

Table of Contents

Keynote Addresses

From Linear Representations to Object Parts	1
<i>Gabriella Sanniti di Baja, L. Serino, and Carlo Arcelli</i>	
Perceptual Grouping Using Superpixels	13
<i>Sven J. Dickinson, Alex Levinshstein, and Cristian Sminchisescu</i>	
Automatic Design of Artificial Neural Networks and Associative Memories for Pattern Classification and Pattern Restoration	23
<i>Humberto Sossa, Beatriz A. Garro, Juan Villegas, Carlos Avilés, and Gustavo Olague</i>	

Image Processing

An Automatic Image Scaling Up Algorithm	35
<i>Maria Frucci, Carlo Arcelli, and Gabriella Sanniti di Baja</i>	
Sampling Techniques for Monte Carlo Matrix Multiplication with Applications to Image Processing	45
<i>Humberto Madrid, Valia Guerra, and Marielba Rojas</i>	
Extended Photometric Sampling for Surface Shape Recovery	55
<i>Felipe Hernández-Rodríguez and Mario Castelán</i>	
A Segmentation Method for Tree Crown Detection and Modelling from LiDAR Measurements	65
<i>José Luis Silván-Cárdenas</i>	
Texture Analysis for Skin Probability Maps Refinement	75
<i>Michal Kawulok</i>	
Composite Correlation Filters for Detection of Geometrically Distorted Objects Using Noisy Training Images	85
<i>Pablo M. Aguilar-González and Vitaly Kober</i>	
Adaptive Spatial Concealment of Damaged Coded Images	94
<i>Alejandro A. Ramírez-Acosta, Mireya S. García-Vázquez, and Mariko Nakano</i>	

Computer Vision and Image Recognition

Human Sign Recognition for Robot Manipulation	107
<i>Leonardo Saldivar-Piñon, Mario I. Chacon-Murguia, Rafael Sandoval-Rodriguez, and Javier Vega-Pineda</i>	
Fuzzy Sets for Human Fall Pattern Recognition	117
<i>Marina V. Sokolova and Antonio Fernández-Caballero</i>	
Vision System for 3D Reconstruction with Telecentric Lens	127
<i>José Guadalupe Rico Espino, José-Joel Gonzalez-Barbosa, Roberto Augusto Gómez Loenzo, Diana Margarita Córdova Esparza, and Ricardo Gonzalez-Barbosa</i>	
A Tool for Hand-Sign Recognition	137
<i>David J. Rios Soria and Satu Elisa Schaeffer</i>	
Improving the Multiple Alignments Strategy for Fingerprint Verification	147
<i>Miguel Angel Medina-Pérez, Milton García-Borroto, Andres Eduardo Gutierrez-Rodríguez, and Leopoldo Altamirano-Robles</i>	
Breaking reCAPTCHAs with Unpredictable Collapse: Heuristic Character Segmentation and Recognition	155
<i>Claudia Cruz-Perez, Oleg Starostenko, Fernando Uceda-Ponga, Vicente Alarcon-Aquino, and Leobardo Reyes-Cabrera</i>	
Using Short-Range Interactions and Simulated Genetic Strategy to Improve the Protein Contact Map Prediction	166
<i>Cosme E. Santiesteban Toca, Milton García-Borroto, and Jesus S. Aguilar Ruiz</i>	

Pattern Recognition and Neural Networks

Associative Model for Solving the Wall-Following Problem	176
<i>Rodolfo Navarro, Elena Acevedo, Antonio Acevedo, and Fabiola Martínez</i>	
The List of Clusters Revisited	187
<i>Eric Sadit Tellez and Edgar Chávez</i>	
A Heuristically Perturbation of Dataset to Achieve a Diverse Ensemble of Classifiers	197
<i>Hamid Parvin, Sajad Parvin, Zahra Rezaei, and Moslem Mohamadi</i>	
Compact and Efficient Permutations for Proximity Searching	207
<i>Karina Figueroa Mora and Rodrigo Paredes</i>	

NURBS Parameterization: A New Method of Parameterization Using the Correlation Relationship between Nodes	216
<i>Sawssen Jalel, Mohamed Naouai, Atef Hamouda, and Malek Jebabli</i>	
Genetic Algorithm for Multidimensional Scaling over Mixed and Incomplete Data	226
<i>P. Tecuanhuehue-Vera, Jesús Ariel Carrasco-Ochoa, and José Fco. Martínez-Trinidad</i>	
Experimental Validation of an Evolutionary Method to Identify a Mobile Robot's Position	236
<i>Angel Kuri-Morales and Ignacio Lopez-Peña</i>	
Up and Down Trend Associations in Analysis of Time Series Shape Association Patterns	246
<i>Ildar Batyrshin</i>	
Unsupervised Linkage Learner Based on Local Optimums	255
<i>Hamid Parvin and Sajad Parvin</i>	
A Modified Back-Propagation Algorithm to Deal with Severe Two-Class Imbalance Problems on Neural Networks	265
<i>R. Alejo, P. Toribio, R.M. Valdovinos, and J.H. Pacheco-Sanchez</i>	
Computing #2SAT and #2UNSAT by Binary Patterns	273
<i>Guillermo De Ita Luna and J. Raymundo Marcial-Romero</i>	

Document Processing and Speech Recognition

A New Document Author Representation for Authorship Attribution ...	283
<i>Adrián Pastor López-Monroy, Manuel Montes-y-Gómez, Luis Villaseñor-Pineda, Jesús Ariel Carrasco-Ochoa, and José Fco. Martínez-Trinidad</i>	
A Machine-Translation Method for Normalization of SMS	293
<i>Darnes Vilariño, David Pinto, Beatriz Beltrán, Saul León, Esteban Castillo, and Mireya Tovar</i>	
Reduced Universal Background Model for Speech Recognition and Identification System	303
<i>Lachachi Nour-Eddine and Adla Abdelkader</i>	
GA Approaches to HMM Optimization for Automatic Speech Recognition	313
<i>Yara Pérez Maldonado, Santiago Omar Caballero Morales, and Roberto Omar Cruz Ortega</i>	

Phonetic Unification of Multiple Accents for Spanish and Arabic
Languages 323
 *Saad Tanveer, Aslam Muhammad, Martinez-Enriquez A.M., and
 Escalada-Imaz G.*

Environmental Sound Recognition by Measuring Significant Changes
in the Spectral Entropy 334
 Jessica Beltrán-Márquez, Edgar Chávez, and Jesús Favela

Author Index 345