

S+SSPR

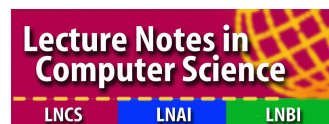
Joensuu, Finland

2014



**IAPR Joint International Workshops on
Statistical Techniques In Pattern Recognition (SPR 2014)
Structural And Syntactic Pattern Recognition (SSPR 2014)**

20-22.8.2014



Preface

IAPR Technical Committees TC1 and TC2 organize the Joint International Workshops on Statistical Techniques in Pattern Recognition (SPR), and Structural and Syntactic Pattern Recognition (SSPR) in Joensuu, Finland on 20-22 August 2014. It is official biennial satellite event prior to the International Conference on Pattern Recognition (ICPR). The workshops (S+SSPR) are hosted by the School of Computing, University of Eastern Finland.

The workshops received 78 submissions, of which 53 were selected into a three days program of 11 sessions. These include 47 original submissions (included in the proceedings), and 6 journal track presentations (only abstracts included). Original submissions were reviewed by three program committee members, on average. The presentations cover the core topics of pattern recognition methodology including clustering, graph kernels, graph edit distance, discriminant analysis, graph models and embedding, combining and selecting, metrics and dissimilarities, partial supervision and applications. Keynote talks are given by Prof. Ali Shokoufandeh from Drexel University (Philadelphia, USA) about approximation of hard combinatorial problems via embedding to hierarchically separated trees, and Prof. David Hand from Imperial College (London, UK) about evaluating supervised classification methods: error rate, ROC curves, and beyond.

This is the first time that S+SSPR is organized in Nordic countries. For many attendees, it might be your first time to visit Finland, which has a unique mix of nature and modern technology. The country has 5 million of people, 7 million mobile phones, 9 million internet connections, 2 million saunas, and nearly 200,000 lakes. Joensuu is located at the beautiful “lake Finland”, and is the main campus of University of Eastern Finland.

We thank all the program committee members and local organizers for their contributions to make the workshops happen. Detailed information can be found on the workshop’s web page <http://cs.uef.fi/ssspr2014/>.

