

PROCEEDINGS OF SPIE

Fourth International Conference on Digital Image Processing (ICDIP 2012)

**Mohamed Othman
Sukumar Senthilkumar
Xie Yi**
Editors

**7-8 April 2012
Kuala Lumpur, Malaysia**

Organized by
International Association of Computer Science and Information Technology

Sponsored by
Universiti Putra Malaysia (Malaysia)
Singapore Institute of Electronics (Singapore)

Published by
SPIE

Volume 8334

Proceedings of SPIE, 0277-786X, v. 8334

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

Fourth International Conference on Digital Image Processing (ICDIP 2012), edited by Mohamed Othman,
Sukumar Senthilkumar, Xie Yi, Proc. of SPIE Vol. 8334, 833401 · © 2012 SPIE
CCC code: 0277-786X/12/\$18 · doi: 10.1117/12.977568

Proc. of SPIE Vol. 8334 833401-1

The papers included 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. The papers published in these proceedings 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 this book:

Author(s), "Title of Paper," in *Fourth International Conference on Digital Image Processing (ICDIP 2012)*, edited by Mohamed Othman, Sukumar Senthilkumar, Xie Yi, Proceedings of SPIE Vol. 8334 (SPIE, Bellingham, WA, 2012) Article CID Number.

ISSN 0277-786X
ISBN 9780819489913

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 © 2012, 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/12/\$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, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first 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, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four 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. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

Part One

xvii *Conference Committee*
xix *Introduction*

FOURTH INTERNATIONAL CONFERENCE ON DIGITAL IMAGE PROCESSING (ICDIP 2012)

- 8334 02 **Online Levenberg-Marquardt algorithm for digital predistortion based on direct learning and indirect learning architectures** [8334-01]
L. Chen, Y. Liang, G. Wan, Nanchang Univ. (China)
- 8334 03 **Research on integrated monitoring and early warning platform for safe high speed railway operation** [8334-02]
X. Xiao, Y. Wang, L. Jia, C. Zhang, Beijing Jiaotong Univ. (China)
- 8334 04 **5/3 integer wavelet transform for images based on Visual C++** [8334-03]
L. Jiao, Q. Liu, H. Zhou, S. Yao, Y. Sun, C. Luo, Guizhou Univ. (China)
- 8334 05 **Research and design of circulation course resources architecture** [8334-05]
J. Song, W. Feng, J. Zhang, Beihang Univ. (China)
- 8334 06 **A unified framework for PCA, LDA, and LPP** [8334-06]
X. Qing, Library Huaihai Institute of Technology (China)
- 8334 07 **Mackay campus of environmental education and digital cultural construction: the application of 3D virtual reality** [8334-09]
S.-C. Chien, Y.-W. Chung, Y.-H. Lin, J.-Y. Huang, J.-T. Chang, C.-Y. He, Y.-W. Cheng, Aletheia Univ. (Taiwan)
- 8334 08 **Image segmentation based on non-subsampled contourlet and normalized cut** [8334-10]
Q. Li, Y. Liu, H. Liu, Z. Shi, Shandong Univ. (China)
- 8334 09 **An improved video median noise reduction algorithm for ambulance vehicle terminal monitoring system** [8334-11]
X.-M. Ma, H. Zhang, Xi'an Univ. of Science and Technology (China)
- 8334 0A **An automatic and effective approach in identifying tower cranes** [8334-12]
B. Yu, Institute of Remote Sensing Applications (China) and Graduate Univ. of Chinese Academy of Sciences (China); Z. Niu, L. Wang, Institute of Remote Sensing Applications (China); Y. Liu, Beihang Univ. (China)
- 8334 0B **Fractal dimension applied in highway surface crack detection** [8334-16]
B. Chen, W. Cao, Y. He, Northwestern Polytechnical Univ. (China)

- 8334 0C **An advanced algorithm for highway pavement fissure detection** [8334-17]
B. Chen, W. Cao, Y. He, Northwestern Polytechnical Univ. (China)
- 8334 0D **Tchebichef moment transform on image dithering for mobile applications** [8334-18]
F. Ernawan, Univ. Dian Nuswantoro (Indonesia); N. A. Abu, H. Rahmalan, Univ. Teknikal Malaysia Melaka (Malaysia)
- 8334 0E **Collaborative learning model inquiring based on digital game** [8334-19]
J. Yuan, Jiangxi Science and Technology Normal Univ. (China); R. Xing, Jiangxi Normal Univ. (China)
- 8334 0F **Web-based remote video monitoring system implemented using Java technology** [8334-20]
X. Li, Zhejiang Sci-Tech Univ. (China)
- 8334 0G **Automatic identification of noise in ice images using statistical features** [8334-22]
B. P. T, P. Subashini, Avinashilingam Institute for Home Science and Higher Education for Women (India)
- 8334 0H **An experimental study for Arabic text classification techniques** [8334-23]
B. Al-Shargabi, Al-Isra Univ. (Jordan); F. Olayah, Najran Univ. (Saudi Arabia)
- 8334 0I **Double regenerative amplification of picosecond pulses** [8334-25]
Z. Bai, L. Chen, Z. Bai, M. Chen, G. Li, Beijing Univ. of Technology (China)
- 8334 0J **The research on the hundred picosecond laser with high repetition rate and high pulse energy** [8334-26]
Z. Bai, Z. Bai, M. Chen, G. Li, Beijing Univ. of Technology (China)
- 8334 0K **The research on the micro-processing-used all-solid-state picosecond laser** [8334-27]
Z. Bai, Q. Ai, J. Duan, M. Chen, G. Li, Beijing Univ. of Technology (China)
- 8334 0L **Direction analysis algorithm using statistical approaches** [8334-28]
M. M. Hasan, P. K. Mishra, Banaras Hindu Univ. (India)
- 8334 0M **Autonomous flying system for grasslands and fields monitoring** [8334-29]
R. J. Tomczak, J. Rudowicz-Nawrocka, S. Kujawa, W. Mueller, Poznan Univ. of Life Sciences (Poland)
- 8334 0N **Mesh-growing surface reconstruction from sparse data based on the complex propagation scheme** [8334-30]
D. Hlindzich, Univ. of Heidelberg (Germany); A. Kryvanos, UltraOsteon GmbH (Germany)
- 8334 0O **Image bilevel thresholding based on multiscale gradient multiplication** [8334-32]
Y. Zou, China Three Gorges Univ. (China)
- 8334 0P **Improved imaging algorithm for bridge crack detection** [8334-33]
J. Lu, P. Song, K. Han, Wuhan Univ. of Technology (China)

