

*Commenced Publication in 1973*

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

## Editorial Board

David Hutchison

*Lancaster University, Lancaster, UK*

Takeo Kanade

*Carnegie Mellon University, Pittsburgh, PA, USA*

Josef Kittler

*University of Surrey, Guildford, UK*

Jon M. Kleinberg

*Cornell University, Ithaca, NY, USA*

Friedemann Mattern

*ETH Zurich, Zurich, Switzerland*

John C. Mitchell

*Stanford University, Stanford, CA, USA*

Moni Naor

*Weizmann Institute of Science, Rehovot, Israel*

C. Pandu Rangan

*Indian Institute of Technology, Madras, India*

Bernhard Steffen

*TU Dortmund University, Dortmund, Germany*

Demetri Terzopoulos

*University of California, Los Angeles, CA, USA*

Doug Tygar

*University of California, Berkeley, CA, USA*

Gerhard Weikum

*Max Planck Institute for Informatics, Saarbrücken, Germany*

More information about this series at <http://www.springer.com/series/7412>

Yao Zhao · Xiangwei Kong  
David Taubman (Eds.)

# Image and Graphics

9th International Conference, ICIG 2017  
Shanghai, China, September 13–15, 2017  
Revised Selected Papers, Part III



Springer

*Editors*

Yao Zhao  
Beijing Jiaotong University  
Beijing  
China

David Taubman  
UNSW  
Sydney, NSW  
Australia

Xiangwei Kong  
Dalian University of Technology  
Dalian  
China

ISSN 0302-9743                   ISSN 1611-3349 (electronic)  
Lecture Notes in Computer Science  
ISBN 978-3-319-71597-1           ISBN 978-3-319-71598-8 (eBook)  
<https://doi.org/10.1007/978-3-319-71598-8>

Library of Congress Control Number: 2017960877

LNCS Sublibrary: SL6 – Image Processing, Computer Vision, Pattern Recognition, and Graphics

© Springer International Publishing AG 2017

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Printed on acid-free paper

This Springer imprint is published by Springer Nature  
The registered company is Springer International Publishing AG  
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

## Preface

These are the proceedings of the 8th International Conference on Image and Graphics (ICIG 2017), held in Shanghai, China, during September 13–15, 2017.

The China Society of Image and Graphics (CSIG) has hosted this series of ICIG conferences since 2000. ICIG is the biennial conference organized by the China Society of Image and Graphics (CSIG), focusing on innovative technologies of image, video, and graphics processing and fostering innovation, entrepreneurship, and networking. This time, Shanghai Jiaotong University was the organizer, and the Nanjing Technology University and Zong Mu Technology Ltd. Company were the co-organizers. Details about the past eight conferences, as well as the current one, are as follows:

Conference	Place	Date	Submitted	Proceeding
First (ICIG 2000)	Tianjin, China	August 16–18	220	156
Second (ICIG 2002)	Hefei, China	August 15–18	280	166
Third (ICIG 2004)	Hong Kong, China	December 17–19	460	140
4th (ICIG 2007)	Chengdu, China	August 22–24	525	184
5th (ICIG 2009)	Xi'an, China	September 20–23	362	179
6th (ICIG 2011)	Hefei, China	August 12–15	329	183
7th (ICIG 2013)	Qingdao, China	July 26–28	346	181
8th (ICIG 2015)	Tianjin, China	August 13–16	345	170
9th (ICIG 2017)	Shanghai, China	September 13–15	370	172

This time, the proceedings are published by Springer in the LNCS series. The titles, abstracts, and biographies of the three invited speakers of plenary talks are presented first. At ICIG 2017, 370 submissions were received, and 160 papers were accepted. To ease in the search of a required paper in these proceedings, the 160 regular papers have been arranged in alphabetical order according to their titles. Another 12 papers forming a special topic are included at the end.

Our sincere thanks go to all the contributors (around 200), who came from around the world to present their advanced works at this event. Special thanks go to the members of Technical Program Committee, who carefully reviewed every single submission and made their valuable comments for improving the accepted papers.

The proceedings could not have been produced without the invaluable efforts of the publication chairs, the web chairs, and a number of active members of CSIG.

