

Contents

Advances in Data Analytics and Pattern Recognition with Applications

Adaptation Approaches in Unsupervised Learning: A Survey of the State-of-the-Art and Future Directions	3
<i>JunHong Wang, YunQian Miao, Alaa Khamis, Fakhri Karray, and Jiye Liang</i>	
Semi-supervised Dictionary Learning Based on Hilbert-Schmidt Independence Criterion	12
<i>Mehrdad J. Gangeh, Safaa M.A. Bedawi, Ali Ghodsi, and Fakhri Karray</i>	
Transferring and Compressing Convolutional Neural Networks for Face Representations	20
<i>Jakob Grundström, Jiandan Chen, Martin Georg Ljungqvist, and Kalle Åström</i>	
Efficient Melanoma Detection Using Texture-Based RSurf Features	30
<i>Tomáš Majtner, Sule Yildirim-Yayilgan, and Jon Yngve Hardeberg</i>	
High-Frequency Spectral Energy Map Estimation Based Gait Analysis System Using a Depth Camera for Pathology Detection	38
<i>Didier Ndayikengurukiye and Max Mignotte</i>	
Combining Low-Level Features of Offline Questionnaires for Handwriting Identification	46
<i>Dirk Siegmund, Tina Ebert, and Naser Damer</i>	
Person Profiling Using Image and Facial Attributes Analyses on Unconstrained Images Retrieved from Online Sources	55
<i>Elisabeth Wetzinger, Michael Atanasov, and Martin Kampel</i>	
Palm Print Identification and Verification Using a Genetic-Based Feature Extraction Technique	63
<i>Joseph Shelton, John Jenkins, and Kaushik Roy</i>	
PCA-Based Face Recognition: Similarity Measures and Number of Eigenvectors	69
<i>Sushma Niket Borade and Ratnadeep R. Deshmukh</i>	

Image Enhancement and Restoration

Sinogram Restoration Using Confidence Maps to Reduce Metal Artifact in Computed Tomography	81
<i>Louis Frédérique, Benoit Recur, Sylvain Genot, Jean-Philippe Domenger, and Pascal Desbarats</i>	
Enhancement of a Turbulent Degraded Frame Using 2D-DTW Averaging . . .	90
<i>Rishaad Abdoola and Barend van Wyk</i>	
Denoising Multi-view Images Using Non-local Means with Different Similarity Measures.	101
<i>Monagi H. Alkinani and Mahmoud R. El-Sakka</i>	
Image Denoising Using Euler-Lagrange Equations for Function-Valued Mappings.	110
<i>Daniel Otero, Davide La Torre, and Edward R. Vrscay</i>	
Runtime Performance Enhancement of a Superpixel Based Saliency Detection Model	120
<i>Qazi Aitezaz Ahmed and Mahmood Akhtar</i>	
Total Variation Minimization for Measure-Valued Images with Diffusion Spectrum Imaging as Motivation.	131
<i>Davide La Torre, Franklin Mendivil, Oleg Michailovich, and Edward R. Vrscay</i>	

Image Quality Assessment

Quality Assessment of Spectral Reproductions: The Camera's Perspective . . .	141
<i>Steven Le Moan</i>	
An Image Database for Design and Evaluation of Visual Quality Metrics in Synthetic Scenarios	148
<i>Christopher Haccius and Thorsten Herfet</i>	
Perceptual Comparison of Multi-exposure High Dynamic Range and Single-Shot Camera RAW Photographs	154
<i>Tomasz Sergej and Radosław Mantiuk</i>	
Objective Image Quality Measures of Degradation in Compressed Natural Images and their Comparison with Subjective Assessments	163
<i>Alison K. Cheeseman, Ilona A. Kowalik-Urbaniak, and Edward R. Vrscay</i>	

Image Segmentation

Human Detection Based on Infrared Images in Forestry Environments.	175
<i>Ahmad Ostovar, Thomas Hellström, and Ola Ringdahl</i>	
Cell Segmentation Using Level Set Methods with a New Variance Term. . . .	183
<i>Zuzana Bilková, Jindřich Soukup, and Václav Kučera</i>	
Video Object Segmentation Based on Superpixel Trajectories.	191
<i>Mohamed A. Abdelwahab, Moataz M. Abdelwahab, Hideaki Uchiyama, Atsushi Shimada, and Rin-ichiro Taniguchi</i>	
Interactive 3D Segmentation of Lymphatic Valves in Confocal Microscopic Images.	198
<i>Jonathan-Lee Jones and Xianghua Xie</i>	
Automatic Nonlinear Filtering and Segmentation for Breast Ultrasound Images	206
<i>Mohamed Elawady, Ibrahim Sadek, Abd El Rahman Shabayek, Gerard Pons, and Sergi Ganau</i>	

