

PROCEEDINGS OF SPIE

Eighth International Conference on Digital Image Processing (ICDIP 2016)

**Charles M. Falco
Xudong Jiang**
Editors

**20–23 May, 2016
Chengu, China**

Sponsored by
Sichuan Province Computer Federation (China)
International Association of Computer Science and Information Technology (Singapore)
Chengdu University of Information Technology (China)
Chinese Academy of Sciences Chengdu Institute of Computer Applications (China)

Assisted by
Sichuan University (China)
Southwest Jiaotong University (China)
University of Electronics Science and Technology of China (China)
Chengdu Young Electrician Consulting Company Ltd. (China)

Published by
SPIE

Volume 10033
Part One of Two Parts

Proceedings of SPIE 0277-786X, V. 10033

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

Eighth International Conference on Digital Image Processing (ICDIP 2016), edited by Charles M. Falco, Xudong Jiang
Proc. of SPIE Vol. 10033, 1003301 · © 2016 SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2257252

Proc. of SPIE Vol. 10033 1003301-1

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.

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 *Eighth International Conference on Digital Image Processing (ICDIP 2016)*, edited by Charles M. Falco, Xudong Jiang, Proceedings of SPIE Vol. 10033 (SPIE, Bellingham, WA, 2016) Seven-digit Article CID Number.

ISSN: 0277-786X
ISBN: 9781510605039

ISSN: 1996-756X (electronic)
ISBN: 9781510605046

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org

Copyright © 2016, 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. 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/16/\$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

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

xv	<i>Authors</i>
xxiii	<i>Conference Committee</i>
xxvii	<i>Introduction</i>

Part One

SESSION 1	FEATURE DETECTION AND MATCHING
<hr/>	
10033 02	An algorithm of LiDAR building outline extraction by Delaunay triangle [10033-239]
10033 03	Deployment of vehicular edge clouds: lessons and challenges [10033-240]
10033 04	An elastic image registration model based on FEM [10033-104]
10033 05	Sub-pixel hard shadows anti-aliasing [10033-23]
10033 06	A local space rotation invariant feature extraction method for facial interest points detection [10033-37]
10033 07	A fusion algorithm of template matching based on infrared simulation image [10033-203]
10033 08	Edge grouping based on Gestalt principles and spectral clustering [10033-111]
10033 09	Paralleled Laplacian of Gaussian (LoG) edge detection algorithm by using GPU [10033-105]
10033 0A	Extraction scenes point features on noisy digital images [10033-196]
10033 0B	An evaluation method of ATR algorithm based on decision tree [10033-233]
10033 0C	Two-step matching strategy combining global-local descriptor [10033-75]
10033 0D	Research of methods for target extraction from ISAR image [10033-34]
10033 0E	Feature extraction and image retrieval based on AlexNet [10033-33]
SESSION 2	TARGET TRACKING AND DETECTION
<hr/>	
10033 0F	Detection of range-distributed targets in compound Gaussian clutter without secondary data [10033-266]
10033 0G	A robust object tracking algorithm in complex environment [10033-77]

- 10033 OH **An improved TLD object tracking algorithm** [10033-159]
- 10033 OI **Multi-orientation saliency features fusion based multi-object detection** [10033-146]
- 10033 OJ **Moving target detection based on features matching of RGB on a foggy day** [10033-44]
- 10033 OK **Structure extraction and region contrast based salient object detection** [10033-167]
- 10033 OL **Fabric defect detection algorithm based on Gabor filter and low-rank decomposition** [10033-139]
- 10033 OM **A CFAR detector for prescreening region of interests in SAR images** [10033-252]
- 10033 ON **Detection and tracking of multi-space junk in star images** [10033-82]
- 10033 OO **A robust method for infrared small target based on saliency detection** [10033-228]
- 10033 OP **Weak target detection based on EMD and Hurst exponent** [10033-187]
- 10033 OQ **An improved parameter adaptive CS model for maneuvering target tracking** [10033-31]
- 10033 OR **Surface ship target detection in hyperspectral images based on improved variance minimum algorithm** [10033-41]

SESSION 3 PATTERN RECOGNITION

- 10033 OS **Towards 3D object recognition with contractive autoencoders** [10033-55]
- 10033 OU **A new pixel-based granular fusion method for finger recognition** [10033-237]
- 10033 OV **A real-time face recognition for class participation enrollment system over WebRTC** [10033-151]
- 10033 OW **Facial expression recognition based on adaptively weighted improved local binary pattern** [10033-107]
- 10033 OX **Investigating factorizations in everyday activity recognition** [10033-32]
- 10033 OY **High-quality initial shape estimation for cascade shape regression** [10033-214]
- 10033 OZ **Fault diagnosis of aircraft hatch cover screws based on image recognition** [10033-6]
- 10033 10 **Gait recognition system based on (2D)² PCA and HMM** [10033-129]
- 10033 11 **Research of the properties of receptive field in handwritten Chinese character recognition based on DCNN model** [10033-100]
- 10033 12 **A radar target recognition method based on MCC-TMM of adaptive frame division** [10033-117]

- 10033 13 **EWGP: entropy-weighted Gabor and phase feature description for head pose estimation**
[10033-27]
- 10033 14 **Design and performance of the classifier of the projectile body surface defect recognition system** [10033-80]
- 10033 15 **Neural analysis of bovine ovaries ultrasound images in the identification process of the corpus luteum: preliminary study** [10033-253]

SESSION 4 IMAGE SEGMENTATION

- 10033 16 **Improved local Gaussian distribution fitting energy model for image segmentation**
[10033-136]
- 10033 17 **Peach fruit recognition method under natural environment** [10033-176]
- 10033 18 **Normal and tangent components normalization based GVF snake for image segmentation**
[10033-39]
- 10033 19 **Image segmentation based on deformed multiresolution graph cuts** [10033-63]
- 10033 1A **Texture segmentation based on nonlinear compact multi-scale structure tensor and TV-flow** [10033-43]
- 10033 1B **Saliency guided region proposal** [10033-154]
- 10033 1C **Retinal automatic segmentation method based on prior information and optimized boundary tracking algorithm** [10033-156]
- 10033 1D **Object cutout from multiview images using level set of probabilities** [10033-217]
- 10033 1E **Convex hierarchical segmentation model for images with multi-component** [10033-86]
- 10033 1F **Improved optimal dichotomy algorithm for image segmentation** [10033-175]
- 10033 1G **Automated segmentation of nine retinal layers with layer thickness information on SD-OCT images** [10033-115]
- 10033 1H **Research of edge detection algorithm based on wavelet transformation** [10033-94]
- 10033 1I **Improved canny edge detection algorithm matches traffic signs** [10033-171]
- 10033 1J **Pedestrian segmentation in infrared images based on local autocorrelation** [10033-10]
- 10033 1K **Application of graph cut based active contour algorithm for contour extraction** [10033-13]
- 10033 1L **Image segmentation algorithm based on wavelet transformation and watershed**
[10033-205]
- 10033 1M **Possibilities for the use of edge detection algorithms in the analysis of images of oilseed rape leaves** [10033-257]

- 10033 1N **A new image segmentation method based on partial adaptive thresholds** [10033-118]
- 10033 1O **Local kernel mapping based piecewise constant model for medical image segmentation**
[10033-158]
- 10033 1P **Image segmentation using Voronoi diagram** [10033-79]

