

PROCEEDINGS OF SPIE

# ***Applications of Digital Image Processing XLI***

**Andrew G. Tescher**  
*Editor*

**20–23 August 2018**  
**San Diego, California, United States**

*Sponsored and Published by SPIE*

**Volume 10752**

**Part One of Two Parts**

Proceedings of SPIE 0277-786X, V. 10752

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

Applications of Digital Image Processing XLI, edited by Andrew G. Tescher, Proc. of SPIE Vol. 10752, 1075201 · © 2018 SPIE · CCC code: 0277-786X/18/\$18 · doi: 10.1117/12.2514600

Proc. of SPIE Vol. 10752 1075201-1

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 [SPIDigitalLibrary.org](http://SPIDigitalLibrary.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 *Applications of Digital Image Processing XLI*, edited by Andrew G. Tescher, Proceedings of SPIE Vol. 10752 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

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

ISBN: 9781510620759  
ISBN: 9781510620766 (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](http://SPIE.org)

Copyright © 2018, 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 \$18.00 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](http://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/18/\$18.00.

Printed in the United States of America.

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

**SPIE. DIGITAL  
LIBRARY**

[SPIDigitalLibrary.org](http://SPIDigitalLibrary.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

ix *Authors*  
xiii *Conference Committee*

## Part One

### SESSION 1 OBJECT DETECTION AND TRACKING

---

- 10752 02 **Tomographic imaging with wireless sensor networks** [10752-1]
- 10752 03 **Monitoring refractory wear in a coke oven under high temperature** [10752-2]
- 10752 04 **Comparison of non-uniformity correction methods in midwave infrared focal plane arrays of high speed platforms** [10752-3]
- 10752 05 **Generating simulated SAR images using Generative Adversarial Network** [10752-4]
- 10752 06 **Robust night target tracking via infrared and visible video fusion** [10752-6]
- 10752 07 **Natural scene text detection and recognition with a three-stage local phase-based algorithm** [10752-7]
- 10752 08 **Automatic identification of diatoms using descriptors obtained in the plane of frequencies** [10752-8]

### SESSION 2 PLENOPTIC IMAGING

---

- 10752 09 **Three dimensional reconstruction using a lenslet light field camera** [10752-9]
- 10752 0A **Canonical 3D object orientation for interactive light-field visualization** [10752-10]
- 10752 0B **Steered mixture-of-experts for light field video coding** [10752-11]
- 10752 0C **Analysis of motion vectors and parallel computing in pseudo-sequence based light field image compression methods** [10752-12]
- 10752 0D **Light field image coding: objective performance assessment of Lenslet and 4D LF data representations** [10752-13]
- 10752 0E **A graph learning approach for light field image compression** [10752-14]

- 10752 0F     **The perceived quality of light-field video services** [10752-15]
- 10752 0G     **Predicting 3D visual discomfort using natural scene statistics and a binocular model** [10752-16]
- 10752 0H     **Point cloud subjective evaluation methodology based on reconstructed surfaces** [10752-17]
- 10752 0I     **A novel methodology for quality assessment of voxelized point clouds** [10752-18]
- 10752 0J     **A digital hologram compression scheme for representation on the object plane** [10752-19]

---

**SESSION 3     VIDEO TRANSMISSION AND QUALITY OPTIMIZATION**

---

- 10752 0K     **Predicting the quality of images compressed after distortion in two steps** [10752-20]
- 10752 0L     **Spatial resolution adaptation framework for video compression** [10752-21]
- 10752 0M     **A user model for JND-based video quality assessment: theory and applications** [10752-22]
- 10752 0N     **Combining tile parallelism with slice partitioning in video coding** [10752-23]
- 10752 0O     **Performance comparison of objective metrics on free-viewpoint videos with different depth coding algorithms** [10752-24]
- 10752 0P     **Subjective and objective quality assessment of omnidirectional video** [10752-25]
- 10752 0Q     **Video codec comparison using the dynamic optimizer framework** [10752-26]
- 10752 0R     **Geo-popularity assisted optimized transcoding for large scale adaptive streaming** [10752-27]
- 10752 0S     **Using modern motion estimation algorithms in existing video codecs** [10752-28]
- 10752 0T     **Using video quality metrics for something other than compression** [10752-29]