- 8334 0Q **Region of interest in disparity mapping for distance estimation on stereo vision application** [8334-34]
R. A. Hamzah, K. A. A. Aziz, Univ. Teknikal Malaysia Melaka (Malaysia)
- 8334 0R **Digital image analysis of microstructure of granular soils based on numerical method** [8334-36]
X. Zhao, Southeast Univ. (China); T. M. Evans, North Carolina State Univ. (United States); J. Tao, China MCC17 Group Co., Ltd. (China)
- 8334 0S **Channel mismatch estimation in time-interleaved ADCs based on input dependent estimating model** [8334-37]
S. Liu, J. Wang, P. Qi, J. Chen, Beijing Univ. of Technology (China)
- 8334 0T **A new method based on multi-scale refinex for low contrast image enhancement** [8334-38]
B. Peng, H. Zhang, Q. Xie, Q. Liu, Southwest Univ. of Science and Technology (China)
- 8334 0U **Skew detection and correction of ancient Tamil documents using particle swarm optimization** [8334-39]
N. Sridevi, P. Subashini, Avinashilingam Institute for Home Science and Higher Education for Women (India)
- 8334 0V **A feature fusion method for feature extraction** [8334-42]
D. Tang, Dalian Maritime Univ. (China) and Dalian Neusoft Institute of Information (China); W. Zhang, Dalian Maritime Univ. (China); X. Qu, Dalian Engineering Consultation Ctr. (China); D. Wang, Dalian Neusoft Institute of Information (China)
- 8334 0W **Landslide monitoring at hillside residential area using GPS static and inclinometer techniques** [8334-45]
Z. Othman, W. A. Wan Aziz, A. Anuar, Univ. Teknologi Malaysia (Malaysia)
- 8334 0X **Research of image retrieval based on SIFT feature** [8334-46]
X. Xu, Beijing Univ. of Posts and Telecommunications (China); Y. Lv, Hebei Institute of Architecture and Civil Engineering (China); H. Zhang, Beijing Univ. of Posts and Telecommunications (China)
- 8334 0Y **Multilayer segmentation of stereo image using webcam** [8334-47]
R. Velswamy, Muthayammal Engineering College (India); S. Sellappan, Muthayammal Technical Campus (India); K. Sengottaiyan, Muthayammal Engineering College (India)
- 8334 0Z **Detection of concentric ellipses with the same orientation** [8334-48]
B. Hu, X. Zeng, L. Huang, Hohai Univ. (China)
- 8334 10 **An algorithm for fatigue pattern detection based on parallel Gabor and 1-nearest neighbor** [8334-53]
J. Chen, Y. Lin, L. Wang, Z. Jiang, G. Wang, Hunan Univ. (China)
- 8334 11 **An accurate iris location method for low quality iris images** [8334-56]
N. Wang, Q. Li, A. A. Abd El-Latif, T. Zhang, J. Peng, Harbin Institute of Technology (China)
- 8334 12 **A novel secret image sharing scheme based on chaotic system** [8334-58]
L. Li, A. A. Abd El-Latif, C. Wang, Q. Li, X. Niu, Harbin Institute of Technology (China)