August 2014

Chairs of S+SSPR 2014

Pasi Fränti

Gavin Brown

Marco Loog

Francisco Escolano

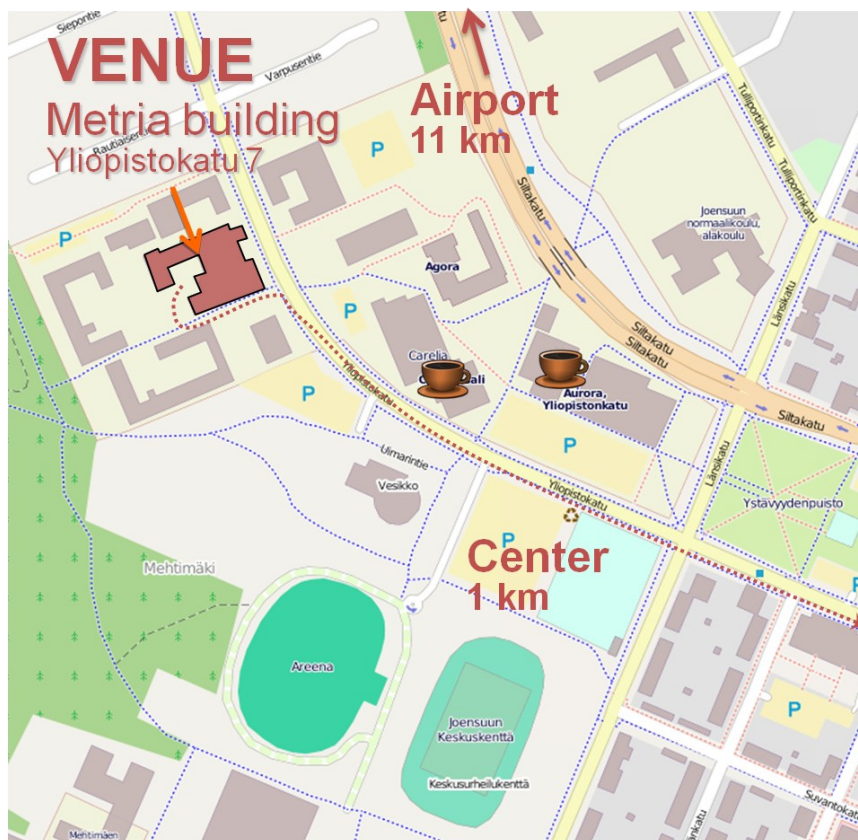
Marcello Pelillo

Venue

The workshop is organized by School of Computing at the University of Eastern Finland. The university offers Bachelor's, Master's and doctoral level education in 12 fields of study: pharmacy, dentistry, humanities, education, economics and business administration, natural sciences, medicine, forest sciences, psychology, theology, health sciences and social sciences.

Joensuu - the capital of green is a town of 75,000 inhabitants in the lakeside Finland. It is famous of its peaceful nature, excellent outdoor opportunities as well as many saunas.

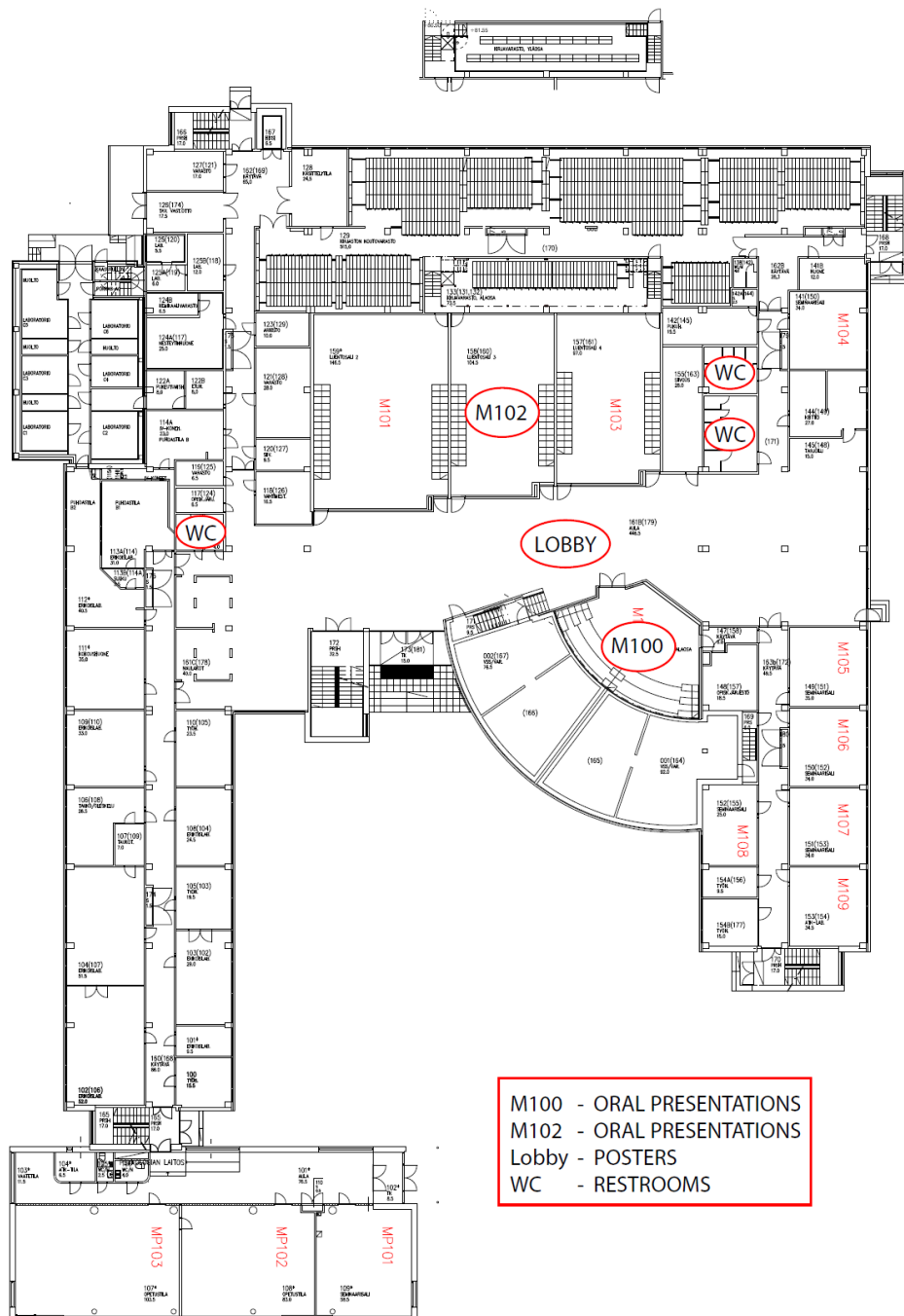
The workshop takes place in Metria building. Lunches will be served in university restaurants Aura and Carelia.



