

S+SSPR 2012

Joint IAPR International Workshops on
Structural and Syntactic Pattern Recognition and
Statistical Techniques in Pattern Recognition

November 7th-9th, 2012
Miyajima-Itsukushima, Hiroshima, Japan

Atsushi Imiya
Mineichi Kudo
Georgy L. Gimel'farb
Keiji Yamada

IMIT, Chiba University, Japan
Hokkaido University, Japan
University of Auckland, New Zealand
NEC Corporation, Japan

Arjan Kuijper
Edwin Hancock
Shinichiro Omachi
Terry Windeatt

Fraunhofer IGD & TU Darmstadt, Germany
University of York, UK
Tohoku University, Japan
University of Surrey, UK

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UNIVERSITY

Miyajima



Ferry landing (A)



Conference Schedule

Time Table

Tuesday November 06 2012

14:00 - 19:00	Registration
21:00 - 22:10	Optional Night Cruise

Wednesday November 07 2012

P.6 -

08:30	Registration
09:00 - 09:10	Opening
09:10 - 10:10	Invited Talk by <i>Kenichi Kanatani</i> Optimization Techniques for Geometric Estimation: Beyond Minimization
10:25 - 12:30	Parallel Session 1
	Kernel methods in SSPR 25mins × 5
	Learning 25mins × 5
12:30 - 14:00	Lunch
14:00 - 16:05	Parallel Session 2
	Graph and Tree Methods 25mins × 5
	Applications of SPR 25mins × 5
16:20 - 18:25	Poster SPR+SSPR
17:30 - 18:30	Drink at Poster Room

Thursday November 08 2012

P.10 -

08:30	Registration
09:00 - 10:00	Pierre Devijver Award by George Nagy Estimation, Learning, and Adaptation: Systems that improve with use
10:10 - 11:50	Joint Session Structural, Syntactical, and Statistical Pattern Recognition 25mins × 4
12:20 - 13:20	Lunch
13:40 - 17:30	Excursion to Miyajima
13:40	Leave Hotel
14:15	JR West Ferry Gate
14:25	Departure
14:35	Miyajima
16:55	Departure
17:30	Hotel
19:00 - 21:00	Dinner

Friday November 09 2012

P.11 -

08:30	Registration
09:00 - 10:00	Invited Talk by Ales Leonardis Hierarchical Compositional Representations of Object Structure
10:15 - 12:20	Parallel Session 3 Applications of SSPR 25mins × 5 Kernel Methods in SPR 25mins × 5
12:20 - 14:00	Lunch
14:00 - 16:05	Parallel Session 4 Randomized Methods and Image Analysis 25mins × 5 Clustering 25mins × 4
16:05 - 16:30	Closing

Wednesday November 07 2012

8:30 Registration

9:00-9:10 Opening - Atsushi Imiya

9:10-10:10 Invited Talk - Atsushi Imiya

9:00 **Optimization Techniques for Geometric Estimation: Beyond Minimization**
Kenichi Kanatani

10:10-10:25 Coffee Break

10:25-12:30 Parallel Session 1

Kernel Methods in Structural and Syntactical Pattern Recognition - Aasa Feragen

10:25 **Laplacian Eigenimages in Discrete Scale Space**
Martin Tschirsich and Arjan Kuijper

10:50 **A Relational Kernel-based Framework for Hierarchical Image Understanding**
*Laura-Andreea Antanas, Paolo Frasconi, Fabrizio Costa,
Tinne Tuytelaars and Luc De Raedt*

11:15 **A Jensen-Shannon Kernel for Hypergraphs**
Lu Bai, Edwin Hancock and Peng Ren

11:40 **Heat Flow-Thermodynamic Depth Complexity in Directed Networks**
Francisco Escolano, Boyan Bonev and Edwin R. Hancock

12:05 **Shape Similarity based on a Tree Kernel with Edition**
Sebastien Bougleux, François-Xavier Dupé, Luc Brun and Myriam Mokhtari

Learning - Alicia Fornés

10:25 **Polichotomies on Imbalanced Domains
by One-per-Class Compensated Reconstruction Rule**
Roberto D'Ambrosio and Paolo Soda

10:50 **The Dipping Phenomenon**
Marco Loog and Bob Duin

11:15 **Colour Matching Function Learning**
Luis Romero-Ortega and Antonio Robles-Kelly

