Welcome to Ystad

and

the 17th Scandinavian Conference on Image Analysis

We are looking forward to an enjoyable and stimulating event with high quality scientific contributions within image analysis, segmentation, multiple view geometry, categorization and classification, structure from motion and SLAM, medical and biomedical applications, 3D shape, and medical imaging. The conference organizers are extremely proud to present tutorial and keynote talks of world-renowned experts, and we are truly honored by them having accepted the invitation.

For the first time in the SCIA history, we used a two-stage reviewing system with the ten program committee members serving as area chairs, each responsible for about 15 papers. Half of the area chairs are from the Scandinavian countries, and the remaining from Europe, United States and Japan in order to reflect that SCIA is an international event.

The papers were carefully selected based on three reviews and a consolidating report and acceptance/rejection recommendation from the responsible area chair. Among 140 submissions 74 were accepted, leading to an acceptance rate of 53%. This year, the main conference is followed by the first workshop on Imaging Food Quality.

We have done our best to organize a good event, but nothing would have been possible without the time and effort put in by the anonymous reviewers. We wish to take this opportunity to thank them. We also wish to thank our invited speakers for accepting the invitation, and thereby helping in making this conference a truly international event of very high standard. And finally, we thank all authors for submitting their work to SCIA.

We hope you all will enjoy the conference and your stay in Ystad.

Anders Heyden, Fredrik Kahl, Magnus Oskarsson, and Niels Christian Overgaard
General Chair: Anders Heyden

Program Chair: Fredrik Kahl

Organizing Committee:
Anders Heyden
Fredrik Kahl
Magnus Oskarsson
Niels Chr. Overgaard

Program Committee: (Serving as Area Chairs)
Magnus Borga, Sweden
Magnus Oskarsson, Sweden
Rasmus Larsen, Denmark
Arnt-Börre Salberg, Norway
Matti Pietikäinen, Finland
Adrien Bartoli, France
Sylvia Pont, The Netherlands
Gabriella Sanniti di Baja, Italy
Rene Vidal, USA
Akihiro Sugimoto, Japan
Locations

Registration: Galleriet (3)

Main conference oral sessions: Bolsa Beach (1-2)
Poster sessions: Galleriet (3)
Exhibition: Galleriet (3)

Tutorials:
Advanced appearance modelling: Picknick (7)
Non-rigid structure from motion: Picknick (7)
Qualitative shape descriptions in image analysis and retrieval: Corona (12)
Statistical models for image sequence analysis: Corona (12)

Workshop sessions and exhibition: Silver Suite (4-5)

Reception: Abben and Terrassen (17)
Conference Dinner: Kronovalls Slott (Buses will leave from YSB)
Program at a glance