WLAN Info
SSID: uef-meeting
Password: ssspr2014

Contact:
+358-405640480 (Oili)
+358-407712924 (Rosa)
+358-405958879 (Pasi)

Floorplan of Metria



Workshop Topics

The workshop focuses on Statistical Techniques in Pattern Recognition (SPR) and Structural and Syntactic Pattern Recognition (SSPR).

SPR Topics:

- Domain Adaptation
- Dissimilarity Representations
- Ensemble Methods
- Multiple Classifiers
- Gaussian Processes
- Dimensionality Reduction
- Clustering Algorithms
- Model Selection
- Semi-Supervised Learning
- Multiple Instance Learning
- Active Learning
- Contextual Pattern Recognition
- Location-based Pattern Recognition
- Partially Supervised Learning
- Novelty Detection
- Comparative Studies

SSPR Topics:

- Structural Matching
- Structural Complexity
- Syntactic Pattern Recognition
- Image Understanding
- Shape Analysis
- Graph-theoretic Methods
- Graphical Models
- Structural Kernels
- Spectral Methods
- Spatio-Temporal Pattern Recognition
- Stochastic Structural Models
- Intelligent Sensing Systems
- Multimedia Analysis
- Structured Text Analysis
- Image Document Analysis

Organization

GENERAL CHAIR

Pasi Fränti University of Eastern Finland, Finland

SPR CHAIRS

Gavin Brown University of Manchester, UK
Marco Loog Delft University of Technology, The Netherlands

SSPR CHAIRS

Francisco Escolano University of Alicante, Spain
Marcello Pelillo University of Venice, Italy

SPR COMMITTEE

Battista Biggio University of Cagliari, Italy
Fransesc J. Ferri University of Valencia, Spain
Ana Fred Technical University of Lisbon, Portugal
Giorgio Fumera University of Cagliari, Italy
Michal Haindl UTIA, Czech Republic
Laurent Heutte University of Rouen, France
Tin Kam Ho Bell Laboratories, USA
Tomi Kinnunen University of Eastern Finland, Finland
Mineichi Kudo Hokkaido University, Japan
Ludmila Kuncheva Bangor University, UK
James Kwok Hong Kong University, China
Heikki Kälviäinen Lappeenranta University of Technology, Finland
Nikunj C. Oza NASA, USA
Filiberto Pla University Jaume I, Spain
Robi Polikar Rowan University, USA
Fabio Roli University of Cagliari, Italy
Clara I. Sánchez Radboud University, The Netherlands
Carlo Sansone University of Naples Federico II, Italy
David Tax Delft University of Technology, The Netherlands
Francesco Tortorella Cassino University, Italy
Seiichi Uchida Kyushu University, Japan
Giorgio Valentini University of Milan, Italy
Jinghao Xue University College London, UK
Terry Windeatt University of Surrey, UK
David Windridge University of Surrey, UK