SESSION 5 IMAGE DENOISING AND FUSION

- 10033 1Q **Global denoising for 3D MRI** [10033-45]
- 10033 1R **An effective algorithm for noise variance estimation in shearlet domain** [10033-178]
- 10033 1S **Improved nonlocal means method based on adaptive pre-classification for image denoising** [10033-58]
- 10033 1T **Improved de-noising method based on sparse representation for remote sensing image**
[10033-150]
- 10033 1U **Two-dimensional noise reduction in optical coherence tomography based on the shearlet transform** [10033-113]
- 10033 1V **An image-noise estimation approach using singular value decomposition** [10033-24]
- 10033 1W **An efficient adaptive total variation regularization for image denoising for mobile communication in 5G** [10033-8]
- 10033 1X **Multi-angle SAR non-coherent image fusion algorithm based on HIS statistic characteristics**
[10033-147]
- 10033 1Y **NSCT domain and regional texture smoothness of Infrared and visible light image fusion**
[10033-207]
- 10033 1Z **Image fusion based on group sparse representation** [10033-149]
- 10033 20 **Effects of image fusion on the information capacity of ZY-3 imagery** [10033-182]
- 10033 21 **Color image fusion based on simplified pulse coupled neural network and HSV color space** [10033-93]
- 10033 22 **Image fusion quality evaluation based on quantized DCT coefficients** [10033-95]

SESSION 6 IMAGE ENHANCEMENT AND RESTORATION

- 10033 23 **Fractional differential algorithm for texture and contrast enhancement** [10033-181]
- 10033 24 **PSF estimation for blind motion deblurring with image edge prior** [10033-127]

- 10033 25 **A variational approach to restore targets of range-gated imaging in scattering environments** [10033-130]
- 10033 26 **A novel enhancement method for fog-degraded images based on DBLA** [10033-152]
- 10033 27 **1-D integral image for enhancing efficiency and effectiveness of probabilistic occupancy map-based people localization approach** [10033-185]
- 10033 28 **Single image blind motion deblurring** [10033-141]
- 10033 29 **Fast single image defogging method based on physical model** [10033-30]
- 10033 2A **An improved unsharp masking sharpening algorithm for image enhancement** [10033-35]

SESSION 7 IMAGE ANALYSIS AND CLASSIFICATION

- 10033 2B **Semi-supervised classification of hyperspectral imagery based on stacked autoencoders** [10033-188]
- 10033 2C **Hyperspectral imagery classification based on probabilistic classification vector machines** [10033-189]
- 10033 2D **Very high resolution images classification by fine tuning deep convolutional neural networks** [10033-91]
- 10033 2E **Fast image clustering based on convolutional neural network and binary K-means** [10033-78]
- 10033 2F **SOFM-type artificial neural network for the non-parametric quality-based classification of potatoes** [10033-42]
- 10033 2G **Determination of dry matter content in composted material based on digital images of compost taken under mixed visible and UV-A light** [10033-54]
- 10033 2H **Maturity classification for sewage sludge composted with rapeseed straw using neural image analysis** [10033-56]
- 10033 2I **Image analysis techniques in the study of slug behaviour** [10033-99]
- 10033 2J **IT system for the identification and classification of soil valuation classes** [10033-69]
- 10033 2K **SURF and KPCA based image perceptual hashing algorithm** [10033-85]
- 10033 2L **Software supporting definition and extraction of the quality parameters of potatoes by using image analysis** [10033-67]
- 10033 2M **Use of computer image analysis methods to evaluate the quality topping sugar beets with using artificial neural networks** [10033-148]
- 10033 2N **An IT system for the simultaneous management of vector and raster images** [10033-68]

- 10033 2O **Characterizing the time-frequency image by morphological pattern spectrum for evaluating electromagnetic environment complexity** [10033-90]
- 10033 2P **A new plantar surface reference system for pressure study** [10033-96]

SESSION 8 IMAGE INFORMATION MANAGEMENT

- 10033 2Q **A novel lossless information hiding scheme based on histogram shifting of residual image** [10033-101]
- 10033 2R **Secure chaos-based substitution with diffusion for highly auto-correlated data in image encryption** [10033-206]
- 10033 2S **A fast 1D chaotic map-based image encryption using generalized Fibonacci-Lucas transform and bidirectional diffusion** [10033-238]
- 10033 2T **A novel biometric image encryption algorithm based on compressed sensing and dual-tree complex wavelet transform** [10033-165]
- 10033 2U **A SIFT-based robust watermarking scheme in DWT-SVD domain using majority voting mechanism** [10033-4]
- 10033 2V **A dual color image watermarking algorithm based on chaotic scrambling and wavelet transform** [10033-106]
- 10033 2W **Research of image compression algorithm based on wavelet transformation** [10033-71]
- 10033 2X **Credit card account numbers detection and extraction from camera-based images** [10033-204]
- 10033 2Y **A new robust multiple description coding method for image based on block compressed sensing** [10033-216]
- 10033 2Z **Reversible watermarking for 2D CAD engineering graphics using asymmetric histogram shifting and complementary embedding** [10033-135]
- 10033 30 **A new gray-scale watermark method based on irregular LDPC codes with Unequal Error Protection (UEP)** [10033-38]
- 10033 31 **Informative and compressed features for aircraft detection in object recognition system** [10033-18]
- 10033 32 **A novel image encryption method based on fractional Fourier transform and odd-even quantification** [10033-192]
- 10033 33 **Research of digital image watermarking algorithm based on DCT** [10033-170]
- 10033 34 **A novel image secret sharing scheme based on pixel field** [10033-190]
- 10033 35 **A computer method to analyse the impact of ultrasound frequency on the brightness of USG images of muscle cross-sections** [10033-259]

Part Two

SESSION 9 IMAGING AND RECONSTRUCTION	
10033 36	Feasibility analysis on the chirp scaling based wideband and wide swath synthetic aperture imaging algorithm [10033-137]
10033 37	An evaluation criterion based on image complexity for ghost imaging [10033-116]
10033 38	Constructing cylindrical image by pixels accumulation to virtual reality [10033-168]
10033 39	Imaging method for spinning targets based on Bayesian compressive sensing [10033-102]
10033 3A	A feature point extraction method based on the continuity of laser stripe pixels [10033-248]
10033 3B	Research on the 3D reconstruction method of the free-form surface based on the grid projection [10033-254]
10033 3C	A fast algorithm based on image gradient field reconstructing [10033-21]
10033 3D	Image reconstruction algorithm based on compressed sensing for electrical capacitance tomography [10033-89]
10033 3E	A robust algorithm for compression and reconstruction of infrared thermal image sequence [10033-92]
10033 3F	Research on impact of imaging under water by types of Chinese shallow sea [10033-258]
10033 3G	A geometric calibration method for cone beam CT system [10033-103]
SESSION 10 REMOTE SENSING AND RADAR IMAGING	
10033 3H	The effect of lossy compression on feature extraction applied to satellite Landsat ETM+ images [10033-202]
10033 3I	Radiometric calibration of space remote sensing camera [10033-219]
10033 3J	A 1-bit compressive sensing approach for SAR imaging based on approximated observation [10033-184]
10033 3K	Experimental results of radar imaging based on orbital angular momentum modulation [10033-195]
10033 3L	Electromagnetic vortex carrying orbital angular momentum in radar imaging [10033-198]
10033 3M	Research on geometry rectification and accuracy evaluation for the ZY-3 remote sensing imagery based on the sparse control points [10033-263]