September 2017

Yao Zhao  
Xiangwei Kong  
David Taubman

## Organization

## Honorary Chairs

## General Chairs

Tieniu Tan Chinese Academy of Sciences, China  
Hongkai Xiong Shanghai Jiaotong University, China  
Zixiang Xiong Texas A&M University, USA

## **Organizing Committee Chairs**

Weiyao Lin Shanghai Jiaotong University, China  
Huimin Ma Tsinghua University, China  
Bo Yan Fudan University, China

## Technical Program Chairs

David Taubman      UNSW, Australia  
Yao Zhao            Beijing Jiaotong University, China

## **Finance Chairs**

Zhihua Chen ECUST, China  
Zhenwei Shi Beihang University, China

## **Special Session Chairs**

Jian Cheng Chinese Academy of Sciences, China  
Zhihai He University of Missouri, USA  
Z. Jane Wang University of British Columbia, Canada

## Award Chairs

## Publicity Chairs

Mingming Cheng Nankai University, China  
Moncef Gabbouj TUT, Finland

## Exhibits Chairs

Zhijun Fang Shanghai University of Engineering Science, China  
Yan Lv Microsoft Research, China

## Publication Chairs

Xiangwei Kong Dalian University of Technology, China  
Jun Yan Journal of Image and Graphics, China

## International Liaisons

Xiaoqian Jiang UCSD, USA  
Huifang Sun MERL, USA

## Local Chairs

Wenrui Dai UCSD, USA  
Junni Zou Shanghai Jiaotong University, China

## Registration Chair

Chen Ye Shanghai Jiaotong University, China

## Webmasters

Chenglin Li EPFL, Switzerland  
Yangmei Shen Shanghai Jiaotong University, China

## Technical Program Committee

Ping An Shanghai University, China  
Ru An Hohai University, China  
Xiao Bai Beijing University of Aeronautics and Astronautics, China  
Lianfa Bai Nanjing University of Science and Technology, China  
Xiang Bai Huazhong University of Science and Technology, China  
Chongke Bi Tianjin University, China  
Hai Bian Hangzhou Dica3d Technology Co., Ltd., China  
Xiaochun Cao Institute of Information Engineering,  
Chinese Academy of Sciences, China

Yan-Pei Cao	Tsinghua University, China
Chong Cao	Tsinghua University, China
Qi Chen	Hainan University, China
Kang Chen	Tsinghua University, China
Mingkai Chen	Nanjing University of Posts and Telecommunications, China
Mingming Cheng	Nankai University, China
Yue Dong	MSRA, China
Zhijun Fang	Shanghai University of Engineering Science, China
Qianjin Feng	Southern Medical University, China
Xiaoyi Feng	Northwestern Polytechnical University, China
Dongmei Fu	University of Science and Technology Beijing, China
Junying Gan	Wuyi University, China
Lin Gao	ICT, CAS, China
Yue Gao	Tsinghua University, China
Xinbo Gao	Xidian University, China
Zexun Geng	Information Engineering University, China
Guanghua Gu	Yanshan University, China
Lin Gu	National Institute of Informatics, Japan
Yanwen Guo	Nanjing University, China
Hu Han	Nanyang Technological University, Singapore
Xiaowei He	Northwest University, China
Qiming Hou	Zhejiang University, China
Dong Hu	Nanjing University of Posts and Telecommunications, China
Hua Huang	Beijing Institute of Technology, China
Haozhi Huang	Tsinghua University, China
Yongfeng Huang	Tsinghua University, China
Rongrong Ji	Xiamen University, China
Yunde Jia	Beijing Institute of Technology, China
Sen Jia	Shenzhen University, China
Xiuping Jia	University of New South Wales, USA
Zhiguo Jiang	Beijing University of Aeronautics and Astronautics, China
Zhaohui Jiang	Central South University, China
Xiaoqian Jiang	University of California, San Diego, USA
Lianwen Jin	South China University of Technology, China
Bin Kong	Institute of Intelligent Machines, Chinese Academy of Sciences, China
Xiangwei Kong	Dalian University of Technology, China
Dengfeng Kuang	Nankai University, China
Jianhuang Lai	Sun Yat-Sen University, China
Congyan Lang	Beijing Jiaotong University, China
Changhua Li	Xi'an University of Architecture and Technology, China
Chenglin Li	Swiss Federal Institute of Technology in Lausanne, Switzerland
Hua Li	Institute of Computing Technology, Chinese Academy of Sciences, China
Jiming Li	Zhejiang Police College, China