---

**SESSION 4     FUTURE VIDEO**

---

- 10752 0V     **Performance comparison of VVC, AV1, and HEVC on 8-bit and 10-bit content** [10752-31]
- 10752 0W     **Adaptive reshaping for next generation video codec** [10752-32]
- 10752 0X     **An adaptive quantization method for 360-degree video coding** [10752-33]

- 10752 0Y **On the adaptive selection of partitioning tree types for coding video color channels** [10752-34]
- 10752 0Z **An overview of end-to-end HDR** [10752-35]
- 10752 10 **HDR compression in the JVET codec** [10752-36]
- 10752 11 **Deep learning techniques in video coding and quality analysis** [10752-37]
- 10752 12 **Machine Learning approach for global no-reference video quality model generation** [10752-38]
- 10752 13 **Neural network based intra prediction for video coding** [10752-39]
- 10752 14 **Intra prediction with deep learning** [10752-40]
- 10752 15 **Video quality analysis framework for spatial and temporal artifacts** [10752-41]
- 10752 16 **Efficient implementation of enhanced multiple transforms for video coding** [10752-114]

---

**SESSION 5 IMAGE RESTORATION, ENHANCEMENT, AND VISUALIZATION I**

- 10752 17 **Challenges of eye tracking systems for mobile XR glasses** [10752-42]
- 10752 18 **Neural net architectures for image demosaicing** [10752-43]
- 10752 19 **Identification of 3D objects using correlation of holograms** [10752-44]
- 10752 1A **Real-time video stitching based on ORB features and SVM** [10752-45]
- 10752 1B **A real-time perception system for autonomous cars targeting highways** [10752-113]
- 10752 1C **A video smoke detection method based on structural similarity index determined by complexity of image** [10752-47]

**Part Two**

- 10752 1D **IRSUM: inter-frame registration based non-uniformity correction using spatio-temporal update mask** [10752-48]
- 10752 1E **Optical surface inspection: A novelty detection approach based on CNN-encoded texture features** [10752-49]
- 10752 1F **Aesthetic color templates for enhancing casual videos** [10752-50]

10752 1H **Noise analysis of two pattern recognition methodologies using binary masks based on the fractional Fourier transform [10752-52]**

---

**SESSION 6 IMAGE RESTORATION, ENHANCEMENT, AND VISUALIZATION II**

---

10752 1J **Stereo vision and fourier transform profilometry for 3D measurement [10752-54]**

10752 1K **High-resolution DMD-FPM system based on ring pattern phase retrieval algorithm [10752-56]**

---

**SESSION 7 NEW JPEG INITIATIVES**

---

10752 1L **Why JPEG is not JPEG: testing a 25 years old standard [10752-57]**

10752 1M **Overview of the JPEG XS core coding system subjective evaluations [10752-58]**

10752 1N **Entropy coding, profiles, and levels of JPEG XS [10752-59]**

10752 1O **Emerging image metadata standards activities in JPEG [10752-60]**

10752 1P **JPEG Pleno: a standard framework for representing and signaling plenoptic modalities [10752-61]**

10752 1Q **A new objective metric to predict image quality using deep neural networks [10752-62]**

---

**SESSION 8 MEDICAL IMAGING**

---

10752 1R **Noise removal of the x-ray medical image using fast spatial filters and GPU [10752-63]**

10752 1S **Optimization of coded aperture in compressive x-ray tomography [10752-64]**

10752 1T **Convolutional neural network based computational imaging spectroscopy [10752-65]**

10752 1W **Magnetic resonance brain images algorithm to identify demyelinating and ischemic diseases [10752-68]**

---

**POSTER SESSION**

---

10752 1X **Development of a method for constructing a 3D accurate map of the surrounding environment [10752-5]**