11:40 **Constrained Log-Likelihood-based Semi-Supervised
Linear Discriminant Analysis**
Marco Loog and Are Jensen

12:05 **Out-of-Sample Embedding by Sparse Representation**
Bogdan Raducanu and Fadi Dornaika

12:30-14:00 Lunch

14:00-16:05 Parallel Session 2

Graph and Tree Method - Yukiko Kenmochi

- 14:00 **Evolutionary Weighted Mean Based Framework for Generalized Median Computation with Application to Strings**
Franek Lucas and Xiaoyi Jiang
- 14:25 **Graph Complexity from the Jensen-Shannon Divergence**
Lu Bai and Edwin Hancock
- 14:50 **Complexity of computing distances between geometric trees**
Aasa Feragen
- 15:15 **Active Graph Matching based on Pairwise Probabilities between nodes**
Xavier Cortes, Francesc Serratosa and Albert Sole
- 15:40 **On The Relation Between The Common Labelling And The Median Graph**
Nicola Rebagliati, Albert Solé-Ribalta, Marcello Pelillo and Francesc Serratosa

Applications of Statistical Pattern Recognition - Atsuto Maki

- 14:00 **One-Sided Prototype Selection on Class Imbalanced Dissimilarity Matrices**
Mónica Millán-Giraldo, Vicente García and J. Salvador Sánchez
- 14:25 **Estimating Surface Characteristics and Extracting Features from Polarisation**
Lichi Zhang, Edwin Hancock and Jing Wu
- 14:50 **Extended Fisher criterion based on auto-correlation matrix information**
Hitoshi Sakano, Tsukasa Ohashi, Akisato Kimura, Hiroshi Sawada and Katsuhiko Ishiguro
- 15:15 **Poisoning adaptive biometric systems**
Battista Biggio, Giorgio Fumera, Fabio Roli and Luca Didaci
- 15:40 **Modified Divergences for Gaussian Densities**
Karim Abou-Moustafa and Frank Ferrie

16:05-16:20 Coffee Break

16:20-18:25 Poster SPR+SSPR

Applications of Structural and Syntactical Pattern Recognition

SSPR Poster

Graph Database Retrieval based on Metric-Trees

Francesc Serratosa, Xavier Cortes and Albert Sole

Validation of Network Classifiers

Eric Bax, Zehra Cataltepe, James Li and Abdullah Sonmez

Alignment and Morphing for the Boundary Curves of Anatomical Organs

Keiko Morita, Atsushi Imiya, Tomoya Sakai, Hidetaka Hontani and Yoshitaka Masutani

Unsupervised Clustering of Human Pose using Spectral Embedding

Muhammad Haseeb and Edwin Hancock

Human Action Recognition in Video by Fusion of Structural and Spatio-Temporal Features

Ehsan Zare Borzeshi, Oscar Perez Concha and Massimo Piccardi

An Incremental Structured Part Model for Image Classification

Huigang Zhang, Xiao Bai, Jian Cheng, Jun Zhou and Huijie Zhao

Top-Down Tracking and Estimating 3D Pose of a Die

Fuensanta Torres and Walter G. Kropatsch

Large Scale Experiments on Fingerprint Liveness Detection

Gian Luca Marcialis, Luca Ghiani, Katja Vetter, Dirk Morgeneier and Fabio Roli

Implicit and Explicit Graph Embedding:

Comparison of both Approaches on Chemoinformatics Applications

Benoit Gaüzère, Makoto Hasegawa, Luc Brun and Salvatore Tabbone

Modeling Spoken Dialog Systems under the Interactive Pattern Recognition framework

M. Inés Torres, Jose Miguel Benedí, Raquel Justo and Fabrizio Ghigi

Hierarchical graph representation for symbol spotting in graphical document images

Klaus Broelemann, Anjan Dutta, Xiaoyi Jiang and Josep Lladós

Compact Form of the Pseudoinverse Matrix in the Approximation of a Star Graph Using the Conductance Electrical Model (CEM)

Manuel Igelmo and Alberto Sanfeliu

A Heuristic Based on the Intrinsic Dimensionality for Reducing the Number of Cyclic DTW Comparisons in Shape Classification and Retrieval Using AESA