- 8334 13 **Clutter removal techniques for GPR images in structure inspection tasks** [8334-59]
B. Vuksanovic, N. J. F. Bostanudin, Univ. of Portsmouth (United Kingdom)
- 8334 14 **A hybrid segmentation method using MRF and GVF snakes** [8334-60]
A. Rukletsov, R. Männer, Univ. of Heidelberg (Germany)
- 8334 15 **Saliency based SIFT keypoints filtration** [8334-61]
X. He, H. Jing, X. Bai, L. Li, Q. Han, X. Niu, Harbin Institute of Technology (China)
- 8334 16 **Bit-plane image coding algorithms based on compressed sensing** [8334-62]
G. Gao, C. Zhang, S. Zhao, K. Xiong, L. Shang, Zhejiang Univ. City College (China)
- 8334 17 **Research of streaming media services based on cloud computing** [8334-63]
Z. Wang, Anhui Huainan Normal Univ. (China)
- 8334 18 **Reconstruction algorithm of infrared video image based on compressed sensing** [8334-64]
Q. Xu, L. Yun, J. Shi, Yunnan Normal Univ. (China)
- 8334 19 **On analyzing colour constancy approach for improving SURF detector performance**
[8334-67]
M. A. Zulkiey, W. M. D. W. Zaki, A. Hussain, M. M. Mustafa, Univ. Kebangsaan Malaysia
(Malaysia)
- 8334 1A **A method of diameter measurement for spur gear based on camera calibration** [8334-69]
Z. Wu, J. Geng, Z. Xu, Shanghai Ocean Univ. (China)
- 8334 1B **All-derivable point in the algebra of operator matrices** [8334-71]
S. Wang, R. Tao, Luoyang Institute of Science and Technology (China)
- 8334 1C **Slow motion replay detection of tennis video based on color auto-correlogram** [8334-72]
X. Zhang, M. Zhi, Inner Mongolia Normal Univ. (China)
- 8334 1D **An algorithm of far-distance pulse laser energy density base on image processing** [8334-73]
J. Duan, X. Wang, H. Jiang, W. Jing, Changchun Univ. of Science and Technology (China)
- 8334 1E **Application of particle swarm optimization for improving the identification of image objects**
[8334-74]
N.-H. Chiu, Ching Yun Univ. (Taiwan); C.-E. Pu, Ministry of Justice (Taiwan); P.-D. Lin, Aviation
Safety Council (Taiwan); S.-S. Wang, Ching Yun Univ. (Taiwan)
- 8334 1F **Spectral-spatial classification to pattern recognition of hyperspectral imagery** [8334-75]
T.-C. Su, National Quemoy Univ. (Taiwan)
- 8334 1G **Remote telescope control of site testing with ASCOM** [8334-79]
K. Ji, B. Liang, Y. Peng, F. Wang, Kunming Univ. of Science and Technology (China)
- 8334 1H **An improved lane detection algorithm and the definition of the error rate standard** [8334-80]
C.-H. Yu, C.-Y. Su, National Taiwan Normal Univ. (Taiwan)
- 8334 1I **Filter design for gray image by down-sample and up-sample** [8334-84]
M. Gupta, Sikkim Manipal Institute of Technology (India)

- 8334 1J **The segmentation algorithm of man-made regions based on local fractal dimension** [8334-87]
D. Guo, L. Cao, Y. Zou, Jilin Univ. (China)
- 8334 1K **Based on support vector machines and new methods of clustering for web mining** [8334-88]
Y. Lv, X. Zhang, Y. Gu, Hebei Institute of Architecture and Civil Engineering (China)
- 8334 1L **Lens distortion calibration using homography** [8334-89]
X. Q. Xu, J. Y. Xia, Q. Zhang, J. L. Xiong, National Univ. of Defense Technology (China)
- 8334 1M **Capture data processing based on human eye's resolution** [8334-92]
X. Zhou, Shandong Institute of Business and Technology (China)
- 8334 1N **Multiple secret images in multiple sharing images** [8334-93]
R. Velswamy, Muthayammal Engineering College (India); S. Sellappan, Muthayammal Technical Campus (India); K. Sengottaiyan, S. Muthusamy, Muthayammal Engineering College (India)
- 8334 1O **A class of fuzzy sliding-mode control simulation for two-link robot manipulators** [8334-96]
C. Zhong, East China Jiaotong Univ. (China)
- 8334 1P **A novel method of robot location using RFID and stereo vision** [8334-97]
D. Chen, G. Zhang, Z. Li, Beihang Univ. (China)
- 8334 1Q **Vertical distribution of air voids based on x-ray computed tomography** [8334-100]
C. Hu, D. Wang, X. Zhang, L. Zhang, South China Univ. of Technology (China)
- 8334 1R **A stand for the image acquisition of composted material based on the sewage sludge** [8334-106]
S. Kujawa, R. J. Tomczak, T. Kluza, J. Weres, P. Boniecki, Poznan Univ. of Life Sciences (Poland)
- 8334 1S **Design on QoS routing management mechanism based on AntNet** [8334-107]
L. Liu, Guangzhou City Polytechnic (China)
- 8334 1T **The application of GIS in identifying mineral resources in Libya** [8334-108]
S. Rehibi, M. Wadi, A. Said, Al-Fateh Univ. (Libyan Arab Jamahiriya)
- 8334 1U **The application of computer-aided technologies in automotive styling design** [8334-109]
Z. Zheng, Agricultural Univ. of Hebei (China); J. Zhang, Baoding Radio and Television Univ. (China); Y. Zheng, Agricultural Univ. of Hebei (China)
- 8334 1V **Research on RFID technology in medical temperature measurement system and anti-collision** [8334-115]
W. Zhao, Handan College (China)
- 8334 1W **Profile parameters of wheelset detection for high speed freight train** [8334-119]
K. Yang, L. Ma, X. Gao, L. Wang, Southwest Jiaotong Univ. (China)
- 8334 1X **Edge detection using ant colony system algorithm** [8334-120]
M. Shao, X. Xu, China Jiliang Univ. (China)