Qi Li	Peking University, China
Shutao Li	Hunan University, China
Xi Li	Zhejiang University, China
Jie Liang	China Aerodynamics Research and Development Center, China
Pin Liao	Nanchang University, China
Chunyu Lin	Beijing Jiaotong University, China
Xiaojing Liu	Qinghai University, China
Changhong Liu	Jiangxi Normal University, China
Bin Liu	University of Science and Technology of China, China
Bin Liu	Tsinghua University, China
Chenglin Liu	Institute of Automation, Chinese Academy of Sciences, China
Wenyu Liu	Huazhong University of Science and Technology, China
Yue Liu	Beijing Institute of Technology, China
Qingshan Liu	Nanjing University of Information Science and Technology, China
Hongbing Lu	Fourth Military Medical University, China
Hanqing Lu	Institute of Automation, Chinese Academy of Sciences, China
Jiwen Lu	Tsinghua University, China
Jianhua Ma	Southern Medical University, China
Huimin Ma	Tsinghua University, China
Weidong Min	Nanchang University, China
Xuanqin Mou	Xi'an Jiaotong University, China
Taijiang Mu	Tsinghua University, China
Feiping Nie	Northwestern Polytechnical University, China
Yongwei Nie	South China University of Technology, China
Zhigeng Pan	Hangzhou Normal University, China
Yanwei Pang	Tianjin University, China
Yuxin Peng	Peking University, China
Yuntao Qian	Zhejiang University, China
Bo Ren	Nankai University, China
Jun Sang	Chongqing University, China
Nong Sang	Huazhong University of Science and Technology, China
Yangmei Shen	Shanghai Jiaotong University, China
Yuying Shi	North China Electric Power University, China
Huifang Sun	Mitsubishi Electric Research Laboratories, USA
Jiande Sun	Shandong University, China
Linmi Tao	Tsinghua University, China
Lei Tong	Beijing University of Technology, China
Yunhai Wang	Shandong University, China
Qi Wang	Northwestern Polytechnical University, China
Cheng Wang	Xiamen University, China
Meng Wang	Hefei University of Technology, China
Hanzi Wang	Xiamen University, China
Peizhen Wang	Anhui University of Technology, China
Tianjiang Wang	Huazhong University of Science and Technology, China

Bin Wang	Tsinghua University, China
Lili Wang	Beihang University, China
Shigang Wang	Jilin University, China
Miao Wang	Tsinghua University, China
Yunhong Wang	Beijing University of Aeronautics and Astronautics, China
Chunhong Wu	University of Science and Technology Beijing, China
Hongzhi Wu	Zhejiang University, China
Xiaojun Wu	Jiangnan University, China
Fei Wu	Zhejiang University, China
Zhongke Wu	Beijing Normal University, China
Dingyuan Xia	Wuhan University of Technology, China
Hongkai Xiong	Shanghai Jiaotong University, China
Mingliang Xu	Zhengzhou University, China
Chunxu Xu	Tsinghua University, China
Kun Xu	Tsinghua University, China
Zengpu Xu	Tianjin University of Science and Technology, China
Jianru Xue	Xi'an Jiaotong University, China
Xiangyang Xue	Fudan University, China
Bo Yan	Fudan University, China
Ling-Qi Yan	UC Berkeley, USA
Xiao Yan	Tsinghua University, China
Jingwen Yan	Shantou University, China
Jun Yan	Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, China
Jinfeng Yang	Civil Aviation University of China, China
Sheng Yang	Tsinghua University, China
Yongliang Yang	Bath University, UK
Shiqiang Yang	Tsinghua University, China
Tao Yang	Tsinghua University, China
Hongxun Yao	Harbin Institute of Technology, China
Yong Yin	Dalian Maritime University, China
Shiqi Yu	Shenzhen University, China
Nenghai Yu	University of Science and Technology of China, China
Yinwei Zhan	Guangdong University of Technology, China
Aiqing Zhang	Anhui Normal University, China
Wei Zhang	Shandong University, China
Daoqiang Zhang	Nanjing University of Aeronautics and Astronautics, China
Jiawan Zhang	Tianjin University, China
Lei Zhang	Beijing Institute of Technology, China
Song-Hai Zhang	Tsinghua University, China
Shiliang Zhang	Peking University, China
Xinpeng Zhang	Shanghai University, China
Yanci Zhang	Sichuan University, China
Yongfei Zhang	Beijing University of Aeronautics and Astronautics, China
Fang-Lue Zhang	Victoria University of Wellington, New Zealand
Guofeng Zhang	Zhejiang University, China