Vicente Palazón-González and Andrés Marzal

SPR Poster

Support Vector Machines Training Data Selection Using a Genetic Algorithm

Michal Kawulok and Jakub Nalepa

A Unified View of Two-Dimensional Principal Component Analyses

Kohei Inoue, Kenji Hara and Kiichi Urahama

Automatic Dimensionality Estimation for Manifold Learning through Optimal Feature Selection

Fadi Dornaika, Ammar Assoum and Bogdan Raducanu

Binary Gabor Statistical Features for Palmprint Template Protection

Meiru Mu, Raymond Veldhuis, Xiaoying Shao, Luuk Spreeuwers and Qiuqi Ruan

Class-dependent Dissimilarity Measures for Multiple Instance Learning

Veronika Cheplygina, David Tax and Marco Loog

Bidirectional Language Models for Handwriting Recognition

Volkmar Frinken, Alicia Fornés, Josep Lladós and Jean-Marc Ogier

Hypergraph Spectra for Unsupervised Feature Selection

Zhihong Zhang and Edwin Hancock

Feature selection using Counting Grids: application to microarray data

Pietro Lovato, Manuele Bicego, Marco Cristani, Nebojsa Jojic and Alessandro Perina

Infinite Sparse Factor Analysis for Blind Source Separation in Reverberant Environments

Kohei Nagira, Takuma Otsuka and Hiroshi G. Okuno

**Sparse Discriminant Analysis based on the Bayesian Posterior Probability
Obtained by L1 Regression**

Akinori Hidaka and Takio Kurita

**Conditional Variance of Differences: a Robust Similarity Measure for
Matching and Registration**

Atsuto Maki and Riccardo Gherardi

**A Class Centric Feature and Classifier Ensemble Selection Approach for
Music Genre Classification**

Hasitha Ariyaratne, Dengsheng Zhang and Guojun Lu

**A local adaptation of the histogram Radon transform descriptor:
an application to a shoeprint dataset**

Makoto Hasegawa and Salvatore Tabbone

**A Multiple Classifier System for classification of breast lesions using
dynamic and morphological features in DCE-MRI**

Roberta Fusco, Mario Sansone, Antonella Petrillo and Carlo Sansone

A Comparative Analysis of Forgery Detection Algorithms

Davide Cozzolino, Giovanni Poggi, Carlo Sansone and Luisa Verdoliva

**Low training strength high capacity classifiers for accurate ensembles
using Walsh Coefficients**

Terry Windeatt and Cemre Zor

**A Novel Shadow-assistant Human Fall Detection Scheme Using
a Cascade of SVM Classifiers**

Yie-Tarnng Chen, You-Rong Lin and Wen-Hsien Fang

Analysis of Co-training Algorithm with Very Small Training Sets

Luca Didaci, Giorgio Fumera and Fabio Roli

Classification Of High-Dimension PDFs Using The Hungarian Algorithm

James Cope and Paolo Remagnino

Face Recognition using Multilinear Manifold Analysis of Local Descriptors

Xian-Hua Han and Yen-Wei Chen

A Genetic Inspired Optimization for ECOC

Miguel Angel Bautista, Sergio Escalera, Xavier Baró and Oriol Pujol

17:30-18:30 Reception

Thursday November 08 2012

8:30 Registration

9:00-10:00 Pierre Devijver Award Lecture - Terry Windeatt

9:00 Estimation, Learning, and Adaptation: Systems that improve with use

George Nagy

10:00-10:10 Coffee Break

10:10-11:50 Joint Session

Structural, Syntactical, and Statistical Pattern Recognition - Georgy L. Gimel'farb

10:10 Information Theoretic Prototype Selection for Unattributed Graphs

Lin Han, Luca Rossi, Andrea Torsello, Richard Wilson and Edwin Hancock

10:35 Graph Kernels: Crossing Information from Different Patterns using Graph Edit Distance