SSPR COMMITTEE

Terry Caelli	University of Melbourne, Australia
Tiberio Caetano	University of Melbourne, Australia
Mario Figueiredo	Technical University of Lisbon, Portugal
Marco Gori	University of Siena, Italy
Edwin Hancock	University of York, UK
Atsushi Imiya	IMIT Chiba University, Japan
Walter G. Kropatsch	Vienna University of Technology, Austria
Arjan Kuijper	Technical University of Darmstadt, Germany
Christoph Lampert	IST, Austria
Xuelong Li	Chinese Academy of Sciences, China
Frank Nielsen	Sony Coproration, Japan
Richard Nock	University of the French West Indies and Guiana, France
Tapio Pahikkala	University of Turku, Finland
Novi Quadrianto	University of Cambridge, UK
Antonio Robles-Kelly	University of Melbourne, Australia
Anand Rangarajan	University of Florida, USA
Samuel Rota Bulò	University of Venice, Italy
Salvatore Tabbone	Université de Nancy, France
Sinisa Todorovic	Oregon State University, USA
Andrea Torsello	University of Venice, Italy
Richard Wilson	University of York, UK

LOCAL ORGANIZING TEAM

Pasi Fränti
Tomi Kinnunen
Oili Kohonen
Rahim Saeidi
Ville Hautamäki
Rosa González Hautamäki
Radu Mariescu-Istodor
Sami Sieranoja
Md Sahidullah

Program Overview

Wednesday, 20.8.

- 8:30 Opening
- 9:00 IAPR Keynote: David Hand
Evaluating supervised classification methods: error rate, ROC curves, and beyond
- 10:00 Coffee Break
- 10:30 Graph Kernels
Clustering
- 12:00 Lunch
- 13:30 Graph Edit Distance
- 15:00 Coffee Break
- 15:30 Discriminant Analysis
Graph Models and Embedding
- 19:00 [Welcome Reception at Polar Bear Club](#)

Thursday, 21.8.

- 9:00 Combining and Selecting
- 10:00 Coffee Break
- 10:30 S+SSPR Joint Session
- 12:00 Lunch
- 13:30 Metrics and Dissimilarities
- 15:00 Coffee & Posters
- 19:00 [Banquet at Theatre Restaurant](#)

Friday, 22.8.

- 9:00 IAPR Keynote: Ali Shokoufandeh
Approximation of hard combinatorial problems via embedding to hierarchically separated trees
- 10:00 Coffee Break
- 10:30 Partial Supervision
Applications
- 12:00 Lunch
- 13:00 [Excursion to Koli National Park](#)

Keynotes

Wednesday, 20 August, 9:00-10:00

Evaluating supervised classification methods: error rate, ROC curves, and beyond

David Hand, Imperial College, London, UK



Evaluation lies at the core of supervised classification. Comparison between methods, selection of methods, parameter estimation, and feature choice all implicitly require the assessment of the effectiveness of classifiers. Because it is so important, a great deal of effort has been expended on developing performance measures and their estimators, stretching back over fifty years. But new applications, new computer power, and new inferential challenges mean that research continues. This talk explores some recent developments.

Biography

David Hand is Senior Research Investigator and Emeritus Professor of Mathematics at Imperial College, London, and Chief Scientific Advisor to Winton Capital Management. He is a Fellow of the British Academy, and a recipient of the Guy Medal of the Royal Statistical Society. He has served (twice) as President of the Royal Statistical Society, and is on the Board of the UK Statistics Authority. He has published 300 scientific papers and 26 books. He has broad research interests in areas including classification, data mining, anomaly detection, and the foundations of statistics. His applications interests include psychology, physics, and the retail credit industry - he and his research group won the 2012 Credit Collections and Risk Award for Contributions to the Credit Industry. He was made OBE for services to research and innovation in 2013.

Friday, 22 August, 9:00-10:00

Approximation of hard combinatorial problems via embedding to hierarchically separated trees

Ali Shokoufandeh, Drexel University, Philadelphia, USA



This talk deals with a bounds on several optimization problems including monochromatic and bichromatic optimization minimum matching, minimum spanning trees, and the travelling salesman problem. Many of these problems lend themselves to representations in terms of hierarchically separated trees --- trees with uniform branching factor and depth, and having edge weights exponential in the depth of the edge in the tree. We also present tight concentration results for the monochromatic problems. Finally, we apply our results to

similar problems on random point sets taken from the Euclidean hypercube $[0, 1]^d$.