Qiang Zhang	Dalian University, China
Yun Zhang	Zhejiang University of Media and Communications, China
Liangpei Zhang	Wuhan University, China
Shengchuan Zhang	Xiamen University, China
Xiaopeng Zhang	Shanghai Jiaotong University, China
Sicheng Zhao	Tsinghua University, China
Yao Zhao	Beijing Jiaotong University, China
Jieyu Zhao	Ningbo University, China
Chunhui Zhao	Harbin Engineering University, China
Ying Zhao	Central South University, China
Wei-Shi Zheng	Sun Yat-Sen University, China
Ping Zhong	National University of Defense Technology, China
Quan Zhou	China Academy of Space Technology, Xi'an, China
Jun Zhou	Griffith University, Australia
Liang Zhou	Nanjing University of Posts and Telecommunications, China
Linna Zhou	University of International Relations, China
Tao Zhou	Ningxia Medical University, China
Wengang Zhou	University of Science and Technology of China, China
Zhe Zhu	Duke University, USA
Wang-Jiang Zhu	Tsinghua University, China
Yonggui Zhu	Communication University of China, China

## Contents – Part III

### Computational Imaging

A Double Recursion Algorithm to Image Restoration from Random Limited Frequency Data . . . . .	3
<i>Xiaoman Liu and Jijun Liu</i>	
RGB-D Saliency Detection with Multi-feature-fused Optimization . . . . .	15
<i>Tianyi Zhang, Zhong Yang, and Jiarong Song</i>	
Research on Color Image Segmentation . . . . .	27
<i>Jingwen Yan, Xiaopeng Chen, Tingting Xie, and Huimin Zhao</i>	
Depth-Based Focus Stacking with Labeled-Laplacian Propagation . . . . .	36
<i>Wentao Li, Guijin Wang, Xuanwu Yin, Xiaowei Hu, and Huazhong Yang</i>	
A Novel Method for Measuring Shield Tunnel Cross Sections . . . . .	47
<i>Ya-dong Xue, Sen Zhang, and Zhe-ting Qi</i>	
Image Noise Estimation Based on Principal Component Analysis and Variance-Stabilizing Transformation . . . . .	58
<i>Ling Ding, Huying Zhang, Bijun Li, Jinsheng Xiao, and Jian Zhou</i>	
Efficient High Dynamic Range Video Using Multi-exposure CNN Flow . . . . .	70
<i>Yuchen Guo, Zhifeng Xie, Wenjun Zhang, and Lizhuang Ma</i>	
Depth Image Acquisition Method in Virtual Interaction of VR Yacht Simulator . . . . .	82
<i>Qin Zhang and Yong Yin</i>	
An Image Segmentation Method Based on Asynchronous Multiscale Similarity Measure . . . . .	93
<i>Min Li, Zhongwai Xu, Hongwen Xie, and Yuhang Xing</i>	
Lagrange Detector in Image Processing . . . . .	102
<i>Feilong Ma, Linmi Tao, and Wu Xia</i>	
New Tikhonov Regularization for Blind Image Restoration . . . . .	113
<i>Yuying Shi, Qiao Liu, and Yonggui Zhu</i>	