- 8334 1Y **Improved rotational matching of SIFT and SURF** [8334-126]
K. M. Goh, M. M. Mokji, S. A. R. Abu-Bakar, Univ. Teknologi Malaysia (Malaysia)
- 8334 1Z **An improved multi-objective evolutionary memetic algorithm based on multi-population and its application** [8334-128]
Z. Xiao, Loudi Vocational and Technical College (China)
- 8334 20 **Human actions recognition using bag of optical flow words** [8334-133]
X. Zhang, Z. Miao, L. Wan, Beijing Jiaotong Univ. (China)
- 8334 21 **Study on the application of mobile internet cloud computing platform** [8334-135]
S. Gong, S. Fu, Z. Chen, Ningbo Univ. (China)
- 8334 22 **The study on privacy preserving data mining for information security** [8334-147]
X. Li, ChangChun Univ. (China)
- 8334 23 **The application of Taylor expansion to error density estimation nonparametric regression** [8334-150]
Q. Zeng, Q. Li, Guangdong Songshan Polytechnic College (China)
- 8334 24 **Analysis on vibration signal of pipeline for hydraulic exciting system** [8334-153]
X. Wei, North Univ. of China (China); H. Zhang, C. Lu, Taiyuan Univ. of Technology (China); Z. Lu, North Univ. of China (China)
- 8334 25 **Identification of malting barley varieties using computer image analysis and artificial neural networks** [8334-154]
K. Nowakowski, P. Boniecki, R. J. Tomczak, S. Kujawa, B. Raba, Poznan Univ. of Life Sciences (Poland)
- 8334 26 **Kinematics analysis on the shot putting technique of back gliding of China's female shot putters** [8334-156]
Z. Hui, Xi'an Univ. of Science and Technology (China)
- 8334 27 **The application of the Kohonen neural network in the nonparametric-quality-based classification of tomatoes** [8334-157]
P. Boniecki, K. Nowakowski, R. Tomczak, S. Kujawa, H. Piekarska-Boniecka, Poznan Univ. of Life Sciences (Poland)
- 8334 28 **The study on network security based on software engineering** [8334-158]
S. Jia, Q. Ao, ShangRao Normal Univ. (China)
- 8334 29 **Strokes-matting method based on sample search** [8334-160]
Y. Yu, Z. Miao, J. Mi, Beijing Jiaotong Univ. (China)

Part Two

- 8334 2A **Possibilities of neural image analysis implementation in monitoring of microalgae production as a substrate for biogas plant** [8334-162]
S. Cerbin, Adam Mickiewicz Univ. (Poland); K. Nowakowski, J. Dach, K. Pilarski, P. Boniecki, J. Przybył, A. Lewicki, Poznan Univ. of Life Sciences (Poland)

- 8334 2B **Neural image analysis for estimating aerobic and anaerobic decomposition of organic matter based on the example of straw decomposition** [8334-163]
P. Boniecki, K. Nowakowski, P. Slosarz, J. Dach, K. Pilarski, Poznan Univ. of Life Sciences (Poland)
- 8334 2C **Noisy image upsampling based on improved bilateral filtering combined with edge extraction** [8334-164]
W. Xie, Wuhan Univ. (China); J. Gao, Central China Normal Univ. (China); L. Lin, Z. Tu, Wuhan Univ. (China)
- 8334 2D **Generating method study of colored processes** [8334-165]
Q. Shi, Naval College of Submarine (China); P. Wang, Naval Univ. of Engineering (China); L. Hong, Navy Force No. 91267 (China); D. Li, Naval Univ. of Engineering (China)
- 8334 2E **Generating method study of Gaussian mixture processes** [8334-167]
Y. Xu, P. Wang, Naval Univ. of Engineering (China); L. Hong, Navy Force No. 91267 (China); D. Li, Naval Univ. of Engineering (China)
- 8334 2F **Developing QNX graphical interface programs based on virtual machine technique** [8334-168]
W. Liu, F. Liu, Naval Univ. of Engineering (China); L. Hong, Navy Force No. 91267 (China); D. Li, Naval Univ. of Engineering (China)
- 8334 2G **The research of virtual reality hybrid collision detection algorithm** [8334-169]
B. Yang, Liaoning Technical Univ. (China)
- 8334 2H **A SVM regression predicting model for indentation depth of welding spot based on digital image processing** [8334-174]
J. Zhang, P. Zhang, Lanzhou Univ. of Technology (China)
- 8334 2I **A user credit assessment model based on clustering ensemble for broadband network new media service supervision** [8334-175]
F. Liu, S. Cao, Communication Univ. of China (China); R. Lu, Communication Univ. of China (China) and Xinhua News Agency (China)
- 8334 2J **Data mining technique for a secure electronic payment transaction using MJK-RSA in mobile computing** [8334-176]
R. B. G. V., N. G., S. A., P. M., Sri Venkateswara Univ. (India)
- 8334 2K **Research of communication application program based on Windows Sockets** [8334-180]
H. Zhang, Jilin Univ. of Finance and Economics (China); R. Bai, Jilin Teachers' Institute of Engineering and Technology (China); L. Wang, Jilin Univ. of Finance and Economics (China); X. Han, Changchun Univ. of Technology (China); Q. Li, H. Sun, Jilin Univ. of Finance and Economics (China)
- 8334 2L **Dynamic recurrent Elman neural network based on immune clonal selection algorithm** [8334-181]
L. Wang, Jilin Univ. of Finance and Economics (China); X. Han, Changchun Univ. of Technology (China); M. Li, H. Sun, Q. Li, Jilin Univ. of Finance and Economics (China)

