

	Wednesday, June 29
8:00-9:00	Registration
9:00-10:00	Keynote Address Resilient Subclass Discriminant Analysis with Application to Prelens Tear Film Interferometry Professor Kim L. Boyer IAPR Invited Speaker
10:00-10:20	Coffee break
	Session 1: Pattern Recognition and Data Mining
10:20-10:40	Comparative Diagnostic Accuracy of Linear and Nonlinear Feature Extraction Methods in a Neuro-oncology Problem Raúl Cruz-Barbosa, David Bautista-Villavicencio, and Alfredo Vellido
10:40-11:00	Efficient Group of Permutants for Proximity Searching Karina Figueroa Mora, Rodrigo Paredes, and Roberto Rangel
11:00-11:20	Associative Memory Approach for the Diagnosis of Parkinson's Disease Elena Acevedo, Antonio Acevedo, and Federico Felipe
11:20-11:40	Scalable Pattern Search Analysis Eric Sadit Tellez, Edgar Chavez, and Mario Graff
11:40-12:00	Application of Pattern Recognition Techniques to Hydrogeological Modeling of Mature Oil Fields Leonid Sheremetov, Ana Cosultchi, Ildar Batyrshin, and Jorge Velasco-Hernandez
12:00-12:20	Coffee break
	Session 2: Pattern Recognition and Data Mining
12:20-12:40	On Trend Association Analysis of Time Series of Atmospheric Pollutants and Meteorological Variables in Mexico City Metropolitan Area Victor Almanza and Ildar Batyrshin
12:40-13:00	Solving 3-Colouring via 2SAT Guillermo De Ita, César Bautista, and Luis C. Altamirano
13:00-13:20	Ensemble of Classifiers based on Hard Instances Isis Bonet, Abdel Rodríguez, Ricardo Grau, and María M. García
13:20-13:40	Classifier Selection by Clustering Hamid Parvin, Behrouz Minaei-Bidgoli, and Hamideh Shahpar
13:40-15:00	Lunch
	Session 3: Computer Vision and Robotics
15:00-15:20	Thermal Video Analysis for Fire Detection Using Shape Regularity and Intensity Saturation Features Mario I. Chacon-Murguía and Francisco J. Perez-Vargas
15:20-15:40	People Detection using Color and Depth Images Joaquín Salas and Carlo Tomasi
15:40-16:00	Multi-Modal 3D Image Registration Based on Estimation of Non-Rigid Deformation Roberto Rosas-Romero, Oleg Starostenko, Jorge Rodríguez-Asomoza, and Vicente Alarcon-Aquino
16:00-16:20	Measuring Rectangularity Using GR-signature Jihen Hentati, Mohamed Naouai, Atef Hamouda, and Christiane Weber
16:20-16:40	A Hybrid Approach for Pap-Smear Cell Nucleus Extraction M. Orozco-Monteagudo, Hichem Sahli, Cosmin Mihai, and A. Taboada-Crispi

	Thursday, June 30
8:00-9:00	Registration
9:00-10:00	Keynote Address Context Sensitive Information: Model Validation by Information Theory Professor Joachim M. Buhmann
10:00-10:20	Coffee break
	Session 4: Computer Vision and Robotics / Image Processing
10:20-10:40	Performance of Correlation Filters in Facial Recognition Everardo Santiago-Ramirez, J. A. Gonzalez-Fraga, and J. I. Ascencio-Lopez
10:40-11:00	Evaluation of Binarization Algorithms for Camera-based Devices M. Nava-Ortiz, W. Gómez-Flores, A. Díaz-Pérez, and G. Toscano-Pulido
11:00-11:20	Segmentation of Noisy Images Using the Rank M-type L-filter and the Fuzzy C-Means Clustering Algorithm Dante Mújica-Vargas, Francisco J. Gallegos-Funes, and Rene Cruz-Santiago
11:20-11:40	Design of Correlation Filters for Pattern Recognition Using a Noisy Training Image Pablo M. Aguilar-González and Vitaly Kober
11:40-12:00	Image Fusion Algorithm using the Multiresolution Directional-Oriented Hermite Transform Sonia Cruz-Techica and Boris Escalante-Ramirez
12:00-12:20	Coffee break
	Session 5: Image Processing
12:20-12:40	Homogeneity Cues for Texel Size Estimation of Periodic and Near-periodic Textures Rocio A. Lizarraga-Morales, Raul E. Sanchez-Yanez, and Victor Ayala-Ramirez
12:40-13:00	Foveated ROI Compression with Hierarchical Trees for Real-Time Video Transmission J. C. Galan-Hernandez, V. Alarcon-Aquino, O. Starostenko, and J. M. Ramirez-Cortes
13:00-13:20	Normalized Cut based Edge Detection Mario Barrientos and Humberto Madrid
13:20-13:40	Adaptive Thresholding Methods for Documents Image Binarization Bilal Bataineh, Siti N. H. S. Abdullah, K. Omar, and M. Faidzu
13:40-15:00	Lunch
	Session 6: Neural Networks and Signal Processing
15:00-15:20	Neural Networks to Guide the Selection of Heuristics within Constraint Satisfaction Problems José Carlos Ortiz-Bayliss, Hugo Terashima-Marín and Santiago Enrique Conant-Pablos
15:20-15:40	Microcalcifications Detection Using PFCM and ANN A. Vega-Corona, J. Quintanilla-Domínguez, B. Ojeda-Magaña, M.G. Cortina-Januchs, A. Marcano-Cedeño, R. Ruelas, and D. Andina
15:40-16:00	Software Development Effort Estimation in Academic Environments Applying a General Regression Neural Network Involving Size and People Factors Cuahtémoc López-Martín, Arturo Chavoya, and M.E. Meda-Campaña
16:00-16:20	An Ensemble of Degraded Neural Networks Eduardo Vázquez-Santacruz and Debrup Chakraborty
16:20-16:40	Genetic Fuzzy Relational Neural Network for Infant Cry Classification Alejandro Rosales-Pérez, Carlos A. Reyes-García, and Pilar Gómez-Gil