- 10033 3N **Synthetic aperture lidar imaging through atmospheric turbulence** [10033-199]
- 10033 3O **Vegetation pixels extraction based on red-band enhanced normalized difference vegetation index** [10033-87]
- 10033 3P **Positioning of airborne stereo SAR images with POS data and one GCP** [10033-193]
- 10033 3Q **Using hyperspectral image data to estimate soil mercury with stepwise multiple regression** [10033-120]
- 10033 3R **Automatic registration of Unmanned Aerial Vehicle remote sensing images based on an improved SIFT algorithm** [10033-212]
- 10033 3S **A quality evaluation method of SAR image based on grayscale image and electromagnetic scattering characteristics** [10033-119]
- 10033 3T **Assessment of anticipated runoff because of impervious surface increase in Pune Urban Catchments, India: a remote sensing approach** [10033-245]

SESSION 11 IMAGE DETECTION AND APPLICATION

- 10033 3U **Fabric defect detection based on wavelet transform and background estimation** [10033-133]
- 10033 3V **Inshore ship detection with high-resolution SAR data using salience map and kernel density** [10033-244]
- 10033 3W **A study of the potential of using worldview-2 of images for the detection of red attack pine tree** [10033-172]
- 10033 3X **UAV reconnaissance images targeting method** [10033-163]
- 10033 3Y **A defect detection method based on sub-image statistical feature for texture surface** [10033-157]
- 10033 3Z **A new A-star algorithm adapted to the semi-automatic detection of cracks within grey level pavement images** [10033-52]
- 10033 40 **Eye feature points detection by CNN with strict geometric constraint** [10033-225]
- 10033 41 **A new feature selection method for the detection of architectural distortion in mammographic images** [10033-114]
- 10033 42 **Rear-view vehicle detection based on MSER and spatial combination feature description** [10033-232]
- 10033 43 **Model recommendation for pedestrian detection** [10033-215]
- 10033 44 **Spatiotemporal saliency detection using border connectivity** [10033-143]

- 10033 45 **Uyghur language text detection in images** [10033-70]
10033 46 **Blind authentication for detecting multi-image forgery** [10033-243]

SESSION 12 SUPER-RESOLUTION IMAGE AND COMPUTATIONAL PHOTOGRAPHY

- 10033 47 **Implementation of ill-sampled image geometry super-resolution processing technology**
[10033-20]
10033 48 **An edge-preserving iterative back-projection method for image super-resolution**
[10033-255]
10033 49 **Super-resolution reconstruction algorithm based on local self-similarity** [10033-124]
10033 4A **Image super-resolution via multistage sparse coding** [10033-131]
10033 4B **Super resolution reconstruction based on adaptive regularization using constrained
particle swarm optimization** [10033-62]
10033 4C **Single image super resolution of 3D MRI using local regression and intermodality priors**
[10033-5]
10033 4D **Three-dimensional point cloud registration based on ICP algorithm employing K-D tree
optimization** [10033-261]
10033 4E **Stepless digital zoom for high definition camera** [10033-221]
10033 4F **Image super-resolution based on self-similarity and various patch size** [10033-16]
10033 4G **The optimization and implementation of the auto-exposure algorithm based on image
entropy** [10033-250]

SESSION 13 MEDICAL IMAGE PROCESSING

- 10033 4H **Lumbar spinal finite element analysis in a gravity environment** [10033-110]
10033 4I **CT reconstruction from sparse projections based on extrapolation in Fourier domain**
[10033-66]
10033 4J **GM-Citation-KNN: Graph matching based multiple instance learning algorithm** [10033-7]
10033 4K **Medical image fusion using pulse coupled neural network and multi-objective particle
swarm optimization** [10033-191]
10033 4L **Atlas-based segmentation of neck muscles from MRI for the characterisation of Whiplash
Associated Disorder** [10033-12]
10033 4M **Improvement of mass detection in mammogram using multi-view information** [10033-112]

- 10033 4N **Segmentation and classification of offline hand drawn images for the BGT neuropsychological screening test** [10033-72]
- 10033 4O **A fast iris localization algorithm under visible light condition** [10033-180]
- 10033 4P **Support vector machine and morphological processing algorithm for red blood cell identification** [10033-9]

SESSION 14 IMAGE PROCESSING TECHNOLOGIES

- 10033 4Q **Robust scene text detection based on color consistency** [10033-138]
- 10033 4R **Particle detection of porous media using scanning electron microscope images** [10033-11]
- 10033 4S **Copy-move forgery detection using improved SIFT** [10033-83]
- 10033 4T **Refinement for Morse decompositions of vector fields using robust critical simplexes** [10033-81]
- 10033 4U **Snow accumulation rendering algorithms introducing image processing in virtual reality** [10033-22]
- 10033 4V **Multi-scale and multi-GMM pooling based on Fisher Kernel for image representation** [10033-226]
- 10033 4W **Accelerating CNN's forward process on mobile GPU using OpenCL** [10033-155]
- 10033 4X **Blind image quality assessment with complete pixel-level information** [10033-84]
- 10033 4Y **Tone correction through a spherical color model** [10033-122]
- 10033 50 **Automatic design of heat sink using genetic algorithms, Lindenmayer systems and digital image processing** [10033-249]

SESSION 15 FILTER DESIGN AND SIGNAL PROCESSING

- 10033 51 **Improved adaptive convex combination of LMS algorithm based on conjugate gradient method** [10033-125]
- 10033 52 **A filter design method for beam hardening correction in middle-energy x-ray computed tomography** [10033-220]
- 10033 53 **A new adaptive weighted mean filter for removing high density impulse noise** [10033-28]
- 10033 54 **A novel method for block ambiguities of independent component analysis using previous demixing matrices** [10033-242]
- 10033 55 **Artifact removal for physiological signals via wavelets** [10033-153]

- 10033 56 **The optimization of discrete wavelet transform module in DSP environment [10033-36]**
- 10033 57 **A similarity method for sorting radar signal [10033-164]**
- 10033 58 **A new approach for high order MQAM signal modulation recognition [10033-223]**
- 10033 59 **Efficient method of DOA estimation for coherent signal based on sparse signal reconstruction [10033-173]**
- 10033 5A **A new detection method for faster-than-Nyquist signaling based on sphere algorithm [10033-25]**
- 10033 5B **Radar sorting performances from a partition clustering perspective [10033-162]**
- 10033 5C **Improvement of pose imitation method: a signal processing perspective [10033-177]**
- 10033 5D **Knowledge-aided subspace detector for second-order Gaussian signal in nonhomogeneous environments [10033-222]**

SESSION 16 VIDEO SIGNAL PROCESSING

- 10033 5E **A no-reference video quality evaluation method based on HEVC bitstream [10033-26]**
- 10033 5F **A novel video stabilization method based on FREAK [10033-15]**
- 10033 5G **Video co-saliency detection [10033-208]**
- 10033 5H **A wavelet HD-video de-noising system with frame rate conversion [10033-209]**
- 10033 5I **Measurement method for video probe based on line-structured light [10033-174]**
- 10033 5J **Extrapolation based pixel domain distributed video coding [10033-123]**
- 10033 5K **Event recognition of crowd video using corner optical flow and convolutional neural network [10033-241]**
- 10033 5L **Efficient background model based on multi-level feedback for video surveillance [10033-97]**