- 10752 1Y **Face recognition by using wavelet-subband booster** [10752-71]
- 10752 1Z **Crop row detection a bioinspired and data analysis approach** [10752-72]
- 10752 20 **A correlation-based algorithm for detecting linearly degraded objects using noisy training images** [10752-73]
- 10752 21 **Accuracy analysis of 3D object shape recovery using depth filtering algorithms** [10752-74]
- 10752 22 **3D object reconstruction using multiple Kinect sensors and initial estimation of sensor parameters** [10752-75]
- 10752 23 **An efficient detection of local features in depth maps** [10752-76]
- 10752 24 **Removal of impulsive noise from color images with cascade switching algorithm** [10752-77]
- 10752 25 **Extrinsic calibration and usage of a single-point laser rangefinder and single camera** [10752-78]
- 10752 26 **Application of SRIO in real-time image processing** [10752-79]
- 10752 27 **Development of methods for selecting features using deep learning techniques based on autoencoders** [10752-80]
- 10752 29 **All-in-focus image reconstruction robust to ghosting effect** [10752-82]
- 10752 2A **Polarization spectroscopy of blood and punctate douglas deepening in patients with ovarian tumors** [10752-83]
- 10752 2B **Spectroscopic image criteria for the selection of patients with ovarian cancer for further molecular genetic studies** [10752-84]
- 10752 2C **Polarization image processing of chordae tendinea of atrio-ventribular heart valves of the foetus** [10752-85]
- 10752 2D **Laser polarimetry imaging in diagnostics of morphological structure of the heart valve tendinous cords of newborns** [10752-86]
- 10752 2E **Polarization structural property of the images of chordae tendineae of the mitral and tricuspid heart valves of the infants** [10752-87]
- 10752 2F **Polarization-interference images of optically anisotropic biological layers** [10752-88]
- 10752 2G **System of biological crystals fibrillar networks polarization-correlation mapping** [10752-89]
- 10752 2H **System of differential Mueller-matrix mapping of phase and amplitude anisotropy of depolarizing biological tissues** [10752-90]
- 10752 2I **Accurate alignment of RGB-D frames for 3D map generation** [10752-91]

- 10752 2J **Object tracking with composite optimum filters using non-overlapping signal models** [10752-92]
- 10752 2K **High efficient energy compaction network for image transform** [10752-93]
- 10752 2L **An algorithm of face recognition based on generative adversarial networks** [10752-94]
- 10752 2M **An algorithm for selecting face features using deep learning techniques based on autoencoders** [10752-95]
- 10752 2N **Stochastic and analytic modeling of atmospheric turbulence in image processing** [10752-96]
- 10752 2O **Stabilization of median smoother via variational approach** [10752-97]
- 10752 2P **Reducing number of points for ICP algorithm based on geometrical properties** [10752-98]
- 10752 2Q **Comparison of resolution estimation methods in optical microscopy** [10752-99]
- 10752 2R **A point-to-plane registration algorithm for orthogonal transformations** [10752-100]
- 10752 2S **A regularization algorithm for registration of deformable surfaces** [10752-101]
- 10752 2T **Image dehazing using total variation regularization** [10752-102]
- 10752 2U **Performance comparison of perceived image color difference measures** [10752-103]
- 10752 2V **An efficient algorithm of 3D total variation regularization** [10752-104]
- 10752 2Y **Complex moments for the analysis of metal-mechanical parts** [10752-107]
- 10752 30 **Breast thermography: a non-invasive technique for the detection of lesions** [10752-109]
- 10752 32 **Smoke detection in compressed video** [10752-111]
- 10752 34 **A sub-picture-based omnidirectional video live streaming platform** [10752-115]
- 10752 35 **Capabilities and limitations of visual search in volumetric images: the effect of target discriminability** [10752-116]



## Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

Abeywickrema, Ujitha, 19  
Adil, Omer Faruk, 1D  
Adsumilli, Balu, 0R, 0T, 15  
Afonso, Mariana, 0L  
Akin, Onur, 04  
Akyazi, Pinar, 1Q  
Al Dhahri, S., 1B  
Al Sieairi, S., 1B  
Alexious, Evangelos, 0H, 0I  
AlMarashda, H., 1B  
Alonso, Julia R., 29  
Alpaslan, Zahir Y., 1P  
Alvarado-Cruz, L. B., 30  
Álvarez-Borrego, Josué, 08, 1H  
Alvarez-Xochihua, Omar, 2J  
Amirpour, Hadi, 0C  
Angulo, Sergio G., 29  
Arce, Gonzalo R., 1S  
Ascenso, João, 0P  
Áviles-Rodríguez, Gener, 1Z  
Avramelos, Vasileios, 0B  
Baba, Shinjiro, 03  
Bampis, Christos G., 0K  
Banerjee, Partha P., 19  
Barriac, Vincent, 12  
Barsi, Attila, 0A, 0F  
Batjargal, Tenger, 02  
Benting, Steve, 0R, 0T  
Bernardo, Marco V., 0H, 0J  
Birkbeck, Neil, 0T  
Birman, Raz, 14  
Bodnar, B. M., 2F, 2G, 2H  
Bodnar, O. B., 2H  
Bokor, Laszlo, 0F  
Bong, Kyeongryeol, 17  
Botova, T., 1X  
Bovik, Alan C., 0G, 0K  
Buggy, Rhys, 18  
Bull, David R., 0L  
Cadena, Franklin, 1R  
Cadena, Luis, 1R  
Cai, Zhi, 1A  
Camacho-Bello, C. J., 2Y  
Castillo, D., 1W  
Chala, K. M., 2E  
Chang, Shengqian, 09, 1K  
Chen, Chao, 0R, 0T  
Chen, Qian, 1S  
Chen, T. H., 1Y  
Chen, Tao, 0W  
Chen, Zhebo, 2A  
Chen, Zhibo, 1P  
Choi, Jun-Ho, 1F  
Choi, Kwang Pyo, 2K  
Clark, Richard, 1L  
Cosío-León, M. A., 1Z  
Covell, Michele, 0T  
Cserkaszky, Aron, 0A, 0F  
Cuadros, Angela P., 1S  
Cuenca, L., 1W  
da Silva Cruz, Luis A., 0H  
Dai, Min (Maggie), 0Z  
Dai, Wei, 0V, 10, 11  
David-Malka, Avishay, 14  
de Queiroz, Ricardo L., 0I  
Déforges, Olivier, 0O, 12  
Demir, Huseyin Seckin, 1D  
Descampe, Antonin, 1M, 1N  
Diaz-Escobar, Julia, 07, 2L, 2M, 2P, 2S  
Dmitrović, Lovorka Gotal, 0H  
Dong, Liquan, 05, 1A  
Dorofeev, Konstantin, 21, 22, 23  
Duarte, Carlos, 0H  
Dubolazov, A. V., 2F, 2G, 2H  
Dumić, Emil, 0H  
Ebrahimi, Touradj, 0E, 0H, 0I, 1M, 1P, 1Q  
Espinosa, Nikolai, 1R  
Faria, Sérgio M. M., 0D  
Fernández, Ariel, 29  
Ferrari, Jose A., 29  
Fiadeiro, Paulo, 0J  
Fliegel, Karel, 1M, 2N, 2O, 2Q, 2U  
Flores, J. L., 29  
Fonseca, Elsa, 0J  
Fonseca, Tiago A., 0I  
Forte, Marco, 18  
Francois, Edouard, 16  
Franz, Matthias O., 1E  
Freiberg, Fabian, 1E  
Frossard, Pascal, 0E  
García-Torales, G., 29  
Garza-Flores, Esbanyely, 08, 1H  
Gavrylyak, M. S., 2B  
Ghanbari, Mohammad, 0C  
Gnawali, Rudra, 19  
Gonzalez-Fraga, Jose A., 2I, 2J  
Grunwald, Michael, 1E  
Grygoryshyn, P. M., 2F, 2G