Biography

Ali Shokoufandeh received the B.Sc. degree in Computer Science from the Tehran University, in 1989, and the M.S. and Ph.D. degrees in Computer Science from Rutgers the State University of New Jersey, in 1996 and 1999, respectively. He is currently Professor and Associate Chair of the Department of Computer Science at the Drexel University. He has held affiliations with the Department of Computer and Information Science, University of Pennsylvania (Visiting Assistant Professor, 1999-2002), the The Wistar Institute, University of Pennsylvania (Visiting Assistant Professor, 2003-2005). Dr. Shokoufandeh's research interests revolve around the design and analysis of algorithms for combinatorial and geometric problems and their applications to generic object recognition, shape representations as hierarchical graphs, and inexact graph indexing and matching. He currently serves on the editorial boards of Pattern Recognition Letters and IET Computer Vision.

Technical Program

Wednesday, 20 August

8:30 OPENING

9:00 IAPR KEYNOTE

Evaluating Supervised Classification Methods: Error Rate, ROC Curves, and Beyond

David Hand, Imperial College, London, UK

10:00 COFFEE BREAK

10:30-12:00 GRAPH KERNELS

Chair: Marcello Pelillo

10:30 A Graph Kernel from the Depth-Based Representation

Lu Bai, Peng Ren, Xiao Bai, and Edwin Hancock

11:00 Incorporating Molecule's Stereoisomerism within the Machine Learning Framework

Pierre-Anthony Grenier, Luc Brun, and Didier Villemin

11:30 Transitive State Alignment for the Quantum Jensen-Shannon Kernel

Andrea Torsello, Andrea Gasparetto, Luca Rossi, Lu Bai, and Edwin R. Hancock

10:30-12:00 CLUSTERING

Chair: Francesco Tortorella

10:30 Balanced K-means for Clustering

Mikko I. Malinen and Pasi Fränti

11:00 Poisoning Complete-linkage Hierarchical Clustering

Battista Biggio, Samuel Rota Bulò, Ignazio Pillai, Michele Mura, Eyasu Zemene Mequanint, Marcello Pelillo, and Fabio Roli

11:30 A Comparison of Categorical Attribute Data Clustering Methods

Ville Hautamäki, Antti Pöllänen, Tomi Kinnunen, Kong Aik Lee, Haizhou Li, and Pasi Fränti

12:00 LUNCH

13:30-15:00 GRAPH EDIT DISTANCE

Chair: Richard C. Wilson

13:30 Improving Approximate Graph Edit Distance Using Genetic Algorithms

Kaspar Riesen, Andreas Fischer, and Horst Bunke

14:00 Approximate Graph Edit Distance Guided by Bipartite Matching of Bags of Walks

Benoit Gaüzère, Sébastien Bogleux, Kaspar Riesen, and Luc Brun

14:30 A Hausdorff Heuristic for Efficient Computation of Graph Edit Distance

Andreas Fischer, Réjean Plamondon, Yvon Savaria, Kaspar Riesen, and Horst Bunke

15:00 COFFEE BREAK

15:30-17:00 DISCRIMINANT ANALYSIS

Chair: Marco Loog

15:30 Fast Gradient Computation for Learning with Tensor Product Kernels and Sparse Training Labels

Tapio Pahikkala

16:00 Comparison between Supervised and Unsupervised Learning of Probabilistic Linear Discriminant Analysis Mixture Models for Speaker Verification

Timur Pekhovsky and Aleksandr Sizov

16:30 Nonlinear Discriminant Analysis Based on Probability Estimation by Gaussian Mixture Model

Akinori Hidaka and Takio Kurita

15:30-17:00 GRAPH MODELS AND EMBEDDING

Chair: Edwin R. Hancock

15:30 Flip-Flop Sublinear Models for Graphs

Brijnesh Jain

16:00 **Node Centrality for Continuous-Time Quantum Walks**
Luca Rossi, Andrea Torsello, and Edwin R. Hancock

16:30 **Max-Correlation Embedding Computation**
Antonio Robles-Kelly

19:00 **WELCOME RECEPTION AT POLAR BEAR CLUB**



Thursday, 21 August

9:00-10:00 COMBINING AND SELECTING

Chair: David M.J. Tax

9:00 Information Theoretic Feature Selection in Multi-label Data through Composite Likelihood