SESSION 17 COMPUTER VISION AND VISUALIZATION

- 10033 5M **Generating dynamic street view images [10033-3]**
- 10033 5N **A real time vision system for traffic surveillance at intersections [10033-160]**
- 10033 5O **Graph regularized deep semi-nonnegative matrix factorization for clustering [10033-73]**
- 10033 5P **Using triplet loss to generate better descriptors for 3D object retrieval [10033-19]**

- 10033 5Q **A robust visual tracking method with restricted Boltzmann machines based classifier** [10033-74]
- 10033 5R **Image processing in dimensional measurement for hot large forgings based on laser-aided binocular machine vision system** [10033-76]
- 10033 5S **High-speed railway clearance surveillance system based on convolutional neural networks** [10033-213]
- 10033 5T **Bag of visual word model based on binary hashing and space pyramid** [10033-211]
- 10033 5U **Feature pooling for small visual dictionaries** [10033-60]
- 10033 5V **Indoor robot 3D scene reconstruction optimization using planar features** [10033-183]
- 10033 5W **Selective background prior for saliency detection** [10033-210]

SESSION 18 COMPUTER AND COMMUNICATION ENGINEERING

- 10033 5X **A new method of virtual Han Chang'an City navigation system** [10033-251]
- 10033 5Y **A Kalman-filter-based wireless clock synchronization method in indoor localization** [10033-53]
- 10033 5Z **Transfer sparse machine: matching joint distribution by subspace learning and classifier transduction** [10033-121]
- 10033 60 **A dropout distribution model on deep networks** [10033-47]
- 10033 61 **Ambiguity resolving in parameter estimation of a single near-field source with uniform circular array via clustering** [10033-128]
- 10033 62 **Clustering by exponential density analysis and find of cluster centers based on genetic algorithm** [10033-144]
- 10033 63 **Symbol-by-symbol detection for turbo-coded FTN aided with precoding** [10033-61]
- 10033 64 **A mesh simplification algorithm based on vertex importance and hierarchical clustering tree** [10033-161]
- 10033 65 **An ant colony algorithm based on differential evolution** [10033-132]

Authors

Numbers in the index correspond to the last two digits of the six-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first four 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.

Abayomi, Oluremi, 55
Abd El-Samie, Fathi E., 3H
Aktar, Nargis, 4L
Al Suman, Abdulla, 4L
Amhaz, Rabih, 3Z
Asikuzzaman, Md., 4L
Bai, Gaiyan, 0U
Bai, Hang, 1L
Bai, Ting, 0O
Bai, Yang, 49
Bai, Zechao, 3P
Baltazart, Vincent, 3Z
Bin, Tang, 57, 58
Boniecki, P., 15, 1M, 2F, 2G, 2J, 2L, 2M, 2N, 35
Bykowska, M., 35
Cai, Biao, 5A
Cai, Wenjing, 5W
Cai, Yufang, 3G
Cai, Zhishan, 32
Cao, Ai-hua, 48
Cao, Bei, 0C
Cao, Chuqing, 4J
Cao, Weifeng, 0I
Cao, Yue, 5J
Chang, Li, 4P
Chang, Shengjiang, 40
Chao, Yin, 62, 64
Chen, Chu, 1F
Chen, Chun Y., 05
Chen, Hao, 3A
Chen, Huai-Liang, 3O
Chen, Hua-Tsung, 27
Chen, Jun, 0Q
Chen, Kuo, 06
Chen, Liang, 34
Chen, Musheng, 32
Chen, Qingli, 23
Chen, Shuang-shuang, 2O
Chen, Sijia, 5D
Chen, Siyu, 4I, 52, 52
Chen, Tieling, 4Y
Chen, Wu-Hsiung, 38
Chen, Xin, 61
Chen, Yajun, 45
Chen, Ying, 3B
Chen, Youbin, 2X
Cheng, Chih-Shan, 5M
Cheng, Chuanqi, 1D
Cheng, Guangyu, 36
Cheng, Hong, 3X
Cheng, Siyuan, 4R
Cheng, Ying-lei, 02
Cheng, Yongqiang, 3K, 3L
Chong, Albert K., 2P
Chuang, Jen-Hui, 27
Cloppet, Florence, 4N
Cui, Wenchao, 1O
D., Lisiak, 35
Dach, J., 2F, 2H
Dahal, Keshab, 55
Dan, Dai, 1P
Davis, Patrick, 55
Deng, Haowen, 5P
Deng, Shuo, 19
Deng, Sibin, 5F
Deng, Wenkang, 0N
Deshpande, Shailesh, 3T
Ding, Chang, 3C
Ding, Tingting, 21
Dong, Chaojun, 1K
Dong, Jiwen, 2T
Dong, Jun, 2O
Dong, Lili, 3C
Dong, Nan, 3F
Dong, Yan, 3U
Dong, Yun-yun, 0M
Dou, Hao, 08, 0B
Dou, Liyun, 4K
Du, Chao, 29
Du, Haiqing, 4X
Du, Wei, 4U
Du, Yanxia, 1E
Duan, Baosong, 4E
Duan, Bingbing, 28
Duan, Hao, 54
Fan, Chaonan, 5R
Fan, Hongzhi, 1L
Fan, Shengming, 16
Fan, Xiaopeng, 3H
Fan, Yi, 2U, 2Y
Fang, Cheng-jun, 3B
Fang, Hao, 4W
Fang, Li, 5T
Fang, Qian-xue, 0Q
Fang, Yao, 4E
Fei, Shumin, 0I
Feng, Ao, 1Q
Feng, Jiwei, 1L