Real-Time Multi-camera Video Stitching Based on Improved Optimal Stitch Line and Multi-resolution Fusion. . . . .	124
<i>Dong-Bin Xu, He-Meng Tao, Jing Yu, and Chuang-Bai Xiao</i>	
Image Quality Assessment of Enriched Tonal Levels Images . . . . .	134
<i>Jie Zhao, Wei Wen, and Siamak Khatibi</i>	
<b>Computer Graphics and Visualization</b>	
A Variational Model to Extract Texture from Noisy Image Data with Local Variance Constraints . . . . .	149
<i>Tao Zhang and Qiuli Gao</i>	
Joint Visualization of UKF Tractography Data . . . . .	158
<i>Wen Zhao, Wenyao Zhang, Na Wang, and Pin Liao</i>	
Semantic Segmentation Based Automatic Two-Tone Portrait Synthesis . . . . .	170
<i>Zhuoqi Ma, Nannan Wang, Xinbo Gao, and Jie Li</i>	
Parameters Sharing Multi-items Non-parametric Factor Microfacet Model for Isotropic and Anisotropic BRDFs. . . . .	182
<i>Junkai Peng, Changwen Zheng, and Pin Lv</i>	
SRG and RMSE-Based Automated Segmentation for Volume Data . . . . .	194
<i>Wang Li, Xiaoan Tang, and Junda Zhang</i>	
Shape Recovery of Endoscopic Videos by Shape from Shading Using Mesh Regularization . . . . .	204
<i>Zhihang Ren, Tong He, Lingbing Peng, Shuaicheng Liu, Shuyuan Zhu, and Bing Zeng</i>	
Lazy Recoloring . . . . .	214
<i>Guanlei Xu, Xiaotong Wang, Xiaogang Xu, and Lijia Zhou</i>	
Similar Trademark Image Retrieval Integrating LBP and Convolutional Neural Network . . . . .	231
<i>Tian Lan, Xiaoyi Feng, Zhaoqiang Xia, Shijie Pan, and Jinye Peng</i>	
Adaptive Learning Compressive Tracking Based on Kalman Filter . . . . .	243
<i>Xingyu Zhou, Dongmei Fu, Yanan Shi, and Chunhong Wu</i>	
Online High-Accurate Calibration of RGB+3D-LiDAR for Autonomous Driving . . . . .	254
<i>Tao Li, Jianwu Fang, Yang Zhong, Di Wang, and Jianru Xue</i>	

Run-Based Connected Components Labeling Using Double-Row Scan . . . . .	264
<i>Dongdong Ma, Shaojun Liu, and Qingmin Liao</i>	
A 3D Tube-Object Centerline Extraction Algorithm Based on Steady Fluid Dynamics . . . . .	275
<i>Dongjin Huang, Ruobin Gong, Hejuan Li, Wen Tang, and Youdong Ding</i>	
Moving Objects Detection in Video Sequences Captured by a PTZ Camera . . . . .	287
<i>Li Lin, Bin Wang, Fen Wu, and Fengyin Cao</i>	
Fast Grid-Based Fluid Dynamics Simulation with Conservation of Momentum and Kinetic Energy on GPU . . . . .	299
<i>Ka-Hou Chan and Sio-Kei Im</i>	
Adaptive Density Optimization of Lattice Structures Sustaining the External Multi-load . . . . .	311
<i>Li Shi, Changdong Zhang, Tingting Liu, Wenhe Liao, and Xiuyi Jia</i>	
<b>Hyperspectral Image Processing</b>	
Hyperspectral Image Classification Based on Deep Forest and Spectral-Spatial Cooperative Feature . . . . .	325
<i>Mingyang Li, Ning Zhang, Bin Pan, Shaobiao Xie, Xi Wu, and Zhenwei Shi</i>	
Hyperspectral Image Classification Using Multi Vote Strategy on Convolutional Neural Network and Sparse Representation Joint Feature . . . . .	337
<i>Daoming Ye, Rong Zhang, and Dixiu Xue</i>	
Efficient Deep Belief Network Based Hyperspectral Image Classification . . . . .	347
<i>Atif Mughees and Linmi Tao</i>	
Classification of Hyperspectral Imagery Based on Dictionary Learning and Extended Multi-attribute Profiles . . . . .	358
<i>Qishuo Gao, Samsung Lim, and Xiuping Jia</i>	
Deep Residual Convolutional Neural Network for Hyperspectral Image Super-Resolution . . . . .	370
<i>Chen Wang, Yun Liu, Xiao Bai, Wenzhong Tang, Peng Lei, and Jun Zhou</i>	