Pattern Analysis and Recognition

Phenotypic Integrated Framework for Classification of ADHD Using fMRI . .	217
<i>Atif Riaz, Eduardo Alonso, and Greg Slabaugh</i>	
Directional Local Binary Pattern for Texture Analysis	226
<i>Abuobayda M. Shabat and Jules-Raymond Tapamo</i>	
Kernel Likelihood Estimation for Superpixel Image Parsing	234
<i>Hasan F. Ates, Sercan Sunetci, and Kenan E. Ak</i>	
Multinomial Sequence Based Estimation Using Contiguous Subsequences of Length Three	243
<i>B. John Oommen and Sang-Woon Kim</i>	

Feature Extraction

Rotation Tolerant Hand Pose Recognition Using Aggregation of Gradient Orientations.	257
<i>Pekka Sangi, Matti Matilainen, and Olli Silvén</i>	
Extracting Lineage Information from Hand-Drawn Ancient Maps	268
<i>Ehab Essa, Xianghua Xie, Richard Turner, Matthew Stevens, and Daniel Power</i>	

Evaluation of Stochastic Gradient Descent Methods for Nonlinear Mapping of Hyperspectral Data	276
<i>Evgeny Myasnikov</i>	
Automatic Selection of the Optimal Local Feature Detector	284
<i>Bruno Ferrarini, Shoaib Ehsan, Naveed Ur Rehman, Aleš Leonardis, and Klaus D. McDonald-Maier</i>	
Multiple Object Scene Description for the Visually Impaired Using Pre-trained Convolutional Neural Networks.	290
<i>Haikel Alhichri, Bilel Bin Jdira, Yacoub bazi, and Naif Alajlan</i>	
Detection and Recognition	
Effective Comparison Features for Pedestrian Detection.	299
<i>Kang-Kook Kong, Jong-Woo Lee, and Ki-Sang Hong</i>	
Counting People in Crowded Scenes via Detection and Regression Fusion. . .	309
<i>Cemil Zalluhoglu and Nazli Ikizler-Cinbis</i>	
Multi-graph Based Salient Object Detection	318
<i>Idir Filali, Mohand Said Allili, and Nadjia Benblidia</i>	
Analysis of Temporal Coherence in Videos for Action Recognition.	325
<i>Adel Saleh, Mohamed Abdel-Nasser, Farhan Akram, Miguel Angel Garcia, and Domenec Puig</i>	
Effectiveness of Camouflage Make-Up Patterns Against Face Detection Algorithms.	333
<i>Vojtěch Frič</i>	
A Comparative Study of Vision-Based Traffic Signs Recognition Methods. . .	341
<i>Nadra Ben Romdhane, Hazar Mliki, Rabii El Beji, and Mohamed Hammami</i>	
A Copy-Move Detection Algorithm Using Binary Gradient Contours	349
<i>Andrey Kuznetsov and Vladislav Myasnikov</i>	
Object Detection and Localization Using Deep Convolutional Networks with Softmax Activation and Multi-class Log Loss	358
<i>AbdulWahab Kabani and Mahmoud R. El-Sakka</i>	
Clustering-Based Abnormal Event Detection: Experimental Comparison for Similarity Measures' Efficiency	367
<i>Najla Bouarada Ghrab, Emna Fendri, and Mohamed Hammami</i>	

Matching

Improved DSP Matching with RPCA for Dense Correspondences	377
<i>Fanhuai Shi and Yanli Zhang</i>	
An Approach to Improve Accuracy of Photo-to-Sketch Matching.	385
<i>Georgy Kukharev, Yuri Matveev, and Paweł Forczmański</i>	

Motion and Tracking

Bio-inspired Boosting for Moving Objects Segmentation	397
<i>Isabel Martins, Pedro Carvalho, Luís Corte-Real, and José Luis Alba-Castro</i>	
A Lightweight Face Tracking System for Video Surveillance	407
<i>Andrei Oleinik</i>	
Single Droplet Tracking in Jet Flow	415
<i>Gokhan Alcan, Morteza Ghorbani, Ali Kosar, and Mustafa Unel</i>	
Video Based Group Tracking and Management	423
<i>Américo Pereira, Alexandra Familiar, Bruno Moreira, Teresa Terroso, Pedro Carvalho, and Luís Côte-Real</i>	