Miscellaneous information

Wireless net access:
Connect to 'Salsjöbaden', no password required

Taxi:
Taxi Kurir, +46 11 585858

Emergency:
Call 112

Electricity:
230 V 50 Hz

Banks and ATM:
Available in Ystad
### Detailed Program

**Monday**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15-18:00</td>
<td>Registration</td>
</tr>
<tr>
<td>08:30-12:30</td>
<td><strong>Tutorials</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Advanced Material Appearance Modelling</strong></td>
</tr>
<tr>
<td></td>
<td>Michal Haindl and Jiri Filip</td>
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<tr>
<td>10:30</td>
<td>Coffee</td>
</tr>
<tr>
<td>12:30-13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30-17:30</td>
<td><strong>Tutorials</strong></td>
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<td></td>
<td><strong>Non-Rigid Structure from Motion</strong></td>
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<tr>
<td></td>
<td>Dr. Lourdes Agapito, Prof. Adrien Bartoli and Dr. Alession Del Bue</td>
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<td>15:00</td>
<td>Coffee</td>
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<tr>
<td>18:00</td>
<td>Reception</td>
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<td>Time</td>
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<tr>
<td>08:00-17:00</td>
<td>Registration</td>
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<tr>
<td>08:15-08:30</td>
<td><strong>Welcome, Practical Information</strong></td>
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<tr>
<td>08:30-09:15</td>
<td><strong>Session 1: IAPR Invited Speaker</strong></td>
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<tr>
<td></td>
<td>Chair: Fredrik Kahl</td>
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<td></td>
<td>Averaging on Riemannian Manifolds</td>
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<td></td>
<td>Richard Hartley</td>
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<td>Australian National University</td>
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<td>09:20-10:25</td>
<td><strong>Session 2: Multiple View Geometry</strong></td>
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<td>Chair: Adrien Bartoli</td>
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<td>Camera Self-calibration with Parallel Screw Axis Motion by Intersecting</td>
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<td>Imaged Horopters</td>
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<td>Ferran Espuny, Joan Aranda, José I. Burgos Gil</td>
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<td>Grenoble-INP, UPC, CSIC-UAM-UCM-UC3</td>
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<td>Triangulating a Plane</td>
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<td>Carl Olsson, Anders Eriksson</td>
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<td>Lund University, University of Adelaide</td>
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<td><strong>Human 3D Motion Computation from a Varying Number of Cameras</strong></td>
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<td>Magnus Burenius, Josephine Sullivan, Stefan Carlsson, Kjartan Halvorsen</td>
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<td>Royal Insitute of Technology</td>
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<tr>
<td>10:25-10:55</td>
<td><strong>Coffee</strong></td>
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<td>10:55-12:00</td>
<td><strong>Session 3: Segmentation</strong></td>
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<td>Chair: Michael Felsberg</td>
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<td>Generalized Hard Constraints for Graph Segmentation</td>
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<td>Filip Malmberg, Robin Strand, Ingela Nyström</td>
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<td>Uppsala University</td>
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<td>Highly Consistent Sequential Segmentation</td>
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<td>Michael Donoser, Martin Urschler, Hayko Riemenschneider, Horst Bischof</td>
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<td>Graz University of Technology</td>
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<td>Improved Video Segmentation by Adaptive Combination of Depth Keying and</td>
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<td>Mixture-of-Gaussians</td>
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<td>Ingo Schiller, Reinhard Koch</td>
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<td>Christian-Albrechts-Universität Kiel</td>
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</tbody>
</table>
12:10-13:10  Lunch

13:10-13:55  Session 4: IAPR Invited Speaker
  
  Chair: Carl Olsson

  Computing with Light
  Kyros Kutulakos
  University of Toronto

14:00-15:30  Session 5: Posters

  1. Sparse Similarity-based Fisherfaces
     Jens Fagertun, David Gomez, Mads Hansen, Rasmus Paulsen
     Technical University of Denmark, Carlos III University

  2. Accumulation of Different Visual Feature Descriptors in a Coherent Framework
     Jeppe Jessen, Florian Pilz, Dirk Kraft, Nicolas Pugeault, Norbert Kruger
     University of Southern Denmark, Aalborg University, University of Surrey

  3. Person Re-Identification by Descriptive and Discriminative Classification
     Martin Hirzer, Csaba Beleznai, Peter Roth, Horst Bischof
     Graz University of Technology, Austrian Institute of Technology

  4. On Inferring Image Label Information Using Rank Minimization for Supervised Concept Embedding
     Dmitriy Bespalov, Anders Dahl, Bing Bai, Ali Shokoufandeh
     Drexel University, Technical University of Denmark, NEC Labs

  5. Saliency in Spectral Images
     Steven Le Moan, Alamin Mansouri, Jon Hardeberg, Yvon Voisin
     Université de Bourgogne, Gjøvik University College

  6. Mixed-State Particle Filtering for Simultaneous Tracking and Re-Identification in Non-Overlapping Camera Networks
     Boris Meden, Patrick Sayd, Frédéric Lerasle
     CEA LIST, CNRS, LAAS, Université de Toulouse

  7. Smoothing-Based Submap Merging in Large Area SLAM
     Anders Karlsson, Jon Bjärkefur, Joakim Rydell, Christina Grönwall
     FOI, Autoliv

  8. Watermark Recovery from a Dual Layer Hologram with a Digital Camera
     Anu Pramila, Anja Keskinarkaus, Esa Rahtu, Tapio Seppänen
     University of Oulu
9. Point Pattern Matching for 2-D Point Sets with Regular Structure
Tapio Manninen, Risto Rönkkä, Heikki Huttunen
DropAim, Tampere University of Technology

10. Real Time Surface Registration for PET Motion Tracking
Jakob Wilm, Olina Olesen, Rasmus Paulsen, Liselotte Højgaard, Bjørne Roed, Rasmus Larsen
Technical University of Denmark, Copenhagen University Hospital,
Siemens Healthcare

11. Image Reconstruction by Prioritized Incremental Normalized Convolution
Anders Landström, Frida Nellros, Håkan Jonsson, Matthew Thurley
Luleå University of Technology