Gudumasu, Srinivas, 34  
 Guerra-Rosas, Esperanza, 08  
 Guo, Bin, 2A  
 Guo, Liwei, 0Q  
 Gupta, Praful, 0K  
 Gutiérrez, Everardo, 2I  
 Hadar, Ofer, 14  
 Hamza, Ahmed, 34  
 Han, Yu, 06  
 He, Weiji, 1S  
 He, Yong, 34  
 He, Yuwen, 0X  
 Helle, P., 13  
 Hermann, Matthias, 1E  
 Hernández-Tapia, J. A., 30  
 Hong, Injoon, 17  
 Horowitz, Michael, 0Y  
 Hou, Yibin, 06  
 Huang, Min, 26  
 Huang, Peizheng, 09, 1J  
 Hui, Mei, 05, 1A  
 Husak, Walt, 0W  
 Inguva, Sasi, 0T  
 Israde-Alcántara, Isabel, 08  
 Jana, Soumya, 0A  
 Jeon, Sunyoung, 2K  
 Jiménez, Y., 1W  
 Kajitani, Masaki, 03  
 Kalschikov, Vsevolod, 21  
 Kaltensadler, S., 13  
 Kara, Peter A., 0A, 0F  
 Karnaukhov, Victor, 20  
 Katsavounidis, Ioannis, 0M, 0Q  
 Keinert, Joachim, 1N  
 Kelly, Damien, 0T  
 Kim, JaeHwan, 2K  
 Klava, Kristaps, 35  
 Klíma, Miloš, 2Q  
 Kober, Anastasia, 1X, 21, 22, 23, 24, 27  
 Kober, Vitaly, 07, 20, 2I, 2J, 2R, 2T, 2V  
 Kodama, Toshifumi, 03  
 Kokaram, Anil, 0R, 0S, 0T  
 Kolmašová, Jana, 2U  
 Kolpakov, Vladimir, 21, 24  
 Komatsubara, Hiroaki, 03  
 Kong, Lingqin, 1A  
 Konosonoka, Vítá, 35  
 Koziri, Maria, 0N  
 Kozko, A., 27  
 Krbcová, Zuzana, 2N, 2O  
 Krishnan, Madhu, 0V, 10, 11  
 Krumina, Gunta, 35  
 Kukal, Jaromír, 2N, 2O  
 Kuo, C.-C. Jay, 0M  
 Kuzma, Andy, 1O  
 Kuznetsov, Vladislav, 2M  
 Kvasnyuk, D., 2H  
 Lambert, Peter, 0B  
 Laube, Pascal, 1E  
 Lee, Jong-Seok, 1F  
 Lee, JongSeok, 2K  
 Leleannec, Fabrice, 16  
 Leonov, Sergey, 2L, 2M  
 Lin, Jessie, 0T  
 Lin, Yao-Chung, 0R  
 Liu, Ming, 05, 1A  
 Liu, Wenlong, 05  
 Liu, Xiaohua, 05  
 Liu, Yang, 1J  
 Liu, Youquan, 1K  
 Liu, Zewei, 25  
 Lopes, Francisco, 0P  
 Loukopoulos, Thanasis, 0N  
 Lu, Dongming, 25  
 Lu, Taoran, 0W  
 Lu, Xiao, 1J  
 Ma, Tianying, 1C  
 Ma, Xu, 1S  
 Macq, Benoit, 1M  
 Mahmoudpour, Saeed, 1M  
 Makovetskaya, Tatyana, 24  
 Makovetskii, Artyom, 1X, 27, 2L, 2M, 2P, 2R, 2S, 2T,  
 2V  
 Malyk, Yu. Yu., 2C, 2D, 2E  
 Maniry, D., 13  
 Mao, Tianyi, 1S  
 Marpe, D., 13  
 Martínez-Vargas, Anabel, 1Z  
 Martini, Maria G., 0A, 0F  
 Martseniak, I. V., 2F, 2G  
 Matković, Dragan, 0H  
 Melnikov, A., 27  
 Meribout, M., 1B  
 Mironov, K., 1X  
 Misra, Kiran, 0Y  
 Monteiro, Ricardo J. S., 0D  
 Morin, Luce, 0O  
 Naser, Karam, 16  
 Nunes, Paulo J. L., 0D  
 Oh, Kwan-Jung, 1P  
 Olar, O. I., 2F, 2G  
 Olar, O. V., 2H  
 Pacheco-Venegas, Eduardo Gessel, 08  
 Padilla-Vivanco, A., 30  
 Panke, Karola, 35  
 Papadopoulos, Panos K., 0N  
 Park, JeongHoon, 2K  
 Park, Youngo, 2K  
 Pentelichuk, N. P., 2C, 2D, 2E  
 Pereira, Fernando M. B., 1P  
 Pereira, Manuela, 0C, 0H, 0J  
 Peresunko, Olexander, 2A, 2B  
 Petric Maretic, Hermina, 0E  
 Pfaff, J., 13  
 Pickamin, L., 2H  
 Pinheiro, António M. G., 0C, 0H, 0J, 1P  
 Piftié, François, 0S, 18  
 Pladere, Tatjana, 35  
 Pospíšil, Jakub, 1M, 2Q  
 Prydiy, O., 2H