3D Computer Vision

Calibration of Shared Flat Refractive Stereo Systems.	433
<i>Tim Dolereit and Uwe Freiherr von Lukas</i>	
3D Structured Light Scanner on the Smartphone	443
<i>Tomislav Pribanić, Tomislav Petković, Matea Donlić, Vincent Angladon, and Simone Gasparini</i>	
Stereo and Active-Sensor Data Fusion for Improved Stereo Block Matching. . .	451
<i>Stefan-Daniel Suvei, Leon Bodenhagen, Lilita Kiforenko, Peter Christiansen, Rasmus N. Jørgensen, Anders G. Buch, and Norbert Krüger</i>	
Dense Lightfield Disparity Estimation Using Total Variation Regularization . . .	462
<i>Nuno Barroso Monteiro, João Pedro Barreto, and José Gaspar</i>	
Target Position and Speed Estimation Using LiDAR	470
<i>Enes Dayangac, Florian Baumann, Josep Aulinas, and Matthias Zobel</i>	

RGB-D Camera Applications

Combining 3D Shape and Color for 3D Object Recognition	481
<i>Susana Brandão, João P. Costeira, and Manuela Veloso</i>	

Privacy-Preserving Fall Detection in Healthcare Using Shape and Motion
Features from Low-Resolution RGB-D Videos 490
Irene Yu-Hua Gu, Durga Priya Kumar, and Yixiao Yun

Visual Perception in Robotics

Proprioceptive Visual Tracking of a Humanoid Robot Head Motion 503
João Peixoto, Vitor Santos, and Filipe Silva

A Hybrid Top-Down Bottom-Up Approach for the Detection of Cuboid
Shaped Objects 512
Rafael Arrais, Miguel Oliveira, César Toscano, and Germano Veiga

The Impact of Convergence Cameras in a Stereoscopic System for AUVs . . . 521
João Aguiar, Andry Maykol Pinto, Nuno A. Cruz, and Anibal C. Matos

Biometrics

Gender Recognition from Face Images Using a Fusion of SVM Classifiers . . . 533
George Azzopardi, Antonio Greco, and Mario Vento

Kinship Verification from Faces via Similarity Metric Based Convolutional
Neural Network 539
Lei Li, Xiaoyi Feng, Xiaoting Wu, Zhaoqiang Xia, and Abdenour Hadid

Combination of Topological and Local Shape Features for Writer's Gender,
Handedness and Age Classification 549
Nesrine Bouadjenek, Hassiba Nemmour, and Youcef Chibani

Hybrid Off-Line Handwritten Signature Verification Based on Artificial
Immune Systems and Support Vector Machines 558
Yasmine Serdouk, Hassiba Nemmour, and Youcef Chibani

Selection of User-Dependent Cohorts Using Bezier Curve
for Person Identification. 566
*Jogendra Garain, Ravi Kant Kumar, Dakshina Ranjan Kisku,
and Goutam Sanyal*

Biomedical Imaging

Bag of Visual Words Approach for Bleeding Detection in Wireless Capsule
Endoscopy Images 575
Indu Joshi, Sunil Kumar, and Isabel N. Figueiredo

Central Medialness Adaptive Strategy for 3D Lung Nodule Segmentation
in Thoracic CT Images 583
Luis Gonçalves, Jorge Novo, and Aurélio Campilho

A Self-learning Tumor Segmentation Method on DCE-MRI Images	591
<i>Szabolcs Urbán, László Ruskó, and Antal Nagy</i>	
Morphological Separation of Clustered Nuclei in Histological Images	599
<i>Shereen Fouad, Gabriel Landini, David Randell, and Antony Galton</i>	
Fitting of Breast Data Using Free Form Deformation Technique	608
<i>Hooshiar Zolfagharnasab, Jaime S. Cardoso, and Hélder P. Oliveira</i>	
Domain Adaptive Classification for Compensating Variability in Histopathological Whole Slide Images	616
<i>Michael Gadermayr, Martin Strauch, Barbara Mara Klinkhammer, Sonja Djudjaj, Peter Boor, and Dorit Merhof</i>	
Comparison of Flow Cytometry and Image-Based Screening for Cell Cycle Analysis	623
<i>Damian J. Matuszewski, Ida-Maria Sintorn, Jordi Carreras Puigvert, and Carolina Wählby</i>	