12. Forming Different-complexity Covariance-model Subspaces through Piecewise-constant Spectra for Hyperspectral Image Classification
Are Charles Jensen, Marco Loog
University of Oslo, TU Delft

13. Mobile Visual Search from Dynamic Image Databases
Xi Chen, Markus Koskela
Aalto University

14. Histogram-Based Description of Local Space-Time Appearance
Karla Brkić, Axel Pinz, Siniša Šegvić, Zoran Kalafatić
FER Zagreb, Graz University of Technology

15. Content Based Detection of Popular Images in Large Image Databases
Martin Solli, Reiner Lenz
Linköping University

16. Unscented Kalman Filtering for Articulated Human Tracking
Anders Boesen Lindbo Larsen, Søren Hauberg, Kim Pedersen
University of Copenhagen

Fredrik Larsson, Michael Felsberg
Linköping University

Rudolf Mester, Christian Conrad, Alvaro Guevara
Goethe University Frankfurt, Linköping University

19. Color Persistent Anisotropic Diffusion of Images
Freddie Åström, Michael Felsberg, Reiner Lenz
Linköping University
20. Analysis of Seed Sorting Process by Estimation of Seed Motion Trajectories
Ole Buus, Johannes Jørgensen, Jens Carstensen
Aarhus University, Technical University of Denmark

21. Improving Particle Segmentation from Process Images with Wiener Filtering
Lauri Laaksonen, Nataliya Strokina, Tuomas Eerola, Lasse Lensu, Heikki Kalviainen
Lappeenranta University of Technology

22. Efficient Hyperelastic Regularization for Registration
Sune Darkner, Michael Sass Hansen, Rasmus Larsen, Mads F. Hansen
University of Copenhagen, Technical University of Denmark

15:30-16:00 Coffee

16:00-17:00 Session 6: Image Analysis I
Chair: Rudolf Mester

Degradation Based Blind Image Quality Evaluation
Ville Ojansivu, Leena Lepisto, Martti Ilmoniemi, Janne Heikkila
University of Oulu, Nokia Corporation

Evaluation of Image Quality Metrics for Color Prints
Marius Pedersen, Yuanlin Zheng, Jon Hardeberg
Gjøvik University College

Super Continuum Light Source for Hyperspectral Subsurface Laser Scattering - Applications for Food Inspection
Otto Nielsen, Anders Dahl, Rasmus Larsen, Flemming Møller, Henrik Aanaes, Jens Carstensen, Carsten Thomsen
Technical University of Denmark, Dansico A/S, NKT Photonics A/S

17:30-18:30 Dinner (optional)

Wednesday

08:00-17:00 Registration

08:15-09:00 Session 7: IAPR Invited Speaker
Chair: Anders Heyden

Images and Text: A Powerful Combination
Tinne Tuytelaars
KU Leuven
09:05-10:10  **Session 8: Categorization and Classification**  
*Chair: Jon Yngve Hardeberg*

- **Real-Time Detection of Landscape Scenes**  
  Sami Huttunen, Esa Rahtu, Ivari Kunttu, Juuso Gren, Janne Heikkila  
  University of Oulu, Nokia Corporation

- **Generic Object Class Detection Using Feature Maps**  
  Oscar Danielsson, Stefan Carlsson  
  Royal Institute of Technology

- **Volume Local Phase Quantization for Blur-Insensitive Dynamic Texture Classification**  
  Juhani Päivärinta, Esa Rahtu, Janne Heikkila  
  University of Oulu

10:10-10:40  **Coffee**

10:40-12:10  **Session 9: Structure from Motion and SLAM**  
*Chair: Richard Hartley*

- **Optimal View Path Planning for Visual SLAM**  
  Sebastian Haner, Anders Heyden  
  Lund University

- **Automatic Estimation of the Number of Deformation Modes in Non-rigid SfM with Missing Data**  
  Carme Julià, Marco Paladini, Ravi Garg, Domenec Puig, Lourdes Agapito  
  Universitat Rovira i Virgili, Queen Mary University of London

- **Unsupervised Learning for Improving Efficiency of Dense Three-Dimensional Scene Recovery in Corridor Mapping**  
  Thomas Warsop, Sameer Singh  
  Loughborough University

- **Catadioptric Silhouette-Based Pose Estimation from Learned Models**  
  Christian Reinbacher, Markus Heber, Matthias Rüther, Horst Bischof  
  Graz University of Technology