Konstantinos Sechidis, Nikolaos Nikolaou, and Gavin Brown

9:30 Majority Vote of Diverse Classifiers for Late Fusion

Emilie Morvant, Amaury Habrard, and Stéphane Ayache

10:00 COFFEE BREAK

10:30-12:00 S+SSPR JOINT SESSION

Chair: Luc Brun

10:30 Information-theoretic Selection of High-dimensional Spectral Features for Structural Recognition

Boyan Bonev, Francisco Escolano, Daniela Giorgi, and Silvia Biasotti

11:00 Entropic Graph Embedding via Multivariate Degree Distributions

Cheng Ye, Richard C. Wilson, and Edwin R. Hancock

11:30 On Parallel Lines in Noisy Forms

George Nagy

12:00 LUNCH BREAK

13:30-15:00 METRICS AND DISSIMILARITIES

Chair: Battista Biggio

13:30 Metric Learning in Dissimilarity Space for Improved Nearest Neighbor Performance

Robert P. W. Duin, Manuele Bicego, Mauricio Orozco-Alzate, Sang-Woon Kim, and Marco Loog

**14:00 Improving Distance Based Image Retrieval Using
Non-Dominated Sorting Genetic Algorithm**

*Miguel Arevalillo-Herráez, Francesc J. Ferri, and
Salvador Moreno-Picot*

14:30 Matching Similarity for Keyword-Based Clustering

Mohammad Rezaei and Pasi Fränti

15:00-17:00 POSTERS

Chairs: Francisco Escolano and Marco Loog

Edit Distance Computed by Fast Bipartite Graph Matching

Francesc Serratosa and Xavier Cortés

**Statistical Method for Semantic Segmentation of Dominant
Plane from Remote Exploration Image Sequence**

Shun Inagaki and Atsushi Imiya

**Analyses on Generalization Error of Ensemble Kernel
Regressors**

*Akira Tanaka, Ichigaku Takigawa, Hideyuki Imai, and
Mineichi Kudo*

**Structural Human Shape Analysis for Modelling and
Recognition**

Chutisant Kerdvibulvech and Koichiro Yamauchi

On Cross-Validation for MLP Model Evaluation

Tommi Kärkkäinen

**Weighted Mean Assignment of a Pair of Correspondences
Using Optimisation Functions**

Carlos Francisco Moreno-García and Francesc Serratosa

**Chemical Symbol Feature Set for Handwritten Chemical
Symbol Recognition**

Peng Tang, Siu Cheung Hui, and Chi-Wing Fu

About Combining Metric Learning and Prototype Generation

*Adrian Perez-Suay, Francesc J. Ferri, Miguel Arevalillo-Herráez,
and Jesús V. Albert*

Tracking System with Re-identification Using a RGB String Kernel

Amal Mahboubi, Luc Brun, Donatello Conte, Pasquale Foggia, and Mario Vento

Towards Scalable Prototype Selection by Genetic Algorithms with Fast Criteria

Yenisel Plasencia-Calaña, Mauricio Orozco-Alzate, Heydi Méndez-Vázquez, Edel García-Reyes, and Robert P. W. Duin

IOWA Operators and Its Application to Image Retrieval

Esther de Ves Cuenca, Pedro Zuccarello, Teresa León, and Guillermo Ayala

On Optimum Thresholding of Multivariate Change Detectors

William J. Faithfull and Ludmila I. Kuncheva

Commute Time for a Gaussian Wave Packet on a Graph

Furqan Aziz, Richard C. Wilson, and Edwin R. Hancock

Properties of Object-Level Cross-Validation Schemes for Symmetric Pair-Input Data

Juho Heimonen, Tapio Salakoski, and Tapio Pahikkala

A Binary Factor Graph Model for Biclustering

Matteo Denitto, Alessandro Farinelli, Giuditta Franco, and Manuele Bicego

Improved BLSTM Neural Networks for Recognition of On-line Bangla Complex Words

Volkmar Frinken, Nilanjana Bhattacharya, Seiichi Uchida, and Umapada Pal

A Ranking Part Model for Object Detection

Chaobo Sun and Xiaojie Wang

Regular Decomposition of Multivariate Time Series and Other Matrices

Hannu Reittu, Fülöp Bazsó, and Robert Weiss

Texture Synthesis: From Convolutional RBMs to Efficient Deterministic Algorithms

Qi Gao, and Stefan Roth

Improved Object Matching Using Structural Relations

Estephan Dazzi, Teofilo de Campos, and Roberto M. Cesar Jr.