- 8334 2M **Ultrasound image despeckling based on MMSE estimation in nonsubsampling contourlet domain** [8334-183]
S. Yan, J. Yuan, C. Hou, Institute of Acoustics (China)
- 8334 2N **Image processing with genetic algorithm in a raisin sorting system based on machine vision** [8334-184]
M. Abbasgholipour, B. M. Alasti, V. Abbasgholipour, A. Derakhshan, M. Abbasgholipour, S. Rahmatfah, S. Rahmatfah, R. Habibifar, Islamic Azad Univ. (Iran, Islamic Republic of)
- 8334 2O **Research on soil organic carbon spatial distribution in Qilian Mountain based on geographic information system and spatial analysis technology** [8334-185]
J. Zhang, H. Tong, Henan Univ. (China); G. Jiao, Lanzhou General Hospital of Lanzhou Military Command (China); L. Zhao, Guangdong Univ. of Business Studies (China); G. Li, Henan Univ. (China)
- 8334 2P **The research of computer multimedia assistant in college English listening** [8334-187]
Q. Zhang, Xi'an External Affairs Institute (China)
- 8334 2Q **The research on electronic commerce security payment system based on set protocol** [8334-188]
H. Guo, Jilin Agricultural Univ. (China)
- 8334 2R **Robust face recognition using fusion of multiscale experts** [8334-191]
I. Naseem, Karachi Institute of Economics and Technology (Pakistan); M. A. Alim, Aligarh Institute of Technology (Pakistan)
- 8334 2S **Applications of schema theory in information security teaching** [8334-194]
C. Qiu, Jilin Univ. of Finance and Economics (China); W. Zhao, Northeast Normal Univ. (China); J. Han, Jilin Univ. of Finance and Economics (China) and Jilin Univ. (China); J. Jiang, Jilin Univ. of Finance and Economics (China)
- 8334 2T **Vision based assistive technology for people with dementia performing activities of daily living (ADLs): an overview** [8334-196]
M. A. As'ari, U. U. Sheikh, Univ. Teknologi Malaysia (Malaysia)
- 8334 2U **Dual watermarking scheme for secure buyer-seller watermarking protocol** [8334-198]
N. Mehra, Samrat Ashok Technological Institute (India); M. Shandilya, Maulana Azad National Institute of Technology (India)
- 8334 2V **Hybrid image segmentation using fuzzy c-means and gravitational search algorithm** [8334-199]
E. M. Majid, M. A. As'ari, U. U. Sheikh, S. A. R. Abu-Bakar, Univ. Teknologi Malaysia (Malaysia)
- 8334 2W **Image super-resolution by combining the learning-based method and sparse-representation** [8334-200]
Q. Xie, Huazhong Univ. of Science and Technology (China) and South-Central Univ. of Nationalities (China)
- 8334 2X **Player detection using one-class SVM** [8334-201]
X. Bai, T. Zhang, C. Wang, Q. Li, X. Niu, Harbin Institute of Technology (China)

- 8334 2Y **Secure data sharing in public cloud** [8334-202]
K. Venkataramana, N. K. R., S. Tatekalva, P. M., Sri Venkateswara Univ. (India)
- 8334 2Z **A secure data hiding method based on preservation of saturated pixels** [8334-206]
W. Hong, Yu Da Univ. (Taiwan); J. Chen, National Taichung Univ. of Science and Technology (Taiwan); M.-C. Wu, Yu Da Univ. (Taiwan); C.-W. Shiu, National Chung Hsing Univ. (Taiwan)
- 8334 30 **A new image segmentation method via fusing NCut eigenvectors maps** [8334-207]
T. Zhang, A. A. Abd El-Latif, N. Wang, Q. Li, X. Niu, Harbin Institute of Technology (China)
- 8334 31 **Flow rate effect on both efficiency and maximum stored power density of the amplifier in a dye laser** [8334-209]
N. Miri, S. Abolhosseini, M. Mollabashi, S. Jelvani, Iran Univ. of Science and Technology (Iran, Islamic Republic of)
- 8334 32 **Target Lock: robust real time adaptive visual tracker** [8334-210]
M. H. Wahab, F. S. Abas, Multimedia Univ. (Malaysia)
- 8334 33 **Study of the precision guided communication of digital television** [8334-214]
L. Liu, Harbin Normal Univ. (China)
- 8334 34 **An enhanced smoothness evaluation for reversible data hiding in encrypted images** [8334-215]
W. Hong, Yu Da Univ. (Taiwan); T.-S. Chen, National Taichung Univ. of Science and Technology (Taiwan); H.-Y. Wu, H.-L. Chang, Yu Da Univ. (Taiwan)
- 8334 35 **Applied learning-based color tone mapping for face recognition in video surveillance system** [8334-216]
C. T. Yew, S. A. Suandi, Univ. Sains Malaysia (Malaysia)
- 8334 36 **2DPCA-based row-kNN distance computation for face recognition** [8334-217]
W. H. Al-Arashi, S. A. Suandi, Univ. Sains Malaysia (Malaysia)
- 8334 37 **Modelling effective diagnosis of risk complications in gestational diabetes mellitus: an e-diabetic expert system for pregnant women** [8334-218]
S. E., V. L. K., Sri Venkateswara Univ. (India); C. K. E., Sri Vidyanikethan Engineering College (India); P. M., Sri Venkateswara Univ. (India)
- 8334 38 **Effectiveness of Haar wavelet and grayscale features in different illumination for facial features detection** [8334-220]
C. Y. Yeong, S. A. Suandi, Univ. Sains Malaysia (Malaysia)
- 8334 39 **Pose invariant face recognition for video surveillance system using kernel principle component analysis** [8334-221]
S. Damavandinejadmonfared, W. H. Al-Arashi, S. A. Suandi, Univ. Sains Malaysia (Malaysia)
- 8334 3A **Study on macroblock level distortion-quantization models** [8334-223]
L. Guo, H. Yin, J. Wang, N. Xu, J. Tan, China JiLiang Univ. (China)