12:10-13:10  **Lunch**

13:10-13:55  **Session 10: IAPR Invited Speaker**  
*Chair: Magnus Oskarsson*

- **The Optimizability-Fidelity Trade-off in Image Analysis**  
  Ghassan Hamarneh  
  Simon Fraser University
14:00-15:00 **Session 11: Medical and Biomedical Applications**  
*Chair: Rasmus Larsen*

*Using The Local Phase of the Magnitude of the Local Structure Tensor for Image Registration*  
*Anders Eklund, Daniel Forsberg, Mats Andersson, Hans Knutsson*  
Linköping University

*Coherence Probe Microscopy Imaging and Analysis for Fiber-Reinforced Polymers*  
*Verena Schlager, Stefan Schausberger, David Stifter, Bettina Heise*  
Johannes Kepler University Linz

*Automatic Segmentation Of Veterinary Infrared Images With The Active Shape Approach*  
*Tom Wirthgen, Stephan Zipser, Ulrike Franze, Steffi Geidel, Franz Dietel, Theophile Alary*  
Fraunhofer Institute, HTW Dresden, HTWK Leipzig, Université de technologie de Troyes

15:00-15:30 **Coffee**

17:30-18:30 **Conference dinner predrink – YSB**

19:30-22:00 **Conference dinner - Kronovalls slott**

**Thursday**

08:00-17:00 **Registration**

08:15-09:00 **Session 12: IAPR Invited Speaker**  
*Chair: Niels Christian Overgaard*

*Depth of Field Rendering*  
*Tomas Akenine-Möller*  
Lund University

09:05-10:10 **Session 13: 3D Shape**  
*Chair: Tinne Tuytelaars*

*Using the Skeleton for 3D Object Decomposition*  
*Luca Serino, Gabriella Sanniti di Baja, Carlo Arcelli*  
Istituto di Cibernetica - CNR
A Three-Dimensional Shape Description Algorithm Based on Polar-Fourier Transform for 3D Model Retrieval
Dariusz Frejlichowski
West Pomeranian University of Technology

Combining Stereo and Time-of-Flight Images with Application to Automatic Plant Phenotyping
Yu Song, Chris Glasbey, Gerie W.A.M. van der Heijden, Gerrit Polder, J. Anja Dieleman
BioSS, Biometris Wageningen, Wageningen UR Greenhouse Horticulture

10:10-10:40 Coffee

10:40-12:10 Session 14: Medical Imaging
Chair: Magnus Borga

Iterative Reconstruction for Quantitative Tissue Decomposition in Dual-Energy CT
Maria Magnusson, Alexandr Malusek, Arif Muhammad, Gudrun Alm Carlsson
Linköping University

An Automated System for the Detection and Diagnosis of Kidney Lesions in Children from Scintigraphy Images
Matilda Landgren, Karl Sjöstrand, Mattias Ohlsson, Daniel Ståhl, Niels Christian Overgaard, Kalle Åström, Rune Sixt, Lars Edenbrandt
Exini Diagnostics AB, Lund University, Queen Silvia Children's Hospital

Automatic Segmentation of Abdominal Adipose Tissue in MRI
Thomas Mosbech, Kasper Pilgaard, Allan Vaag, Rasmus Larsen
Technical University of Denmark, Steno Diabetes Center

Fully Automatic Liver Volumetry Using 3D Level Set Segmentation for Differentiated Liver Tissue Types in Multiple Contrast MR Datasets
Oliver Gloger, Klaus Tönnies, Jens Kuehn
Universität Greifswald, Otto-von-Guericke University of Magdeburg

12:10-13:10 Lunch

13:10-14:40 Session 15: Posters

1. Stable Structure from Motion for Unordered Image Collections
Carl Olsson, Olof Enqvist
Lund University

2. Projector Calibration by "Inverse Camera Calibration"
Ivan Martynov, Joni Kamarainen, Lasse Lensu
Lappeenranta Univ. of Technology
3. Representing Local Structure Using Tensors II  
Hans Knutsson, Carl-Fredrik Westin, Mats Andersson  
Linköping University, Harvard Medical School

4. Automatic Compartment Modelling and Segmentation for Dynamical Renal Scintigrahpies  
Daniel Ståhl, Kalle Åström, Niels Christian Overgaard, Matilda Landgren, Karl Stjôstrand, Lars Edenbrandt  
Lund University, Exini Diagnostics AB

5. Expression Recognition in Videos Using a Weighted Component-based Feature Descriptor  
Xiaohua Huang, Guoying Zhao, Matti Pietikäinen, Wenming Zheng  
University of Oulu, Southeast University