Designing LDPC Codes for ECOC Classification Systems

Claudio Marrocco and Francesco Tortorella

Unifying Probabilistic Linear Discriminant Analysis Variants in Biometric Authentication

Aleksandr Sizov, Kong Aik Lee, and Tomi Kinnunen

The Active Geometric Shape Model: A New Robust Deformable Shape Model and Its Applications

Quan Wang, and Kim Boyer

Multi-label Learning Under Feature Extraction Budgets

Pekka Naula, Antti Airola, Tapio Salakoski, and Tapio Pahikkala

19:00

BANQUET AT THEATRE RESTAURANT



Friday, 22 August

9:00 IAPR KEYNOTE

**Approximation of Hard Combinatorial Problems via
Embedding to Hierarchically Separated Trees**

Ali Shokoufandeh, Drexel University, Philadelphia, USA

10:00 COFFEE BREAK

10:30-12:00 PARTIAL SUPERVISION

Chair: Francesc J. Ferri

**10:30 Evaluating Classification Performance with only Positive and
Unlabeled Samples**

Siamak Hajizadeh, Zili Li, Rolf P.B.J. Dollevoet, and David M.J. Tax

**11:00 Semi-Supervised Nearest Mean Classification through a
Constrained Log-Likelihood**

Marco Loog and Are C. Jensen

11:30 Who Is Missing? A New Pattern Recognition Puzzle

Ludmila I. Kuncheva and Aaron Jackson

10:30-12:00 APPLICATIONS

Chair: Antonio Robles-Kelly

10:30 Quantum vs Classical Ranking in Segment Grouping

Francisco Escolano, Boyan Bonev, and Edwin R. Hancock

11:00 Remove Noise in Video with 3D Topological Maps

Donatello Conte and Guillaume Damiand

**11:30 Video Analysis of a Snooker Footage Based on Kinematic
Model**

Aysylu Gabdulkhakova, and Walter Kropatsch

12:00 LUNCH BREAK

13:00 EXCURSION TO KOLI NATIONAL PARK

Social Program

WEDNESDAY, 20 AUGUST at 19:00

WELCOME RECEPTION

Welcome reception will be arranged in Polar Bear Club situated about 3 km away from the city centre. Sight-seeing bicycle trip to the venue is organized for those who interested. Contact Person: Andrei, +358-442171994

THURSDAY, 21 AUGUST at 19:00

BANQUET

Banquet will be held in Theatre Restaurant in Joensuu City Hall designed by Eliel Saarinen in the Art Nuoveau style and completed in 1914.

FRIDAY, 22 AUGUST at 13:00

EXCURSION TO KOLI

Koli, with its forested hills, is one of Finland's best known national landscapes. Ukko-Koli, the highest hill in the Koli range, rises 253 metres above the surface of wilderness-like Lake Pielinen. You can attend hiking routes of varying difficulty, and stop in Visitor Centre Ukko which has information on Koli's heritage landscape and Eastern Finland's wooded hills and culture.

Schedule:

- 13.00 Departure from Aura building
- 14.00 Arrival to Koli
- 14.15 Guided hiking (3 levels of routes)
- 16.45 Gathering at harbor
- 17.00 Lake cruise to Lieksa, dinner on board
- 18.40 Arrival to Lieksa
- 19.15 Visit to Paateri
- 22.00 Arrival to Joensuu



Things to Do and Places to Visit

Orienteering in forest: 19.8 at 17.00 Tutorial to orienteering at Selkie (24 km from city) suitable also for new-comers. Take trail or orienteering shoes, towel and change clothes optional. (6€) Contact Person: Pasi, +358-405958879