- 8334 3C **A fingerprint key binding algorithm based on vector quantization and error correction** [8334-228]
L. Li, Q. Wang, K. Lv, Graduate Univ. of Chinese Academy of Sciences (China); N. He, Beijing Union Univ. (China)
- 8334 3D **An improved method for network congestion control** [8334-230]
J. Zhang, Northwest Univ. (China) and ShangLuo Univ. (China)
- 8334 3E **3D model retrieval method based on mesh segmentation** [8334-231]
Y. Gan, Y. Tang, Q. Zhang, Southwest Univ. (China)
- 8334 3F **A new image encryption based on chaotic systems and singular value decomposition** [8334-232]
A. A. Abd El-Latif, Harbin Institute of Technology (China) and Menoufia Univ. (Egypt); L. Li, N. Wang, Q. Li, X. Niu, Harbin Institute of Technology (China)
- 8334 3G **Application of CDIO model in major courses for computer profession** [8334-233]
X. Yang, X. Han, North Univ. of China (China)
- 8334 3H **Multi-beam interference suppression method in satellite navigation system** [8334-235]
X. Zhang, L. Wang, L. Chen, Y. Chen, Northwestern Polytechnical Univ. (China)
- 8334 3I **Image noise severity metric** [8334-245]
D. B. L. Bong, Univ. Malaysia Sarawak (Malaysia); B. E. Khoo, Univ. Sains Malaysia (Malaysia)
- 8334 3J **Motion simulation of air cushion vehicle in beach-landing** [8334-246]
N. Ji, Harbin Engineering Univ. (China)
- 8334 3K **Petals' shape descriptor for blooming flowers recognition** [8334-250]
W.-N. Tan, Y.-F. Tan, A.-C. Koo, Y.-P. Lim, Multimedia Univ. (Malaysia)
- 8334 3L **A multi-object detection and tracking method in wireless video sensor networks** [8334-254]
Z. Chu, J. Zhang, L. Zhuo, Beijing Univ. of Technology (China)
- 8334 3M **Accuracy assessment of geo-locations using multiresolution interpolated DEMs** [8334-256]
M. M. Waqar, R. Mumtaz, N. Sufyan, M. Mumtaz, National Univ. of Sciences and Technology (Pakistan)
- 8334 3N **Analysis of influential factors for weathering of stone relics** [8334-257]
F. Liu, C. Xie, Harbin Institute of Technology (China); L. Zhong, Guangdong Vocational College of Science and Trade (China); D. Song, Harbin Institute of Technology (China)
- 8334 3O **Image coding compression based on DCT** [8334-258]
F. Feng, P. Liu, B. Jiang, Qingdao Huanghai College (China)
- 8334 3P **Mobile computing device as tools for college student education: a case on flashcards application** [8334-262]
C. Kang, Linyi Univ. (China)
- 8334 3Q **Applied research of embedded WiFi technology in the motion capture system** [8334-264]
H. Gui, Anhui Univ. of Science and Technology (China)