**Multi-view and Stereoscopic Processing**

Stereoscopic Digital Camouflage Pattern Generation Algorithm Based on Color Image Segmentation . . . . .	383
<i>Qin Lei, Wei-dong Xu, Jiang-hua Hu, and Chun-yu Xu</i>	
Uncertain Region Identification for Stereoscopic Foreground Cutout . . . . .	390
<i>Taotao Yang, Shuaicheng Liu, Chao Sun, Zhengning Wang, and Bing Zeng</i>	
Map-Build Algorithm Based on the Relative Location of Feature Points . . . . .	400
<i>Cheng Zhao, Fuqiang Zhao, and Bin Kong</i>	
Sparse Acquisition Integral Imaging System . . . . .	412
<i>Bowen Jia, Shigang Wang, Wei Wu, Tianshu Li, and Lizhong Zhang</i>	
Marker-Less 3D Human Motion Capture in Real-Time Using Particle Swarm Optimization with GPU-Accelerated Fitness Function . . . . .	423
<i>Bogdan Kwolek and Boguslaw Rymut</i>	
Warping and Blending Enhancement for 3D View Synthesis Based on Grid Deformation . . . . .	436
<i>Ningning Hu, Yao Zhao, and Huihui Bai</i>	
A Vehicle-Mounted Multi-camera 3D Panoramic Imaging Algorithm Based on Ship-Shaped Model . . . . .	445
<i>Xin Wang, Chunyu Lin, Yi Gao, Yaru Li, Shikui Wei, and Yao Zhao</i>	
A Quality Evaluation Scheme to 3D Printing Objects Using Stereovision Measurement . . . . .	458
<i>Li-fang Wu, Xiao-hua Guo, Li-dong Zhao, and Meng Jian</i>	
<b>Representation, Analysis and Applications of Large-Scale 3D Multimedia Data</b>	
Secure Image Denoising over Two Clouds . . . . .	471
<i>Xianjun Hu, Weiming Zhang, Honggang Hu, and Nenghai Yu</i>	
Aesthetic Quality Assessment of Photos with Faces . . . . .	483
<i>Weining Wang, Jierong Huang, Xiangmin Xu, Quanzeng You, and Jiebo Luo</i>	

Sensitive Information Detection on Cyber-Space . . . . .	496
<i>Mingbao Lin, Xianming Lin, Yunhang Shen,     and Rongrong Ji</i>	
Optimization Algorithm Toward Deep Features Based Camera Pose Estimation . . . . .	505
<i>Han Chen, Feng Guo, Ying Lin,     and Rongrong Ji</i>	
<b>Security</b>	
A Robust 3D Video Watermarking Scheme Based on Multi-modal Visual Redundancy . . . . .	517
<i>Congxin Cheng, Wei Ma, Yuchen Yang,     Shiyang Zhang, and Mana Zheng</i>	
Partial Secret Image Sharing for $(n, n)$ Threshold Based on Image Inpainting . . . . .	527
<i>Xuehu Yan, Yuliang Lu, Lintao Liu, Shen Wang,     Song Wan, Wanmeng Ding, and Hanlin Liu</i>	
A New SMVQ-Based Reversible Data Hiding Scheme Using State-Codebook Sorting . . . . .	539
<i>Juan-ni Liu, Quan Zhou, Yan-lang Hu,     and Jia-yuan Wei</i>	
An Efficient Privacy-Preserving Classification Method with Condensed Information . . . . .	551
<i>Xinning Li and Zhiping Zhou</i>	
Cross-Class and Inter-class Alignment Based Camera Source Identification for Re-compression Images . . . . .	563
<i>Guowen Zhang, Bo Wang, and Yabin Li</i>	
JPEG Photo Privacy-Preserving Algorithm Based on Sparse Representation and Data Hiding . . . . .	575
<i>Wenjie Li, Rongrong Ni, and Yao Zhao</i>	
<b>Surveillance and Remote Sensing</b>	
An Application Independent Logic Framework for Human Activity Recognition . . . . .	589
<i>Wengang Feng, Yanhui Xiao, Huawei Tian, Yunqi Tang,     and Jianwei Ding</i>	

An Altitude Based Landslide and Debris Flow Detection Method for a Single Mountain Remote Sensing Image . . . . .	601
<i>Tingting Sheng and Qiang Chen</i>	
Improved Fully Convolutional Network for the Detection of Built-up Areas in High Resolution SAR Images . . . . .	611
<i>Ding-Li Gao, Rong Zhang, and Di-Xiu Xue</i>	
SAR Image Registration with Optimized Feature Descriptor and Reliable Feature Matching . . . . .	621
<i>Yanzhao Wang, Juan Su, Bichao Zhan, Bing Li, and Wei Wu</i>	
An Improved Feature Selection Method for Target Discrimination in SAR Images . . . . .	633
<i>Yanyan Li and Aihua Cai</i>	
The Detection of Built-up Areas in High-Resolution SAR Images Based on Deep Neural Networks. . . . .	646
<i>Yunfei Wu, Rong Zhang, and Yue Li</i>	
SAR Automatic Target Recognition Based on Deep Convolutional Neural Network . . . . .	656
<i>Ying Xu, Kaipin Liu, Zilu Ying, Lijuan Shang, Jian Liu,     Yikui Zhai, Vincenzo Piuri, and Fabio Scotti</i>	
<b>Author Index . . . . .</b>	<b>669</b>