Pu, Fangjun, 0W  
 Qian, Weixian, 25  
 Queluz, Maria Paula, 0P  
 Ramos-Fernández, Julio C., 1Z  
 Ren, Keyan, 06  
 Richter, Thomas, 1L, 1N, 1O  
 Ringis, Daniel J., 0S  
 Rodrigues, António, 0P  
 Rodrigues, Nuno M. M., 0D  
 Rodríguez-Álvarez, M. J., 1W  
 Romo, Gerardo, 1Z  
 Rouvroy, Gael, 1N  
 Ruchay, Alexey, 21, 22, 23, 24  
 Rudan, Ksenia, 2A  
 Rusanovskyy, Dmytro, 0Z  
 Saenen, Ignace, 0B  
 Saidi, Ines, 12  
 Sakarya, Doğan Uğur, 04  
 Sakhnovskiy, M. Yu., 2F, 2G  
 Samaniego, René, 1W  
 Samek, W., 13  
 Schelkens, Peter, 1M, 1P  
 Schwarz, H., 13  
 Segal, Yoram, 14  
 Segall, Andrew, 0Y  
 Seleznova, Marina, 35  
 Semeniuk, T. O., 2C, 2D, 2E  
 Shu, Xiao, 1T  
 Sidor, M. I., 2H  
 Sikora, Thomas, 0B  
 Singh, Davinder, 0S  
 Sinno, Zeina, 0G  
 Sireis, Abduljalil, 2O  
 Sofu, Buğra, 04  
 Strojnik, M., 29  
 Sun, Yan, 26  
 Sundaram, Ramakrishnan, 02  
 Švihlík, Jan, 2N, 2O, 2Q, 2U  
 Syvokorovskaya, A.-V., 2G  
 Tabus, Ioan, 1P  
 Tamboli, Roopak R., 0A, 0F  
 Tao, Chenning, 09, 1K, 1T  
 Tao, Xiao, 09, 1K, 1T  
 Temmermans, Frederik, 1O  
 Tian, Shishun, 0O  
 Tihonkih, Dmitrii, 2P  
 Timchenko, M., 1X, 27  
 Topiwala, Pankaj, 0V, 10, 11  
 Töreyn, Behçet Uğur, 32  
 Torlig, Eric M., 0I  
 Toxqui-Quíñ, C., 30  
 Tran, Quang Van, 2N  
 Tsyhykalo, O. V., 2C, 2D, 2E, 2F, 2G, 2H  
 Ushenko, V. A., 2F, 2G  
 Ushenko, Yu. A., 2H  
 Van Wallendael, Glenn, 0B  
 Vargas-Vargas, H., 2Y  
 Vasilyev, Alexander, 2L, 2M  
 Verhack, Ruben, 0B  
 Viola, Irene, 0E, 1M  
 Vivanco, O., 1W  
 Vokhmintsev, A., 1X, 27  
 Voronin, Aleksei, 2P, 2R, 2S  
 Voronin, Sergei, 2R, 2S, 2T, 2V  
 Wanchuliak, O. Yu., 2F  
 Wang, Chang, 09, 1K, 1T  
 Wang, Haiqiang, 0M  
 Wang, J. W., 1Y  
 Wang, Shu, 1C  
 Wang, Yilin, 0T, 15  
 Wang, Zhanchao, 26  
 Wiegand, T., 13  
 Willème, Alexandre, 1M  
 Wu, Jiaying, 1C  
 Xiu, Xiaoyu, 0X  
 Yamahira, Naoshi, 03  
 Yang, Chao, 0M  
 Yang, Jinqing, 25  
 Ye, Yan, 0X, 34  
 Yermolenko, Sergey, 2A, 2B, 2C, 2D, 2E  
 Yin, Peng, 0W  
 Yoo, Hoi-Jun, 17  
 Yu, Xiangxu, 0K  
 Yuan, Ruifeng, 1A  
 Zhang, Fan, 0L  
 Zhang, Jinlei, 1K  
 Zhang, Jun, 25  
 Zhang, Lu, 0O, 12  
 Zhang, Wentao, 09, 1K, 1T  
 Zhang, Xiao, 06  
 Zhang, Xinfeng, 0M  
 Zhao, Baowei, 26  
 Zhao, Jie, 0Y  
 Zhao, Yuejin, 05, 1A  
 Zheng, Zhenrong, 09, 1J, 1K, 1T  
 Zhu, Ming, 1C  
 Zhu, Weijia, 0Y  
 Zotin, Alexander, 1R