	Friday, July 1
9:00-10:00	Registration
	Session 7: Neural Networks and Signal Processing / Natural Language and Document Processing
10:00-10:20	Speech Compression Based on Frequency Warped Cepstrum and Wavelet Analysis Francisco J. Ayala and Abel Herrera
10:20-10:40	Dust Storm Detection Using a Neural Network with Uncertainty and Ambiguity Output Analysis Mario I. Chacon-Murguía, Yearim Quezada-Holguín, Pablo Rivas-Perea, and Sergio Cabrera
10:40-11:00	Extraction of Buildings Footprint from LiDAR Altimetry Data with the Hermite Transform José Luis Silván-Cárdenas and Le Wang
11:00-11:20	Automatic Acquisition of Synonyms of Verbs from an Explanatory Dictionary using Hyponym and Hyperonym Relations Noé Alejandro Castro-Sánchez and Grigori Sidorov
11:20-11:40	Using Finite State Models for the Integration of Hierarchical LMs into ASR Systems Raquel Justo and M. Inés Torres
11:40-12:00	Use of Elliptic Curves in Term Discrimination Darnes Vilariño, David Pinto, Carlos Balderas, Mireya Tovar, Beatriz Beltrán, and Sofía Paniagua
12:00-12:20	Coffee break
12:20-13:20	Keynote Address Evolutionary Multi-Objective Optimization: Basic Concepts and Some Applications in Pattern Recognition Professor Carlos A. Coello Coello
13:20-15:00	Lunch
20:00-22:00	Conference Dinner
	Saturday, July 2 (Cancun Technological Institute)
9:30-11:00	Tutorial 1 / 2 / 3 (see below)
11:00-11:15	Coffee break
11:15-12:30	Tutorial 1 / 2 / 3 (see below)

Tutorial 1

Perceptual Organization in the Design of Computer Vision Systems

Professor Kim L. Boyer
IAPR Invited Speaker

Abstract:

This tutorial will present concepts from perceptual organization and explore their use as the core building block in the design of computer vision systems. We will describe a fully implemented system that identifies residential houses and suburban street networks from satellite imagery as the primary case study, while bringing in other examples from range data and medical image analysis. We will discuss emerging and dominant themes in perceptual organization, and present some questions and hypotheses for group discussion.

Tutorial 2

Structured Machine Learning Models for Pattern Recognition:
Medical Imaging, Information Security, Acoustic Information Processing

Professor Joachim M. Buhmann

Abstract:

The information society has surpassed the zettabyte mark in 2010 and it continues to accelerate the growth of new digital information every year. To cope with this massive deluge we have to develop sophisticated new models to condense this digital information into knowledge and value. Machine learning with its focus on highly structured complex models and its strong statistical foundation develops the modeling technology to transform data and information into knowledge to support an intelligent decision process. This tutorial describes machine learning methods like random forests, multi-label clustering, dictionary learning and more to devise novel approaches for various application domains. Dictionary learning yields better speech filtering in noisy environments, random forests can be efficiently used for detecting malignant cells in cancerous histological tissues to predict survival of cancer patients, multi-label clustering offers new methods for role based

Tutorial 2 (In Spanish)

Optimización Multi-Objetivo usando Metaheurísticas

Professor Carlos A. Coello Coello

Resumen:

Este tutorial proporcionará una visión general del área denominada optimización evolutiva multi-objetivo, en la cual se usan metaheurísticas para resolver problemas con dos o más funciones objetivo (las cuales, por lo general, se encuentran en conflicto entre sí). Primero, se proporcionará información histórica sobre la optimización multi-objetivo, comenzando por sus orígenes y sus primeras aplicaciones. Esta discusión motivará el uso de las metaheurísticas, como una alternativa para resolver problemas multi-objetivo no lineales de alta complejidad. Posteriormente, se discutirán diferentes técnicas multi-objetivo basadas en metaheurísticas que se han propuesto en la literatura especializada. Los métodos que se analizarán incluyen, entre otros, a los algoritmos evolutivos, el recocido simulado, la búsqueda tabú, la búsqueda dispersa y los sistemas inmunes artificiales. En la parte final, se plantearán algunas de las áreas más prometedoras de