Early Bird Trail Jogging: 21.8 at 7:15 Scenery jog of 7 km at Utranharju, 10 min drive from center. Ends at Onkilampi lake, where you can wash yourself before returning to town. Take trail shoes, towel and change clothes. (0€) Contact Person: Pasi, +358-405958879

Taitokortteli/Art Corner (Koskikatu 1): Handcraft and culture block in the center of Joensuu. The old wooden house atmosphere and shops for souvenirs and handcrafts with exhibitions and a cafe. Open: Monday-Friday 10-17:00

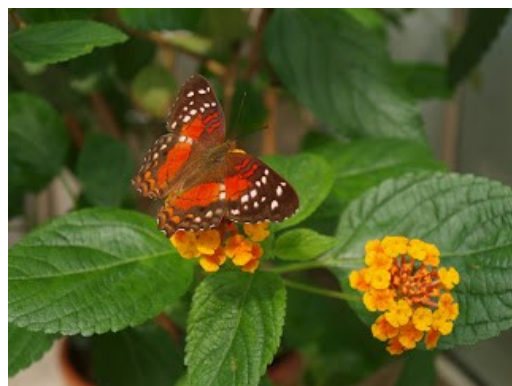
Jokiasema (Hasanniementie 3): A popular meeting terrace at the end of river, good for beer, coffee, ice-cream and meeting local people.

Carelicum (Koskikatu 5) : Tourist info that also has a museum of local history and culture. During the war, Joensuu served as an important airbase so you'll find some small pieces of war history. Open : Monday-Friday 9am to 5pm.

River & Lake Cruise: Daily cruises (Vinkeri) depart at 12:00 (river), 15:00 (lake), 18:00 (river). The cruise takes 2 hours (15 €).

Tori (marketplace): Visit here and meet the "city wolf", enjoy ice cream, outdoor coffee (Marttakahvio & Torikahvio), fried fish (*muikku*) and local delicacies Carelian pastry (*karjalanpiirakka*).

Botania (Heinäpurontie 70): A botanical garden with tropical butterflies. Open: Mon-Tue 10-17, Wed 10-18, Thu-Fri 10-17, Sat-Sun 11-16.



Sea Cruise to Stockholm

Whether you are attending ICPR or want to have a mini-holiday in Stockholm before travelling back home, you are welcome to join our sea cruise.

Please note that the fee does not cover transportation from Joensuu to Helsinki! We recommend you to take a morning flight AY2482 departing from Joensuu at 8.45 on Saturday 23.8.

Saturday 23.8 (EET)

17.30	Gathering in Katajanokka Terminal, Mastokatu 1, Helsinki
18.15	Departure from Helsinki
18.45	Buffet dinner on-board

Sunday 24.8 (CET)

7.00-9:30	Buffet breakfast on-board
10.00	Arrival to Stockholm
	Sightseeing in Stockholm/going to ICPR
16.30	Departure from Stockholm

Monday 25.8 (EET)

8.00-9:45	Buffet breakfast on-board
9.50	Arrival to Helsinki

Contact person: Oili, +358 405640480, oili.kohonen@uef.fi



Foods, Drinks and Tips

Restaurants

Pizza Express & Café (Siltakatu 18): Pizza & Kebab

Pub-pizzeria Gaude (Länsikatu 18): Pizza

Kesälato (Rantakatu 13): Pizza

Kerubi (Siltakatu 1): Finnish/local

Kielo (Suvantokatu 12): Finnish/local

Pubs

Kesälato (Rantakatu 13)

Sointula pub (Kirkkokatu 22)

60s Palaver pub (Kauppakatu 22)

Bar Play (Kauppakatu 23)

Tipping & Etiquette

In Finland, tips are not expected, service fee is always included in the bill.

Taxi

East Finland Taxi Center tel. +358-600-90100

Electricity

In Finland, socket and plug used are mainly of types: C, F.

Voltage: 230 V 50 Hz



Time Zone

Finland uses Eastern European Time (EET), which is +2 hours ahead of UTC (Greenwich), and +1 hours to Central European Time (CET) as in Sweden, for example. In August, summer daylight saving time applies.