Vasileios Zografos, Reiner Lenz  
Linköping University

7. Model-Based Transfer Functions for Efficient Visualization of Medical Image Volumes  
Daniel Forsberg, Claes Lundström, Mats Andersson, Hans Knutsson  
Linköping University

8. Anatomical Landmark Tracking for the Analysis of Animal Locomotion in X-ray Videos Using Active Appearance Models  
Daniel Haase, Joachim Denzler  
University of Jena

Filip Malmberg  
Uppsala University

10. Scale Space Smoothing, Image Feature Extraction and Bessel Filters  
Sasan Mahmoodi, Steve Gunn  
University of Southampton

11. A Free-Viewpoint Virtual Mirror with Marker-Less User Interaction  
Matthias Straka, Stefan Hauswiesner, Matthias Rüther, Horst Bischof  
Graz University of Technology

12. Wood Detection and Tracking in Videos of Rivers  
Imtiaz Ali, Julien Mille, Laure Tougne  
Université Lyon
13. Interactive Image Segmentation Using Level Sets and Dempster-Shafer Theory of Evidence
Björn Scheuermann, Bodo Rosenhahn
Leibniz Universität Hannover

Hamed Rezazadeh Tavakoli, Esa Rahtu, Janne Heikkila
University of Oulu

15. Combining Contrast Information and Local Binary Patterns for Gender Classification
Juha Ylioinas, Abdenour Hadid, Matti Pietikäinen
University of Oulu

16. Indexing Tree Structures through Caterpillar Decomposition
Fadi Yilmaz, Fatih Demirci
TOBB University of Economics and Technology

17. Recovering Missing Data on Satellite Images
Isabelle Herlin, Dominique Béréziat, Nicolas Mercier
INRIA, CEREA, Université Pierre et Marie Curie

18. Target Segmentation in Scenes with Diverse Background
Christina Grönwall, Gustav Tolt
FOI

19. A Hybrid Approach to Brain Extraction from Premature Infant MRI
Michele Peporte, Dana E. Ilea Ghita, Eilish Twomey, Paul F. Whelan
Dublin City University, Childrens University Hospital, Dublin

20. Adaptive Classification Method for Dirt Particle Recognition
Nataliya Strokina, Tuomas Eerola, Lasse Lensu, Heikki Kalviainen
Lappeenranta University of Technology

21. Text Extraction using Component Analysis and Neuro-Fuzzy Classification on Complex Backgrounds
Michael Makridis, Nikolaos Mitrikis, Nikos Nikolaou, Nikolaos Papamarkos
Democritus University Thrace, European Commission - Joint Research Centre

22. Using Active Illumination for Accurate Variational Space-Time Stereo
Sergey Kosov, Thorsten Thormaehlen, Hans-Peter Seidel
Max-Planck-Institut, Saarbrücken

23. Kernel Fisher Discriminant and Elliptic Shape Model for Automatic Measurement of Allergic Reactions
Heikki Huttenen, Jari-Pekka Rynänen, Ville Voipio, Hisakazu Kikuchi
Tampere University of Technology, Niigata University
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>14:40-15:10</td>
<td><strong>Coffee</strong></td>
</tr>
<tr>
<td>15:10-16:15</td>
<td><strong>Session 16: Image Analysis II</strong></td>
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<tr>
<td></td>
<td>Chair: Heikki Kälviäinen</td>
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<tr>
<td></td>
<td>Continuous Orientation Representation for Arbitrary Dimensions –</td>
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<td>a Generalized Knutsson Mapping</td>
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<td>Bernd Rieger, Lucas van Vliet, Piet Verbeek</td>
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<td>TU Delft</td>
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<td>Real-Time Line Detection Using Accelerated High-Resolution Hough Transform</td>
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<td>Radovan Jošt, Markéta Dubská, Adam Herout, Jiří Havel</td>
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<td>Brno University of Technology</td>
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<td>Decomposition of a Curve into Arcs and Line Segments Based on Dominant</td>
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<td>Point Detection</td>
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<td>Thanh Phuong Nguyen, Isabelle Debled-Rennesson</td>
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<td>LORIA, Nancy university</td>
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<td>16:15-16:30</td>
<td><strong>Farewell</strong></td>
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<tr>
<td>17:30-18:30</td>
<td><strong>Workshop dinner</strong></td>
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<td></td>
<td><strong>Friday</strong></td>
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<tr>
<td>08:30-17:00</td>
<td><strong>Workshop on Imaging Food Quality</strong></td>
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