# Conference Committee

## *Program Track Chair*

**José Sasián**, College of Optical Sciences, The University of Arizona  
(United States)

## *Conference Chair*

**Andrew G. Tescher**, AGT Associates (United States)

## *Conference Program Committee*

**Anne Margot Aaron**, Netflix, Inc. (United States)

**Vasudev Bhaskaran**, Qualcomm Inc. (United States)

**Antonin Descampe**, intoPIX s.a. (Belgium)

**Frederic Dufaux**, Télécom ParisTech (France)

**Touradj Ebrahimi**, Ecole Polytechnique Fédérale de Lausanne  
(Switzerland)

**Dan Grois**, Comcast Corporation (United States)

**Ofer Hadar**, Ben-Gurion University of the Negev (Israel)

**Arianne T. Hinds**, CableLabs (United States)

**Ioannis Katsavounidis**, Netflix, Inc. (United States)

**C.-C. Jay Kuo**, The University of Southern California (United States)

**Ajay Luthra**, ARRIS Group, Inc. (United States)

**Andre J. Oosterlinck**, Kuleuven R & D (Belgium)

**Sethuraman Panchanathan**, Arizona State University (United States)

**Fernando Pereira**, Instituto de Telecomunicações (Portugal)

**Yuriy A. Reznik**, InterDigital, Inc. (United States)

**Thomas Richter**, Universität Stuttgart (Germany)

**John A. Saghri**, California Polytechnic State Univ., San Luis Obispo  
(United States)

**Peter Schelkens**, Vrije Universiteit Brussel (Belgium)

**Gary J. Sullivan**, Microsoft Corporation (United States)

**David S. Taubman**, The University of New South Wales (Australia)

**Pankaj Topiwala**, FastVDO Inc. (United States)

**Mihaela van der Schaar**, University of California, Los Angeles  
(United States)

**Anthony Vetro**, Mitsubishi Electric Research Laboratories  
(United States)

## *Session Chairs*

- 1 Object Detection and Tracking  
**Andrew G. Tescher**, AGT Associates (United States)

- 2 Plenoptic Imaging  
**Touradj Ebrahimi**, Ecole Polytechnique Fédérale de Lausanne  
(Switzerland)
- 3 Video Transmission and Quality Optimization  
**Ioannis Katsavounidis**, Netflix, Inc. (United States)
- 4 Future Video  
**Pankaj Topiwala**, FastVDO Inc. (United States)
- 5 Image Restoration, Enhancement, and Visualization I  
**Vasudev Bhaskaran**, Qualcomm Inc. (United States)  
**Ofer Hadar**, Ben-Gurion University of the Negev (Israel)
- 6 Image Restoration, Enhancement, and Visualization II  
**Vasudev Bhaskaran**, Qualcomm Inc. (United States)  
**Ofer Hadar**, Ben-Gurion University of the Negev (Israel)
- 7 New JPEG Initiatives  
**Touradj Ebrahimi**, Ecole Polytechnique Fédérale de Lausanne  
(Switzerland)  
**Thomas Richter**, Fraunhofer-Institut für Integrierte Schaltungen (IIS)  
(Germany)
- 8 Medical Imaging  
**Peter Schelkens**, Vrije Universiteit Brussel (Belgium)