- 8334 3R **Evolutionary computation hybrids with Monte Carlo method for differential equation** [8334-267]
S.-P. Wu, Wuhan Univ. (China)
- 8334 3S **A test sheet generating algorithm based on intelligent genetic algorithm and hierarchical planning** [8334-268]
P. Gu, Z. Niu, X. Chen, W. Chen, Beijing Institute of Technology (China)
- 8334 3T **Enhancing the quality of service of video streaming over MANETs using MDC and FEC** [8334-269]
W. Zang, R. Guo, Handan College (China)
- 8334 3U **Application studies of RFID technology in the process of coal logistics transport** [8334-270]
B. Qiao, Taiyuan Univ. of Technology (China) and Shanxi Finance and Taxation College (China); X. Chang, Taiyuan Univ. of Technology (China); M. Hao, D. Kong, Shanxi Finance and Taxation College (China)
- 8334 3V **Music video shot segmentation using independent component analysis and keyframe extraction based on image complexity** [8334-272]
W. Li, Shanghai Univ. (China) and Hunan Univ. of Technology (China); T. Chen, Hunan Univ. of Technology (China); W. Zhang, Y. Shi, J. Li, Shanghai Univ. (China)
- 8334 3W **Analysis of security and threat of underwater wireless sensor network topology** [8334-274]
G. Yang, Z. Wei, Y. Cong, D. Jia, Ocean Univ. of China (China)
- 8334 3X **Design of high-speed electrical capacitance tomography system** [8334-275]
Y. Gao, Y. Zhang, East China Jiaotong Univ. (China); W. Wang, Jiangxi Vocational and Technical College of Electricity (China)
- 8334 3Y **Study of a varied hysteretic-band current control technology** [8334-276]
M. Ye, P. Song, S. Li, East China Jiaotong Univ. (China)
- 8334 3Z **The simulation on diode-clamped five-level converters common-mode voltage suppression with zero-vector PWM strategy** [8334-279]
Y. Zhang, Y. Gao, L. Long, East China Jiaotong Univ. (China)
- 8334 40 **The research of software requirements analysis of core needs** [8334-280]
A. Cai, Jiangxi Univ. of Technology (China)
- 8334 41 **The research of design mode selection based on test first** [8334-281]
S. Xiao, Q. Zhan, Jiangxi Univ. of Technology (China)
- 8334 42 **Research on positioning and tracking system of construction workers based on ZigBee** [8334-282]
Z. Y. Zhang, Zhejiang Univ. of Science and Technology (China)
- 8334 43 **The research of randomized incremental construction method based on compressed quadtree** [8334-283]
Q. Zhan, S. Xiao, Jiangxi Univ. of Technology (China)

- 8334 44 **A novel evaluation method for perceptual hash algorithm in authentication mode** [8334-284]
Z. Liu, Q. Li, J. Liu, X. Niu, Harbin Institute of Technology (China)
- 8334 45 **Face recognition using improved local line binary pattern** [8334-285]
W. S. Chai, B. A. Rosdi, S. A. Suandi, Univ. Sains Malaysia (Malaysia)
- 8334 46 **An anti-jamming framework of spread spectrum communications with ICA** [8334-287]
M. Yu, M. Wang, S. Guan, Nanjing Telecommunication Technology Institute (China)
- 8334 47 **Circuit simulation for large-scale MOSFET and lossy coupled transmission line circuits using multi-rate iterated timing analysis algorithm** [8334-288]
C.-J. Chen, T.-H. Shin, Chinese Culture Univ. (Taiwan)
- 8334 48 **Large-scale MOSFET and interconnect circuit simulation using waveform relaxation and transmission line time step control** [8334-289]
C.-J. Chen, A. Y. Chang, C.-L. Tsai, C.-J. Lee, L.-P. Chou, T.-H. Shin, Chinese Culture Univ. (Taiwan)
- 8334 49 **The investigation and implementation of real-time face pose and direction estimation on mobile computing devices** [8334-290]
D. Fu, Linyi Univ. (China) and The Univ. of Suwon (Korea, Republic of); L. Gao, Linyi Univ. (China); S. T. Jhang, The Univ. of Suwon (Korea, Republic of)
- 8334 4A **An investigation and implementation of real-time image cropping on mobile computing devices based on saliency and face detection** [8334-291]
L. Gao, Linyi Univ. (China); D. Fu, Linyi Univ. (China) and The Univ. of Suwon (Korea, Republic of); S. T. Jhang, The Univ. of Suwon (Korea, Republic of)
- 8334 4B **Threshold extended ID3 algorithm** [8334-292]
A. B. R. Kumar, C. P. Ramesh, E. Madhusudhan, P. M., Sri Venkateswara Univ. (India)
- 8334 4C **An application on an updated snake model in vehicle image tracking system** [8334-295]
J. Qian, D. Liu, Tsinghua Univ. (China); W. Yang, Beijing Research Ctr. of Urban Systems Engineering (China); T. Xing, X. Li, National Astronomical Observatories of China (China); Q. Yang, S. Luo, Tsinghua Univ. (China)
- 8334 4D **The fault diagnosis method of integrated navigation system based on covariance intersection filtering** [8334-297]
C. Liu, Y. Xu, Civil Aviation Flight Univ. of China (China)
- 8334 4E **Realization of abutals rendering on rugged terrain** [8334-298]
B. Wang, G. Hu, J. Luo, G. Ni, Q. Feng, Z. Deng, PLA Univ. of Science and Technology (China)
- 8334 4F **Random forest using tree selection method to classify unbalanced data** [8334-300]
B. Xu, Y. Ye, Q. Wang, Harbin Institute of Technology (China); J. Li, Shenzhen Institutes of Advanced Technology (China); X. Chen, Harbin Institute of Technology (China)
- 8334 4G **In-depth blog retrieval based on improved pivoted normalization weighting coefficient** [8334-301]
J. Guan, S. Li, W. Xu, G. Chen, J. Guo, Beijing Univ. of Posts and Telecommunications (China)