Feng, Junmei, 5X
 Feng, Mingkui, 40
 Feng, Shan, 11
 Feng, Xiaoyi, 5X
 Fu, Dongmei, 1C
 Fu, Mengyin, 4R
 Fu, Qiang, 0P
 Fu, Qiongying, 2B, 2C
 Fu, Ying, 24
 Gao, Fulin, 1C
 Gao, Guangshuai, 0L
 Gao, Jianjun, 0D
 Gao, Ming, 26
 Gao, Shaoshuai, 5J
 Gao, Wei, 1Z
 Gao, Xiang, 07
 Gao, Yunfeng, 4J
 Ge, Rongjun, 2S
 Ge, Wen, 1Y
 Ge, Zhongxiao, 1T
 Giess Shokrallah Ahmed, Mohaned, 57, 5B
 Gniewko, Niedbała, 2I, 2J, 2L, 2M, 2N
 Gong, Guoqiang, 1O
 Gong, Yuanzhi, 5L
 Górna, K., 15, 1M, 2F, 2G
 Gu, Qin, 42
 Gu, Wei, 1F
 Guan, Ruya, 2A
 Guo, Baoqing, 5S
 Guo, Fangmin, 4P
 Guo, Huinan, 3I, 4E
 Guo, Kailu, 04, 4B
 Guo, Liye, 4G
 Guo, Mingxi, 54
 Guo, Peng, 11
 Guo, Wenfeng, 14
 Hagag, Ahmed, 3H
 Han, Shou-Dong, 19, 1A
 Han, Yu, 52
 Hao, Xiangyang, 1D
 Hao, Yangyang, 0Y
 He, Jian, 1O
 He, Kangjian, 4K
 He, Man-yun, 02
 He, Mingfu, 1V
 He, Qinglian, 5N
 He, Shaorong, 1S
 Hong, Yong, 36
 Hou, Yibin, 5K
 Hsiao, Ching-Ju, 27
 Hu, Bingliang, 0R
 Hu, Jin Rong, 24
 Hu, Jing, 4C
 Hu, Jingqiu, 3J
 Hu, Wei, 1G
 Hu, Xuefeng, 5L
 Hu, Zheng, 0Z
 Hua, Chun-jian, 3B
 Huang, Fay, 5M
 Huang, Guo, 23
 Huang, Jianqiang, 10
 Huang, Jie, 3V
 Huang, Qiaojie, 5H
 Huang, Shifeng, 3R
 Huang, Xianglin, 5U
 Hwang, Jenq-Neng, 27
 Idziaszek, P., 2F, 2G, 2J, 2N
 Iftene, M., 2D
 J., Kozłowski, 2I
 Janiszewski, P., 1M
 Jaśkowski, B. M., 15
 Jaśkowski, J. M., 15
 Jaturawat, Phichaya, 0V
 Ji, Peng-chong, 1Y
 Jia, Xibin, 06
 Jia, Zhenyuan, 5R
 Jiang, Haiqi, 1W
 Jiang, Hongyan, 1S
 Jiang, Huiqin, 1R
 Jiang, Jianbo, 4H
 Jiang, Peilin, 3Z
 Jiang, Tao, 0W
 Jiang, Tengda, 1T
 Jiang, Xiuhua, 5E
 Jiao, Zhigang, 14
 Jie, Jiang, 2W
 Jin, Guowang, 3P
 Jin, Xiaofeng, 4G
 Jin, Xin, 4K
 Jin, Zhao, 4I
 Jun, Wang, 57, 58
 Jurek, P., 1M
 Kan, Guangyuan, 3R
 Kang, Chen, 2W
 Ke, Shengcai, 2E
 Kong, Fanxing, 1H
 Kong, Lingcheng, 0S
 Kong, Lingtong, 4P
 Kong, Longxing, 4T
 Koszela, K., 1M, 2H, 2I, 2J, 2L, 2M, 2N, 35
 Kozłowski, R. J., 15, 1M, 2G, 2H, 2I, 2J, 2L, 2M, 2N,
 35
 Kravtsov, Sergey, 0A
 Kujawa, S., 2G, 2H, 2I, 2J, 2L, 2M, 2N
 Kun, Dong, 62, 64
 Lan, Qiang, 4W
 Lao, Guo-chao, 1X, 3S
 Lei, Bangjun, 26
 Lei, Pu, 02
 Lei, Tao, 31
 Lei, Tianjie, 3R
 Lei, Xiaohua, 5E
 Lei, Xiaoyong, 4U
 Li, Bicheng, 2E
 Li, Bing, 2O
 Li, Bo, 3J
 Li, Chao, 4J
 Li, Cheng, 0H
 Li, Chunlei, 0L, 3U
 Li, Fang, 5T

Li, Feng, 5F
 Li, Fengqi, 60
 Li, Gaoliang, 37
 Li, Gen, 4Q
 Li, Guojing, 3S
 Li, Hai-ling, 48
 Li, Hengjian, 2T
 Li, Hongguang, 0R
 Li, Hongping, 3N
 Li, Hua, 05
 Li, Jianzhen, 4B
 Li, Jingjiao, 43
 Li, Juan, 5N
 Li, Junhao, 44
 Li, Kerun, 4H
 Li, Lei, 4I, 52
 Li, Lin, 3R
 Li, Qing, 4Q
 Li, Qingli, 4P
 Li, Shanshan, 22
 Li, Shouliang, 2S
 Li, Shuang, 20
 Li, Ting, 0H, 3X
 Li, Tong, 4F
 Li, Weibin, 1E
 Li, Xiang, 4R
 Li, Xiangchun, 08
 Li, Xiujian, 25
 Li, Xueen, 5Y
 Li, Yangyang, 0Z
 Li, Yi, 28
 Li, Yin, 3E
 Li, Ying, 3O
 Li, Zengguang, 4I
 Li, Zhenni, 43
 Li, Zhi-jing, 0P
 Li, Zuoyong, 1U
 Liang, Degang, 14
 Liang, Guomao, 4O
 Liang, Xiaohu, 5A, 63
 Liao, Lejian, 16
 Lin, En-Bing, 55
 Lin, Han-Chi, 2U, 2Y, 5Q
 Lin, Jiajun, 0K
 Lin, Yaping, 1S
 Lin, Yen-Shuo, 27
 Lin, Yunxia, 30
 Ling, Qiang, 5F
 Liu, Aijun, 5A, 63
 Liu, Bing, 2C
 Liu, Bo, 0S
 Liu, Bo, 0C
 Liu, Dandan, 3M
 Liu, Falin, 3J
 Liu, Guiyuan, 3Q
 Liu, Heping, 4Q
 Liu, Hongyan, 3K, 3L
 Liu, Hongying, 4P
 Liu, Jiancheng, 5H
 Liu, Jiang, 3M, 4D
 Liu, Jie, 1B, 4Q
 Liu, Jun, 4M
 Liu, Kai, 07
 Liu, Kang, 13, 3L
 Liu, Kun, 53
 Liu, Liping, 1I
 Liu, Lixiong, 16
 Liu, Liyan, 4G
 Liu, Lizhen, 29
 Liu, Mingshan, 65
 Liu, Mingzhe, 1V
 Liu, Peng-yuan, 2O
 Liu, Q., 2D
 Liu, Qing, 4E
 Liu, Qiuli, 3U
 Liu, Shuangyin, 59
 Liu, Shun, 45
 Liu, Tong, 29
 Liu, Wei, 3V, 5R, 5Y
 Liu, Xia, 37
 Liu, Xian, 63
 Liu, Xiaoming, 1G, 1U, 41, 4M
 Liu, Xiaoxu, 5X
 Liu, Xin, 2E
 Liu, Xuan, 20
 Liu, Yang, 5R, 5V
 Liu, Yong, 4X
 Liu, Yonghe, 1S
 Liu, Yu-Jun, 19
 Liu, Yumin, 1R
 Liu, Zhaolin, 3D
 Liu, Zhen, 2U, 2Y, 61
 Liu, Zhi, 44, 5G
 Liu, Zhoufeng, 3U
 Long, Qin, 2Z
 Lu, Cao, 1K
 Lu, Hong, 0I
 Lu, Jingli, 29
 Lu, Ke, 1O
 Lu, Tianan, 3N
 Lu, Tiejun, 4G
 Ludwiczak, A., 1M, 35
 Luo, Guibo, 5Q
 Luo, Lei, 5P
 Luo, Leifei, 52
 Luo, Ling, 1C
 Lv, Jidong, 17
 Lv, Jinhua, 36
 Lv, Yuanhao, 3J
 Lv, Zhongyuan, 5V
 Ma, Huimin, 0G
 Ma, Ji, 43
 Ma, Jiangfeng, 1L
 Ma, Jianwei, 3R
 Ma, Jun, 4Y
 Ma, Li, 43
 Ma, Ling, 1R
 Ma, Lizhuang, 0Y
 Ma, Nan, 3I, 4E
 Ma, Shanshan, 4H