Brain Imaging

Improving QuickBundles to Extract Anatomically Coherent White Matter Fiber-Bundles	633
<i>Francesco Cauteruccio, Claudio Stamile, Giorgio Terracina, Domenico Ursino, and Dominique Sappey-Marinier</i>	
Automatic Rating of Perivascular Spaces in Brain MRI Using Bag of Visual Words	642
<i>Víctor González-Castro, María del C. Valdés Hernández, Paul A. Armitage, and Joanna M. Wardlaw</i>	
White Matter Fiber-Bundle Analysis Using Non-negative Tensor Factorization.	650
<i>Claudio Stamile, François Cotton, Frederik Maes, Dominique Sappey-Marinier, and Sabine Van Huffel</i>	

Cardiovascular Image Analysis

A Flexible 2D-3D Parametric Image Registration Algorithm for Cardiac MRI	661
<i>L.W. Lorraine Ma and Mehran Ebrahimi</i>	
Sparse-View CT Reconstruction Using Curvelet and TV-Based Regularization.	672
<i>Ali Pour Yazdanpanah and Emma E. Regentova</i>	

Estimating Ejection Fraction and Left Ventricle Volume Using Deep Convolutional Networks.	678
<i>AbdulWahab Kabani and Mahmoud R. El-Sakka</i>	

A Hybrid Model for Extracting the Aortic Valve in 3D Computerized Tomography and Its Application to Calculate a New Calcium Score Index. . .	687
<i>Laura Torío, César Veiga, María Fernández, Victor Jiménez, Emilio Paredes, Pablo Pazos, Francisco Calvo, and Andrés Íñiguez</i>	

Image Analysis in Ophthalmology

Automatic Optic Disc and Fovea Detection in Retinal Images Using Super-Elliptical Convergence Index Filters	697
<i>Behdad Dashtbozorg, Jiong Zhang, Fan Huang, and Bart M. ter Haar Romeny</i>	

Age-Related Macular Degeneration Detection and Stage Classification Using Choroidal OCT Images.	707
<i>Jingjing Deng, Xianghua Xie, Louise Terry, Ashley Wood, Nick White, Tom H. Margrain, and Rachel V. North</i>	

3D Retinal Vessel Tree Segmentation and Reconstruction with OCT Images. . . .	716
<i>Joaquim de Moura, Jorge Novo, Marcos Ortega, and Pablo Charlón</i>	

Segmentation of Retinal Blood Vessels Based on Ultimate Elongation Opening.	727
<i>Wonder A.L. Alves, Charles F. Gobber, Sidnei A. Araújo, and Ronaldo F. Hashimoto</i>	

Document Analysis

ISauvola: Improved Sauvola’s Algorithm for Document Image Binarization . . .	737
<i>Zineb Hadjadj, Abdelkrim Meziane, Yazid Cherfa, Mohamed Cheriet, and Insaf Setitra</i>	

Recognition of Handwritten Arabic Words with Dropout Applied in MDLSTM	746
<i>Rania Maalej, Najiba Tagougui, and Monji Kherallah</i>	

Direct Unsupervised Text Line Extraction from Colored Historical Manuscript Images Using DCT.	753
<i>Asim Baig, Somaya Al-Maadeed, Ahmed Bouridane, and Mohamed Cheriet</i>	

Applications

Time Series Analysis of Garment Distributions via Street Webcam	765
<i>Sen Jia, Thomas Lansdall-Welfare, and Nello Cristianini</i>	

Automatic System for Zebrafish Counting in Fish Facility Tanks	774
<i>Francisco J. Silvério, Ana C. Certal, Carlos Mão de Ferro, Joana F. Monteiro, José Almeida Cruz, Ricardo Ribeiro, and João Nuno Silva</i>	
A Lightweight Mobile System for Crop Disease Diagnosis.	783
<i>Punnarai Siricharoen, Bryan Scotney, Philip Morrow, and Gerard Parr</i>	
Automatic Cattle Identification Using Graph Matching Based on Local Invariant Features	792
<i>Fernando C. Monteiro</i>	
An Intelligent Vision-Based System Applied to Visual Quality Inspection of Beans	801
<i>P.A. Belan, S.A. Araújo, and W.A.L. Alves</i>	
Obituaries	
Remembering the ICIAR founding Chair: Mohamed Kamel	813
<i>Aurelio Campilho</i>	
Remembering an IEEE Pioneer: Mohamed Kamel.	815
<i>Fakhri Karray</i>	
Author Index	817

Image Analysis and Recognition

13th International Conference, ICIAR 2016, in Memory of

Mohamed Kamel, Póvoa de Varzim, Portugal, July 13-15,

2016, Proceedings

Campilho, A.; Karray, F. (Eds.)

2016, XXI, 820 p. 337 illus., Softcover

ISBN: 978-3-319-41500-0