- 8334 4H **Incomplete information system decision method based on non-optimum analysis** [8334-303]
J. Zou, J. Liu, Y. Zhou, Y. Peng, Commanding Communications Academy of PLA (China)
- 8334 4I **An improved algorithm for discovering the models with short loops constructs** [8334-304]
J. Feng, Sun Yat-Sen Univ. (China) and HanShan Normal Univ. (China); H. Chang, Sun Yat-Sen Univ. (China); X. Lin, HanShan Normal Univ. (China)
- 8334 4J **Shape-based nuclei area of digitized pap smear images** [8334-305]
I. Muhimmah, R. Kurniawan, Univ. Islam Indonesia (Indonesia)
- 8334 4K **An image inpainting method based on image retrieval** [8334-307]
J. Mi, Z. Miao, Y. Yu, Beijing Jiaotong Univ. (China)
- 8334 4L **An ink-diffusion-based rendering method for Chinese ink painting** [8334-308]
Y. Zhang, Z. Miao, Beijing Jiaotong Univ. (China); Y. Liu, W. Zhou, Siemens Ltd. (China)
- 8334 4M **A novel edge-based criterion for determining the number of thresholds for multilevel image thresholding** [8334-309]
N. Jahangir, C.-K. Ho, J. Abdullah, Multimedia Univ. (Malaysia)

Author Index

Conference Committee

Honorary Chair

Xudong Jiang, Nanyang Technological University (Singapore)

Conference Chairs

Mohamed Othman, Universiti Putra Malaysia (Malaysia)

Srikanta Murthy. K, PES School of Engineering (India)

Program Committee Chairs

L. Jaba Sheela, Anna University (India)

Ismail Rakip Karas, Karabük University (Turkey)

Sihem Mostefai, King Saud University (Saudi Arabia)

Sukumar Senthilkumar, Universiti Sains Malaysia (Malaysia)

Soumaya Yacout, Polytechnique de Montréal (Canada)

Publication Chairs

Xiaoxiao Zhou, Nanyang Technological University (Singapore)

Xie Yi, IACSIT Press (Singapore)

Hadj Hamma Tadjine, Clausthal University of Technology (Germany)

International Advisory Board

V. S. Giridhar, Hasvita Institute of Engineering and Technology (India)

Olumide A. Odeyemi, Universiti Kebangsaan (Malaysia)

M. Ersin Yumer, Defense Industries Research and Development
Institute (Turkey)

Yogita K. Dubey, Yeshwantrao Chavan College of Engineering (India)

Saraswathi Janaki, R. M. K. Engineering College (India)

Farhad Keissarian, University of Wollongong (Australia)

Rehna V. J., Atria Institute of Technology (India)

Amna Ali, Ajou University (Korea, Republic of)

Seyed Mostafa Nowee, Chemical Engineering (Iran)

Ahmad Fairuz Bin Omar, Universiti Sains Malaysia (Malaysia)

Introduction

Dear Distinguished Delegates and Guests,

The organizing committee warmly welcomed our distinguished delegates and guests to the 2012 International Conference on Digital Image Processing (ICDIP 2012) which was held 7–8 April 2012 in Kuala Lumpur, Malaysia.

The ICDIP 2012 was cosponsored by International Association of Computer Science and Information Technology (IACSIT) and Singapore Institute of Electronics, and supported by the University of Electronics Science and Technology of China (UESTC). The conference was organized to gather members of our international community of scientists so that researchers from around the world could present their cutting-edge work, expanding our community's knowledge and insight into the significant challenges currently being addressed in that research. The conference program committee was quite diverse and truly international with membership from the Americas, Europe, Asia, Africa and Oceania.

This proceedings volume contains fully refereed papers presented at the ICDIP 2012. The main conference themes and tracks are digital image processing. The main goal of these events is to provide international scientific forums for exchange of new ideas in a number of fields that interact in-depth through discussions with their peers from around the world. Both inward research (core areas of digital image processing) and outward research (multidisciplinary, interdisciplinary, and applications) were covered during these events. The conference solicited and gathered technical research submissions related to all aspects of major conference themes and tracks. All of the submitted papers in these proceedings have been peer reviewed by the reviewers drawn from the scientific committee, external reviewers, and editorial board depending on the subject matter of the paper. Reviewing and initial selection were undertaken electronically. After the rigorous peer-review process, the submitted papers were selected on the basis of originality, significance, and clarity for the purpose of the conference. The selected papers and additional late-breaking contributions to be presented as lectures made for an exciting technical program. The conference program was extremely rich, featuring high-impact presentations. The high quality of the program – which was guaranteed by the presence of an unparalleled number of internationally recognized top experts – can be assessed when reading the contents of the program. The conference was therefore a unique event, where attendees were able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other fields. The program was structured to favor interactions among attendees coming from many diverse horizons, scientifically, geographically, from academia and from industry.

We are grateful to all those who have contributed to the success of the ICDIP 2012. We would like to thank the program chairs, organization staff, and the members of the program committees for their work. We hope that all participants and other interested readers benefit scientifically from these proceedings and also find it stimulating in the process.

Finally, we hope that you had a unique, rewarding, and enjoyable week at the ICDIP 2012 in Kuala Lumpur, Malaysia.

With our warmest regards,

The ICDIP 2012 Organizing Committees