Ma, Xiaoyu, 5E
 Ma, Yide, 2S
 Ma, Yingcun, 07
 Ma, Yong-Chao, 3E
 Ma, Zhenghua, 17
 Man, Hong, 1K
 Mao, Aihua, 5C
 Mao, Tiezheng, 5C
 Mao, Xiaoju, 1N
 Martínez, Fernando, 50
 Martínez, Fredy, 50
 Masroor, Uzma, 4N
 Mdziniso, Nonhle Channon, 55
 Men, Tao, 23
 Meng, Chunng, 40
 Meng, Jidong, 39
 Meng, Xianglai, 4D
 Ming, Delie, 08, 0B
 Mioduszevska, Natalia, 2F, 2G, 2M
 Mo, Delin, 1T
 Moetesum, Momina, 4N
 Montiel, Holman, 50
 Mu, Chengpo, 07
 Mueller, W., 2H, 2I, 2L, 2M, 2N
 Naqvi, Abid A., 2R
 Nie, Rencan, 21, 4K
 Nie, Shengyu, 54
 Nie, WeiGuo, 2R
 Niedbala, G., 2H, 2I, 2J, 2L, 2M, 2N
 Ning, Jingyi, 4G
 Okoń, P., 15, 1M, 2F, 2I
 Pan, Yuzhuo, 32
 Pau, Giovanni, 03
 Pei, Zhongcai, 53
 Peng, Fei, 2Z
 Peng, Jing, 1Q
 Peng, Jinye, 5X
 Peng, Tianqiang, 5T
 Peng, Xianlin, 5X
 Peng, Yu-Chen, 1A
 Perriman, Diana M., 4L
 Phankokkruad, Manop, 0V
 Pickering, Mark R., 4L
 Pongmanawut, Pasinee, 0V
 Przybył, J., 15, 1M, 2F, 2J, 35
 Przybył, K., 2F, 2G, 2H, 2I, 2J, 2L, 2M, 2N
 Przybylak, A., 35
 Qi, Yinlong, 2K
 Qi, Zhiyi, 4O
 Qian, Xu, 13
 Qiao, Lingling, 1N
 Qin, Hongyin, 23
 Qin, Yuliang, 3K, 3L
 Qiu, Guoqing, 64
 Qiu, Lang-bo, 02
 Qiu, Yuehong, 2K
 Qu, Shengwei, 5O
 Qu, Zhiyi, 4O
 Ran, Da, 1X
 Ren, Xiaoli, 59
 Rui, Zhang, 62
 Rummyantsev, Konstantin, 0A
 Ryniecki, A., 2L
 Shang, Ke, 08
 Shang, She, 39
 Shao, Chunfu, 5N
 Sharif, M., 2R
 Shi, Chengying, 18
 Shi, Dazhao, 0G, 0G
 Shi, Min, 49, 4A
 Shi, Yang, 4W
 Shi, Yi, 1F
 Siddiqi, Imran, 4N
 Ślószar, P., 1M, 35
 Song, Bo-Wen, 3O
 Song, Hongsheng, 3Q
 Song, Wei, 29
 Song, Xiaodong, 3I
 Song, Zong-xi, 0J, 0N, 1Z
 Srinivasan, Kathiravan, 5M
 Stanis, M., 35
 Strzeliński, P., 1M
 Su, Feng, 0F
 Su, Fulin, 0D
 Suman, Abdulla Al, 4L
 Sun, Jie, 3F
 Sun, Junhong, 04, 4B
 Sun, Kelin, 31
 Sun, Shuifa, 1O
 Sun, Tao, 3R
 Sun, Weiyang, 22
 Sun, Wenbang, 3X
 Sun, Xiao, 08, 0O
 Sun, Yu-mei, 0F, 0M
 Sun, Zi-Qiang, 2U
 Tag Elsir Awad Elsoufi, Mohammed, 58
 Tan, Jing, 48
 Tan, Qingping, 56
 Tan, Zhiying, 0S
 Tang, Bin, 5B
 Tang, Hao, 0I
 Tang, Qian, 0C
 Tang, Song, 5L
 Tang, Xiao-an, 4T
 Tang, Zhiyong, 53
 Tao, Sheng-Jie, 3E
 Tao, Zhi-qiang, 48
 Teng, Peng-guo, 34
 Tian, JinWen, 08, 0O
 Tian, Pei, 3D
 Tian, Zhen, 36
 Tianqiang, Peng, 5T
 Tomczak, R. J., 2H
 Tong, Hejun, 1C
 Tse, Rita, 03
 Vincent, Nicole, 4N
 Wan, Shouhong, 4V
 Wan, Yi, 2A, 30
 Wang, Bingshu, 5L
 Wang, Chunmei, 33

Wang, Fan, 17
 Wang, Feng, 04, 4B
 Wang, Hanshi, 29
 Wang, Hongqiang, 3K
 Wang, Ji, 59
 Wang, Jia, 1G, 1U
 Wang, Jiateng, 64
 Wang, Jingyu, 52
 Wang, Jue, 3G
 Wang, Kai, 3A
 Wang, Ke, 5A
 Wang, Keqiang, 1K
 Wang, Li, 4T
 Wang, Lichen, 59
 Wang, Lingli, 5R
 Wang, Linna, 0W
 Wang, Linyuan, 4I
 Wang, Luping, 5W
 Wang, Mei-chun, 0F
 Wang, Meiling, 4R
 Wang, Mingrong, 23
 Wang, Na, 3A
 Wang, Peng, 0X, 2Q
 Wang, Ping, 25
 Wang, Qiang, 3M
 Wang, Quan, 4K
 Wang, Rui, 65
 Wang, Runyuan, 06
 Wang, Shan, 4O
 Wang, Shengjin, 1B, 5Z
 Wang, Shunan, 3K
 Wang, Suyu, 5K
 Wang, Tianrui, 5I
 Wang, Ting, 13
 Wang, Wei, 3I
 Wang, WeiJiang, 1F
 Wang, Xiao meng, 13
 Wang, Xiaoying, 10
 Wang, Xihan, 5X
 Wang, Y., 2D
 Wang, Yang, 5S
 Wang, Yulin, 46
 Wang, Zhengzhou, 0R
 Webb, Alexandra Louise, 4L
 Wei, Sun, 2W
 Wei, Xiangpo, 2B, 2C
 Wei, Xizhang, 6I
 Wen, Mei, 5P
 Wen, Peizhi, 3Y
 Wojcieszak, D., 2G, 2I, 2M, 35
 Wu, Hongzhi, 3W
 Wu, Huan, 10
 Wu, Jie, 12
 Wu, Jinghua, 0S
 Wu, Kai, 0Y
 Wu, Qinzhang, 3I
 Wu, Sicong, 56
 Wu, Tao, 1J
 Wu, Tongbao, 44
 Wu, Weibin, 09
 Wu, Weina, 2V
 Wu, Xi, 1Q, 24, 4C
 Wu, Xiaojun, 3Y
 Wu, Zhibing, 2E
 Wu, Zhilong, 5O
 Wu, Zhize, 4V
 Xi, Xiaoqi, 52
 Xia, Hui, 3A
 Xia, Qin, 1T
 Xiang, Qian, 3G
 Xiao, Meifeng, 4R
 Xie, Hongtao, 45
 Xie, Kai, 4F
 Xie, Yi, 46
 Xie, Yufeng, 5G
 Xie, Yunfang, 4S
 Xie, Zhigang, 0K
 Xin, Jin, 2I
 Xing, Shuai, 1T
 Xing, Xiaoduo, 63
 Xiong, Huijiang, 3Y
 Xiong, Xue-mei, 3B
 Xu, Guangzhu, 26
 Xu, Hua, 5I
 Xu, Jianjun, 56
 Xu, Jingtao, 4X
 Xu, Pengtao, 5R
 Xu, Qing, 3P
 Xu, Wei, 1A
 Xu, Wenhai, 3C
 Xu, Xianling, 5H
 Xu, Ye, 5U
 Xu, Yufeng, 1R
 Xu, Zhaohui, 0C
 Xu, Zhen-yu, 0M
 Xua, Hua, 5I
 Xue, Zhixiang, 2B, 2C
 Xun, Yanqin, 65
 Yadav, Piyush, 3T
 Yan, Bin, 4I, 52
 Yang, Helin, 60
 Yang, Hongtao, 3I
 Yang, Hua M., 05
 Yang, Jianbo, 1V
 Yang, Jian-wen, 0Q
 Yang, Jianyu, 42
 Yang, Jinfeng, 0U
 Yang, Jinghao, 5R
 Yang, Jinling, 4D
 Yang, Juan, 12
 Yang, Junfeng, 1S
 Yang, Junjie, 1J
 Yang, Lifang, 5U
 Yang, Liya, 5N
 Yang, Longchao, 3Z
 Yang, Luping, 4X
 Yang, Shuai, 0H, 3X
 Yang, Xiaopeng, 1R
 Yang, Xin, 4A
 Yang, Yunyun, 2X

