEMS XVII

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Light field imaging
- Multi-sensor fusion
- Scientific imaging

CONFERENCE TOPICS***Methods**

- Linear and non-linear filtering
- Transforms, wavelets, and abstract harmonic analysis
- Machine learning
- Genetic and evolutionary computing
- Plenoptics and light field imaging

Applications and systems in

- Machine vision
- Biomedical image processing
- Microarray imaging
- Biomedical and health informatics

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_IPAS

SUBMISSION OPTIONS

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SUBMISSION DEADLINES

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CALL FOR PAPERS

IMAGE QUALITY AND SYSTEM PERFORMANCE XVI

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Automotive imaging
- Data analytics and visualization
- HDR imaging and displays
- Light field imaging
- Medical / diagnostic imaging
- Scientific imaging

CONFERENCE TOPICS***Image quality**

- Image quality attributes, characterization, and metrics
- Image preference, saliency, scene dependency
- Machine learning visual quality methods (e.g., CNN)
- No-reference and multi-modal (audio and video) metrics

System performance

- Imaging system simulation and modeling
- Camera ISP tuning and quality trade-offs
- Autonomous vehicle vision system performance

Standards for image quality and system performance

- Standards for image and video quality
- Mobile, automotive, and video imaging performance

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award
- Best Student Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_IQSP

SUBMISSION OPTIONS

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SUBMISSION DEADLINES

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JIST- /JPI-first: 30 June 2018

Regular submission: 8 September 2018

FINAL PROCEEDINGS MANUSCRIPT DEADLINE

Typical length: 4-6 pages

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16 November 2018
- **Post-EI viewing:** February 2019

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CALL FOR PAPERS

IMAGE SENSORS AND IMAGING SYSTEMS 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Color
- Medical / diagnostic imaging
- HDR imaging and displays
- Multi-sensor fusion
- Light field imaging
- Scientific imaging

CONFERENCE TOPICS***Advances in technologies and models**

- Innovative devices, process, and post-process (e.g., 3D integration)
- Advances in alternative technologies (organic, a-Si, etc.)
- Advanced/novel image sensor or pixel control circuits
- Advanced/novel defects and noise reduction algorithms

High-end image sensors

- High speed, large format, ultra low power & low noise
- Very high dynamic range

On-chip processing for smarter sensors

- On chip signal or image processing
- Image sensors for 3D imaging
- Bio-inspired image sensor

Image sensors assessment and novel implementations or applications

- Hyperspectral image sensors or camera
- Sensor fusion
- Miniature autonomous systems based on image sensors

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_IMSE

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 4-6 page draft proceedings paper with optional figures using the symposium template. Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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SUBMISSION DEADLINES

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CALL FOR PAPERS

IMAGING AND MULTIMEDIA ANALYTICS IN A WEB AND MOBILE WORLD 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- HDR imaging and displays
- HMI (human machine interface)
- Medical / diagnostic imaging

CONFERENCE TOPICS*

- Image, video, and multimedia analytics: deep learning; object tracking; face detection and recognition
- Social networks: use of image / videos, web-based testing, ground-truth data collection (crowd-sourcing)
- Mobile computing, services, and applications: search, sharing, indexing, and retrieval
- Mobile healthcare
- Internet of Things: for smart home and smart office applications
- Online photo services
- Image Aesthetics
- Web content creation, repurposing, analysis, and representation

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_IMAWM

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 1,000-word structured abstract (template provided). Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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Typical length: 4-6 pages

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- **Post-EI viewing:** February 2019

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CALL FOR PAPERS

**INTELLIGENT ROBOTICS AND INDUSTRIAL APPLICATIONS USING
COMPUTER VISION 2019**

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Advanced manufacturing
- Medical / diagnostic imaging
- Deep learning
- Multi-sensor fusion

CONFERENCE TOPICS*

- Computer vision algorithms and uses for industry, robots, surveillance
- 3D vision: modeling, perception, processing, recognition, predictive
- Physical, thermal, color, and/or spectroscopic algorithms & applications
- High-throughput systems for medical or biological applications
- Intelligent mobile robot methods and advancements
- Machine vision applications for industrial R&D, harsh environments
- Autonomous multi-vehicle collaboration
- Robotic aids for the elderly, health, education, and transportation
- Cognitive learning strategies and systems
- Tracking and scene analysis; active vision and real-time techniques; mobile mapping
- Object modeling and recognition for robotic vision
- Computational attention

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Student Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_IRIACV