Benoit Gaüzère, Luc Brun and Didier Villemin

11:00 Mode seeking clustering by KNN and Mean Shift evaluated

Robert P. W. Duin, Ana Fred, Marco Loog and Elzbieta Pekalska

11:25 Learning Sparse Kernel Classifiers in the Primal

Zhouyu Fu, Guojun Lu, Kai Ming Ting and Dengsheng Zhang

11:50-12:20 TCmeeting

12:20-13:20 Lunch

13:40-17:30 Excursion

	First group	Second group
	(24 persons+1student)×2buses	
Hotel	13:40	14:00
JR Port at Miyajima-guchi	13:55	14:15
Ferry	14:10	14:25
Miyajima	14:20	14:35
Visit Itsukushima Shrine		
Guided tour		
Free visit		
JR Port at Miyajima	16:45	17:00
	24persons in 1bus + 4persons in 6 taxis	
Ferry	16:55	17:10
Hotel	17:20	17:40

Japanese organizers will come back by Hotel shuttle

From JR Miyajima-guchi on 17:30 and 18:00(100m from Port)

19:00-21:00 Dinner

Friday November 09 2012

8:30 Registration

9:00-10:00 Invited Talk - Edwin Hancock

9:00 Hierarchical Compositional Representations of Object Structure
Ales Leonardis

10:00-10:15 Coffee Break

10:15-12:20 Parallel Session 3

Applications of Structural and Syntactical Pattern Recognition - Yll Haximusa

10:15 **3D Mesh Segmentation Using Commute Time Embedding**
Muhammad Haseeb and Edwin Hancock

10:40 **Conditional Random Fields for Land Use/Land Cover Classification and Complex Region Detection**
Gulcan Can, Orhan Firat and Fatos Tunay Yarman Vural

11:05 **Recognition of Long-Term Behaviors by Parsing Sequences of Short-Term Actions with a Stochastic Regular Grammar**
Gerard Sanromà, Gertjan Burghouts and Klamer Schutte

11:30 **Improving Fuzzy Multilevel Graph Embedding through Feature Selection Technique**
Muhammad Muzzamil Luqman, Jean-Yves Ramel and Josep Lladós

11:55 **A comparison between structural and embedding methods for graph classification**
Albert Sole, Xavier Cortés and Francesc Serratosa

Kernel methods in SPR - Marco Loog

10:15 **Extended Analyses for an Optimal Kernel in a Class of Kernels with an Invariant Metric**
Akira Tanaka, Ichigaku Takigawa, Hideyuki Imai and Mineichi Kudo

10:40 **Simultaneous Learning of Localized Multiple Kernels and Classifier with Weighted Regularization**
Naoya Inoue and Yukihiko Yamashita

11:05 **Change-Point Detection in Time-Series Data by Relative Density-Ratio Estimation**
Song Liu, Makoto Yamada, Nigel Collier and Masashi Sugiyama

11:30 **Online metric learning methods using soft margins and least squares formulations**
Adrian Perez-Suay and Francesc J. Ferri

11:55 **Shape Analysis using the Edge-Based Laplacian**
Furqan Aziz, Richard Wilson and Edwin Hancock

12:20-14:00 Lunch

14:00-16:05 Parallel Session 4

Randomized Methods and Image Analysis - Richard Wilson

- 14:00 **A hierarchical image segmentation algorithm based on an observation scale**
Silvio Guimaraes, Jean Cousty, Yukiko Kenmochi and Laurent Najman
- 14:25 **A Discrete Scale Space Neighborhood for Robust Deep Structure Extraction**
Martin Tschirsich and Arjan Kuijper
- 14:50 **On the Correlation of Graph Edit Distance and L1 Distance in the Attribute Statistics Embedding Space**
Jaume Gibert, Ernest Valveny, Horst Bunke and Alicia Fornés
- 15:15 **Approximate Axial Symmetries from Continuous Time Quantum Walks**
Luca Rossi, Andrea Torsello and Edwin Hancock
- 15:40 **A Clustering-Based Ensemble Technique for Shape Decomposition**
Sergej Lewin, Xiaoyi Jiang and Achim Clausen

Clustering - Antonio Robles-Kelly

- 14:00 **Entropic Selection of Histogram Features for Efficient Classification**
Ákos Utasi
- 14:25 **2D shapes classification using BLAST**
Pietro Lovato and Manuele Bicego
- 14:50 **A new random forest method for one class classification**
Chesner Desir, Simon Bernard, Caroline Petitjean and Laurent Heutte
- 15:15 **A new index based on sparsity measures for comparing fuzzy partitions**
Romain Quéré and Carl Frélicot

16:05-16:30 Closing