Yang, Zengguo, 5W
 Yang, Zhaohua, 37
 Yang, Zhenji, 53
 Yang, Zhou, 1G, 1U
 Yao, Guangle, 31
 Yao, Luyang, 4F
 Yao, Min, 5I
 Yao, Shaowen, 21
 Yao, Yao, 42
 Ye, Linwei, 5G
 Ye, Wei, 3S
 Ye, Yushan, 4F
 Yi, Qingming, 49, 4A
 Yi, Wenjun, 25
 Yi, Xian, 1E
 Yi, Zhengming, 10
 Yin, Bangjie, 4V
 Yin, Can-bin, 1X
 Yin, Fei, 1Z
 Yin, Jian, 45
 Yin, Qinye, 0R
 Ying, Xiong, 57, 58
 Yoshie, Osamu, 5C
 You, Bo, 5Y
 Yu, Chuanbo, 21
 Yu, Xuchu, 2B, 2C
 Yu, Zujun, 5S
 Yuan, Tiezhu, 3K, 3L
 Yuan, Zheng-Wu, 0E
 Yue, Hongwei, 1K
 Yue, Lihua, 4V
 Yu-ze, Nie, 02
 Zaborowicz, M., 15, 1M, 2F, 2G, 2H, 2J, 2L, 2N, 35
 Zan, Shiwei, 4F
 Ze, Wang, 62
 Zeng, Leya, 51
 Zeng, Shaogeng, 1J
 Zeng, Xianhua, 5O
 Zeng, Zhigang, 1U
 Zhai, Leilei, 41, 4M
 Zhai, Pengfei, 18
 Zhai, Yuqiang, 42
 Zhan, Shiwei, 4F
 Zhang, Changle, 0D
 Zhang, Chunyuan, 5P
 Zhang, Duo, 0L
 Zhang, Hanming, 4I
 Zhang, He, 4D
 Zhang, Hong-bing, 48
 Zhang, Hongmin, 3P
 Zhang, Hong-Wei, 3O
 Zhang, Hui, 4E
 Zhang, Jianglong, 5U
 Zhang, Jing-zhong, 34
 Zhang, Jin-Yu, 3E
 Zhang, Jun, 0E
 Zhang, Junda, 4T
 Zhang, Junhua, 4H
 Zhang, Junjun, 1T
 Zhang, Kai, 41
 Zhang, Lifeng, 3D
 Zhang, Luping, 5W
 Zhang, Nan, 56
 Zhang, Ningyu, 20, 3Q
 Zhang, Qing, 0K
 Zhang, Ruiheng, 07
 Zhang, Shigang, 0Z
 Zhang, Shixue, 47
 Zhang, Tongfeng, 2S
 Zhang, Weihai, 5K
 Zhang, Weikun, 3S
 Zhang, Wenbo, 65
 Zhang, Xiaolei, 3R
 Zhang, Xu, 5Z
 Zhang, Xuanping, 2R
 Zhang, Xuefeng, 61
 Zhang, Yan-fei, 0F, 0M
 Zhang, Ya-qun, 0J
 Zhang, Yifei, 0B
 Zhang, YiKun, 3A
 Zhang, Yujuan, 3M
 Zhang, Zhenjie, 1D
 Zhang, Zhifang, 32
 Zhang, Zhongbo, 3R
 Zhao, Chengqiang, 1V
 Zhao, Fan, 1E
 Zhao, Jian P., 05
 Zhao, Jianghai, 0S
 Zhao, Junqing, 20
 Zhao, Mandan, 1D
 Zhao, Ronghui, 3I
 Zhao, Tian-chen, 1Y
 Zhao, Wei, 54
 Zhao, Wen-jie, 0H
 Zhao, Xiaodong, 0W
 Zhao, Xinzhong, 49
 Zhao, Xuepeng, 40
 Zhao, Yan, 37
 Zhao, Yong, 5L
 Zhao, Yongjun, 3V
 Zhao, Yongwei, 2E
 Zhao, Yunhao, 4V
 Zhao, Zi-hao, 02
 Zhao, Ziru, 2T
 Zhen, Yong, 3V
 Zheng, Jia, 5V
 Zheng, Yang, 4Q
 Zheng, Zhifang, 32
 Zhong, Jiandan, 31
 Zhou, Bin, 0B
 Zhou, Chongbin, 3J
 Zhou, Dongming, 21, 4K
 Zhou, Helen, 1V
 Zhou, Ji Liu, 24
 Zhou, Jian-jiang, 12
 Zhou, Jiliu, 4C
 Zhou, Mei, 4P
 Zhou, Quan, 2Q
 Zhou, Yigang, 4S
 Zhou, Yuan, 65

Zhou, Zhiyong, 54
Zhu, Hengliang, 0Y
Zhu, Jiwen, 4D
Zhu, Liqiang, 5S
Zhu, Pei-Le, 3O
Zhu, Ting, 41, 4M
Zhu, Wei-qiang, 1X
Zhu, Yong-feng, 0P
Zhu, Yue-Sheng, 2U, 2Y, 5Q
Zong, Shouxin, 5J
Zou, Xuemei, 5G
Zou, Yaobin, 26

Conference Committee

Honorary Chairs

Zhang Jingzhong, Chinese Academy of Sciences (China)
Chin-Chen Chang, Feng Chia University (Taiwan)

International Advisory Committee

Yuri Rzhanov, University of New Hampshire (United States)
Lin Zhouchen, Peking University (China)

Conference Chairs

Charles M. Falco, College of Optical Sciences, The University of
Arizona (United States)
Wang Xiaoyu, Sichuan Province Computer Society (China)
Zhou Jiliu, Chengdu University of Information Technology (China)

Program Committee Chairs

Xudong Jiang, Nanyang Technological University (Singapore)
Zhang Yi, Sichuan University (China)
Qin Zhiguang, University of Electronic Science and Technology
(China)
Pan Wei, Southwest Jiaotong University (China)