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 500-word structured abstract with optional figures using the symposium template. Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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CALL FOR PAPERS

MATERIAL APPEARANCE 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- HDR imaging and displays
- Material appearance perception
- Medical / diagnostic imaging
- Multi-scale data integration

CONFERENCE TOPICS***Physical characterization:**

- Optical measurement techniques
- Light-matter interaction models

Perceptual characterization (with HVEI):

- Perceptual attribute assessment and representation
- Sensorial metrology

Appearance reproduction and design:

- Technologies: 3D printing, special effect coatings, surface texturation
- Soft proofing methods
- Materials for fabrication

Simulation and display (with COLOR):

- HDR / spectral display for material appearance
- Virtual proofing for design
- Image synthesis

Applications:

- Art, textile, cosmetics, automotive, object design, 3D printing, manufacturing, lighting, e-commerce, security

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Student Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_MAAP

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 1,000-word structured abstract (template provided). Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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CALL FOR PAPERS

MEDIA WATERMARKING, SECURITY, AND FORENSICS 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Deep learning

CONFERENCE TOPICS*

- Digital watermarking, steganography and data hiding
- Media forensics and authentication
- Media encryption and protection
- Digital rights management
- Optical document security
- Document authentication and examination
- Biometrics and user identification
- Feature extraction and management
- Media identification and physical object identification and interaction
- RFID tags, barcode technology, near field communication (NFC), Internet of Things
- Autonomous technology security and privacy

* See conference webpage for detailed listing of subtopics

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_MWSF

SUBMISSION OPTIONS

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CALL FOR PAPERS

MOBILE DEVICES AND MULTIMEDIA: ENABLING TECHNOLOGIES, ALGORITHMS, AND APPLICATIONS 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- HMI (human machine interface)
- Medical / diagnostic imaging
- Multi-sensor fusion

CONFERENCE TOPICS***Applications**

- Multimedia signal processing and modern compression for mobile devices
- Location-based-services and technologies and safety
- Small scale digital device forensics
- Healthcare information systems, mobility, security, and privacy
- HCI, interaction design and techniques, user-centered studies for mobile devices

Multimedia content

- Content management and delivery
- Mobile visual information processing and management
- Multimedia standards
- Multimedia data mining
- Cognitive aspects of human/machine systems

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award
- Best Student Paper Award

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CONFERENCE WEBSITE

A complete list of conference topics and details for submission is found on the conference webpage: bit.ly/EI2019_MOBMU

SUBMISSION OPTIONS

Presentation + proceedings paper: Submit a 4-6 page draft proceedings paper with optional figures using the symposium template. Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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CALL FOR PAPERS

PHOTOGRAPHY, MOBILE, AND IMMERSIVE IMAGING 2019

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Deep learning
- HDR imaging and displays
- Light field imaging
- Medical / diagnostic imaging
- Multi-sensor fusion
- Scientific imaging

CONFERENCE TOPICS***Methods**

- Image input hardware: novel image sensors, optics and module, depth sensing
- Imaging algorithms: device calibration, image / video artifact corrections, enhancement, rendering, computational photography, image fusion, sensor fusion, photogrammetry, depth map estimation, 3-D imaging
- Imaging system architecture: novel system design and simulation, pipeline, 3A, stabilization, image quality, usage experience
- Immersive imaging: 360 surround camera architectures, Cinematic VR systems, digital sense, applications, challenges and innovative solutions
- Deep learning/machine learning: solving problems related to mobile capture, AR/VR, and general camera image pipelines

* See conference webpage for detailed listing of subtopics

AWARDS

- Best Paper Award

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CONFERENCE WEBSITE

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SUBMISSION OPTIONS

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SUBMISSION DEADLINES

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CALL FOR PAPERS

STEREOSCOPIC DISPLAYS AND APPLICATIONS XXX

Submissions that address the Symposium-wide themes, joint sessions, and/or conference topics are welcome.

SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Astronomy / astrophysics
- Visualization facilities
- Data analytics and visualization
- Stereoscopic image processing
- Light field imaging
- Stereoscopic human factors
- Stereoscopic image quality

CONFERENCE TOPICS*

- **Applications:** games, scientific, medical, television, entertainment, training, CAD, molecular modeling, teleoperation, telepresence, VR, AR
- **Advances in true 3D display technologies:** autostereoscopic, high-density multi-view, volumetric, light-field, spatially/temporally-multiplexed, multi-projector, mobile 3D, electro-holography, etc.
- **Stereoscopic systems design:** performance, crosstalk, brightness, viewing freedom, VR/AR/MR head-mounted displays, teleoperation, telerobotics, telesurgery, mobile devices, game systems, broadcast, interaction technologies
- **Digital cinema:** production, post-production, presentation, case studies
- **3D image quality, image alignment, and depth range analysis**
- **Stereoscopic and multi-view computer graphics, including gaming**
- **Image synthesis:** 2D to 3D, depth map generation, multi-viewpoint generation
- **3D image acquisition and generation techniques:** single- and multi-lens camera systems, light-field cameras, motion parallax, volume projection, graphical construction, generation of novel viewpoints, light-field rendering
- **Human factors and user-interface issues:** task performance comparisons, ortho-stereo, hyper-stereo, geometry of 3D perceptual space

* See conference webpage for detailed listing of subtopics

SPECIAL EVENT

- SD&A 3D Theater

AWARDS

- Best film (animation)
- Best film (live action)
- Best use of stereoscopy in a presentation

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CONFERENCE WEBSITE

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Presentation + proceedings paper: Submit a 500-word structured abstract with optional figures using the symposium template. Accepted authors write 4-6 page paper for inclusion in the Open Access conference proceedings.

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SUBMISSION DEADLINES

Early decision: 30 June 2018

JIST- /JPI-first: 30 June 2018

Regular submission: 8 September 2018

FINAL PROCEEDINGS MANUSCRIPT DEADLINE

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- **FastTrack viewing** (available online at EI): 16 November 2018
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VISUAL INFORMATION PROCESSING AND COMMUNICATION X

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SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Deep learning
- HDR imaging and displays
- Light field imaging
- Multi-sensor fusion
- Multi-scale data integration

CONFERENCE TOPICS*

- Compression of visual information
- Media over networks
- Visual information processing and representations
- Pattern matching of visual data
- Object-based methods
- Synthetic imaging and rendering
- Application systems
- Media system design
- Compression of medical imaging information
- Challenges associated with: sporting event reproduction for real, AR, and MR platforms; event acquisition via 360, 3D, and multi camera networks; understanding and analysis of event/special application imaging

* See conference webpage for detailed listing of subtopics

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SYMPOSIUM-WIDE THEMES FOR EI 2019

- 3D Imaging
- Autonomous vehicles
- Augmented, virtual, and mixed reality (AR/VR/MR) imaging

PROSPECTIVE JOINT SESSIONS

- Data analytics and visualization
- Deep learning
- HDR imaging and displays
- HMI (human machine interface)
- Medical / diagnostic imaging
- Multi-scale data integration
- Scientific imaging

CONFERENCE TOPICS*

- High-performance computing and visualization: information, graph, geographic, scientific, biomedical
- Exploratory data visualization and analysis
- Multivariate time series visualization; volume and flow visualization
- Image processing
- Sentiment analysis
- Human factors
- Cyber-security
- Data mining
- Social media
- Virtual and augmented reality
- Case and empirical studies

* See conference webpage for detailed listing of subtopics

AWARDS

- Kostas Pantazos Memorial Award for Outstanding Paper in Visualization and Data Analysis

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Presentation-only: Submit a 500-word short abstract. Accepted authors present work, but do not write a proceedings paper.

Journal-first paper: Submit a full, journal-ready paper, for Open Access publication in the selected journal (provides journal citation) and inclusion in the conference proceedings. Authors present their papers at EI. Select either the *Journal of Imaging Science and Technology (JIST)* or *Journal of Perceptual Imaging (JPI)*.

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Social Event Sponsor	\$2,000	One (1) technical registration Half-table during Symposium for literature Individual sign recognizing your contribution
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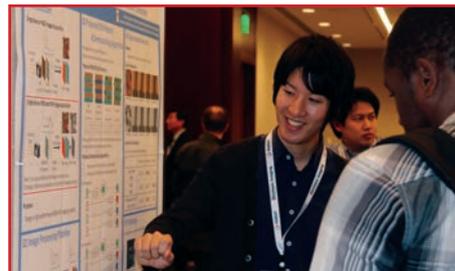
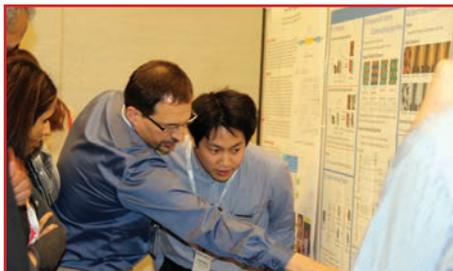
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