Steering Committee Chairs

Jamshid Dehmeshki, Kingston University (United Kingdom)
Wang Xiaojing, Chengdu Institute of Computer Applications (China)
Chen Xingshu, Sichuan University (China)

Organizing Committee Chair

Changyuan Song, Sichuan Province Computer Federation (China)

Publicity Chairs

Zhu Guobin, University of Electronic Science and Technology (China)
Xiang Qian, Sichuan Province Computer Federation (China)

Technical Committee Chairs

Zhang Yong, Chengdu Institute of Computer Applications (China)
Liu Zhang, Chengdu Institute of Computer Applications (China)
Ismail Rakip Karas, Karabük University (Turkey)

Technical Committee

Krzysztof Koszela, Poznan University of Life Sciences (Poland)
Liming Zhang, University of Macau (Macau)
Jinfeng Yang, Civil Aviation University of China (China)
Yong-Sheng Chen, National Chiao Tung University (Taiwan)
Tarek Sobh, University of Bridgeport (United States)
Mueller Wojciech, Poznan University of Life Sciences (Poland)
Srikanta Murthy K., PES School of Engineering (India)
Arinto Yudi Ponco Wardoyo, Brawijaya University (Indonesia)
Radosław Jan Kozłowski, Poznan University of Life Sciences (Poland)
Gniewko Niedbała, Poznan University of Life Sciences (Poland)
Bicheng Li, Information Engineering University (China)
Lixiong Liu, Beijing Institute of Technology (China)
Fulin Su, Harbin Institute of Technology (China)
Zhi Liu, Shanghai University (China)
Bin Tang, University of Electronic Science and Technology of China (China)
Lei Xiaoyong, Beihang University (China)
En-Bing Lin, Central Michigan University (United States)
Huimin Ma, Tsinghua University (China)
Juncheng Li, Hunan University of Humanities (China)
Mingzhe Liu, Chengdu University of Technology (China)
Muhammad Naufal Bin Mansor, Universiti Malaysia Perlis (Malaysia)
George A. Papakostas, Eastern Macedonia and Thrace Institute of Technology (Greece)
Zhang Zhi Jia, Shenyang University of Technology (China)
Peng Tianqiang, Henan Institute of Engineering (China)
Tieling Chen, University of South Carolina Aiken (United States)
Hong Lu, Nanjing Institute of Technology (China)
Florence Cloppet, Paris Descartes Université (France)
Momina Moetesum, Bahria University (Pakistan)
Imran Siddiqi, Bahria University (Pakistan)
Bin Yan, National Digital Switching System Engineering and Technological Research Center (China)
Wu Xi, Xihua University (China)
Wu-Hsiung Chen, Pano Leader Company, Ltd. (Taiwan)
Hengian Li, Shandong Computer Science Center (China)
Sergey Kravtsov, Southern Federal University (Russian Federation)
Konstantin Rummyantsev, Southern Federal University (Russian Federation)
Yan Yang, Southwest Jiaotong University (China)

Sherif Welsen, University of Nottingham Ningbo (China)
Ningyu Zhang, Shandong Jianzhu University (China)
Shouhong Wan, USTC (China)
Chunning Meng, China Maritime Police Academy (China)
Jenq-Neng Hwang, University of Washington (United States)
Hua-Tsung Chen, National Chiao Tung University (China)
Ahmed A. Abd El-Latif, Menoufia University (Egypt)
Mark Richard Pickering, University of New South Wales (Australia)
Hongping Li, Ocean University of China (China)
Huiqin Jiang, Zhengzhou University (China)
Tao Wu, Lingnan Normal University (China)
Kathiravan Srinivasan, National Ilan University (Taiwan)
Liu Zhen, National University of Defense Technology (China)
Yigang Zhou, Harbin Institute of Technology (China)
Jia Xibin, Beijing University of Technology (China)
Fengqi Li, Dalian University of Technology (China)
Wenbing Tao, Huazhong University of Science and Technology (China)
Nicole Vincent, Paris Descartes Université (France)
Ahmed Nashat, Fayoum University (Egypt)
Zhihua Xie, Jiangxi Science and Technology Normal University (China)
Kuo-Liang Chung, National Taiwan University of Science and Technology (China)
G. Balakrishnan, Indra Ganesan College of Engineering (India)
Peng Wang, Tsinghua University (China)
Juan Li, Beijing Jiaotong University (China)
Jing Hu, Chengdu University of Information and Technology (China)
Hung Nguyen, Japan Advanced Institute of Science and Technology (Japan)
He Yangming, Jiangxi University of Traditional Chinese Medicine (China)
Bing Li, State Key Laboratory of Complex Electromagnetic Environmental Effects on Electronics and Information Systems (China)
Fei Xia, Shanghai University of Electric Power (China)
Lifeng Zhang, North China Electric Power University (China)
Dongming Zhou, Yunnan University (China)
Zou Junzhou, East China University of Science and Technology (China)
Wenchao Cui, China Three Gorges University (China)
Hong Zhang, Armstrong State University (United States)
Suyu Wang, Beijing University of Technology (China)
Maciej Zaborowicz, Ponzan University of Life Sciences (Poland)
Shuai Lu, Jilin University (China)
Dongmei Fu, University of Science and Technology Beijing (China)
He Yangming, Jiangxi University of Traditional Chinese Medicine (China)

Peiyuan Guo, Beijing Technology and Business University (China)
Albert Chong, University of Southern Queensland (Australia)
Yebin Liu, Tsinghua University (China)
Lizhuang Ma, Shanghai Jiao Tong University (China)
Hongtao Xie, Chinese Academy of Sciences (China)
Tao Lei, Chinese Academy of Sciences (China)
Wen He, Chengdu Medical College (China)
Chi-Man Pun, University of Macau (China)
Zhen Liu, Ningbo University (China)
Jin Guowang, Zhengzhou Institute of Surveying and Mapping (China)
Hu Zheng, National University of Defense Technology (China)
Xiangyang Hao, Information Engineering University (China)

Introduction

We had the great honor of organizing the Eighth International Conference on Digital Image Processing (ICDIP 2016). It was truly a great pleasure for us to greet more than 250 participants from many different countries. We firmly believe that ICDIP will become an important international event in the field of Digital Image Processing.

The Eighth International Conference on Digital Image Processing (ICDIP 2016) was co-sponsored by Sichuan Province Computer Federation, International Association of Computer Science and Information Technology, Chengdu University of Information Technology and Chinese Academy of Sciences Chengdu Institute of Computer Applications, and assisted by Sichuan University, University of Electronics Science and Technology of China, Southwest Jiaotong University, and Chengdu Young Education Consulting Co., Ltd.

The objective of this conference was to provide a platform for the participants to report and review innovative ideas and up-to-date progress and developments and discuss novel approaches to application in the digital image processing field. It is sincerely hoped that the research and development in digital image processing will be improved and the international cooperation sharing the common interest enhanced.

On behalf of other Co-Chairs, and the Organization Committee of ICDIP 2016, we would like to express our heartfelt thanks for our sponsors and cooperating organizers for all they have done for ICDIP 2016. Thanks also to all the authors for their contributions to the proceedings, to all of the participants and friends for their interest and efforts in helping us to make it possible, to the Program Technical Committee for their effective work and valuable advice, the Conference Secretary, and to the editors at SPIE for their tireless efforts and outstanding service in preparing and publishing the proceedings.

Xudong Jiang

