



11th Workshop "Theoretical Foundations of Computer Vision" - April 2002

Geometry, Morphology and Computational Imaging

Schloß Dagstuhl. Wadern, Germany
April 07 – April 12, 2002

Chairmen

Tetsuo Asano (Japan), **Reinhard Klette** (New Zealand)
Christian Ronse (France)

Monday morning

09:00 **Opening:** Reinhard Klette

09:10 - 12 **SESSION 1: Mathematical Morphology**

chair: Christian Ronse

09:10-10:00 Isabelle Bloch, CNRS/ENST - Paris
Spatial Relationships between Objects and Fuzzy Objects using
Mathematical Morphology

10:00-10:25 Akira Asano, Hiroshima University
Morphological Texture Analysis using Optimization of Structuring Elements

10:25-10:40 BREAK

10:40-11:30 Ulrich Eckhardt, Universität Hamburg
Root Images of Median Filters: Semi-Topological Approach

11:30-12:00 Jos Roerdink, University of Groningen
Multiresolution MIP Volume Rendering by Morphological Pyramids

Monday afternoon - definition of working groups

14:00 – 14:15 **Definition of Working Groups**

chairs: Christian Ronse, Reinhard Klette

Monday afternoon - first sessions of working groups

14:15 – 15:00 **Definition of Working Groups**

Computational Geometry (chair: David Mount) – Room S 003

Computer Vision (chair: John Barron) – Room N 033

Digital Geometry (chair: Mohamed Tajine) – Room S 025

Morphology (chair: Jos Roerdinck) – Lecture Hall

Monday late afternoon

16 - 18 **SESSION 2: Discrete Geometry / 1**

chair: Isabelle Debled-Rennesson

16:00-16:45 Tetsuo Asano, JAIST - Ishikawa
Combinatorial and Geometric Problems Related to Digital Halftoning

16:45-17:10 Naoki Katoh, Kyoto University:
Matrix Rounding under the L_p -Discrepancy Measure and Digital Halftoning

17:10-17:35 Alain Daurat, University of Strasbourg
Reconstruction of Discrete Convex Sets from Point-source X-rays

17:35-18:00 Helene Reiter, Universität Hamburg
Digital Sets and Their Polygonal Representation By Corresponding Segments

Monday evening after dinner

19 **PERSONAL INTRODUCTIONS:** chair: Tetsuo Asano

location: White Hall (Room S 101)

Tuesday morning

9 - -12 **SESSION 3: Discrete Geometry / 2**

chair: Mohamed Tajine

09:00-09:40 Reinhard Klette, University of Auckland
Seven Open Problems in Digital Geometry and Topology

09:40-10:05 David Coeurjolly, Universite Lumiere Lyon 2

Digital Surface Area Estimation

10:05-10:20 BREAK

10:20-11:10 Isabelle Sivignon, University of Grenoble

Digital Planes Identification and Recognition

11:10-12:00 Fridrich Sloboda & Bedrich Zatko, Slovak Academy of Sciences: On Approximation and Representation of Surfaces in Implicit Forms

Tuesday afternoon - working groups

14-15.30 group meetings, including the following talks

Jan Neumann, University of Maryland: Eyes from Eyes: Analysis of Camera Design Using Plenoptic Video Geometry

Tomio Hirata, Nagoya University: Distance Map Based Image Enhancement for Interpolation

Mostefa Mohammed Mesmoudi, University of Genova: Multiresolution Model Based on Discrete Gradient Vector Fields

Christian Ronse, University of Strasbourg: Morphology on Label Images

Tuesday late afternoon

16 – 18 **SESSION 4: Image Processing and Computer Vision**

chair: Gerald Sommer

16:00-16:30 Yasushi Hirano, Nagoya University
Quantification of the Convergence of Tissues in Lung for CAD of Chest X-ray CT Images

16:30-17:00 David Mount, University of Maryland
k-Means Clustering and Applications in Image Processing

17:00-17:30 Birgit Loch, University of Queensland
Representation of Plant Leaves using Surface Fitting Techniques

17:30-18:00 Michael Werman, University of Jerusalem
Bayesian Fitting

Tuesday evening after dinner

19.30 **Slide Show 'New Zealand'** (Reinhard Klette)

Wednesday morning

9 - 12 **SESSION 5: Geometric Features and Shape**

chair: Jos Roerdink

09:00-09:25 Koichiro Deguchi, Tohoku University

Contour Shape Analysis Using Crystalline Flow

09:25-10:15 Georgy L. Gimel'farb, University of Auckland

Geometric Structure and Randomness in Texture Analysis and Simulation

10:15-10:30 BREAK

10:30-11:00 Guy Windreich, Tel Aviv

Voxel-based Surface Area Estimation: From Theory to Practice

11:00-11:30 Yukiko Kenmochi, Laboratoire A2SI

3D Border Tracking with Surface Structures

11:30-12:00 Ullrich Köthe, Universität Hamburg

Junction Detection and the Topological Structure of Images

Wednesday afternoon / evening - no official program

Bus tour to historic sites of the Roman Empire at Trier, followed by a winery visit, wine tasting and dinner at Riol

Thursday morning

9-12 **SESSION 6: Scene Analysis**

chair: Michael Werman

09:00-09:45 Cornelia Fermüller and Yiannis Aloimonos (presented by Jan Neumann), University of Maryland: Uncertainty in Visual Processes Predicts Geometrical Optical Illusions

09:45-10:10 Fay Huang, University of Auckland

Panoramic Imaging - Theory and Practice

10:10-10:25 BREAK

10:25-11:35 Gerald Sommer, Universität Kiel

Generalizations in Computer Vision: From Intrinsically Multi-dimensional Signals to Stratified Robot Vision

11:10-11:35 Nahum Kiryati, Tel Aviv University

Bias Correction in Photometric Stereo using Control Points

11:35-12:00 John L. Barron, University of Western Ontario

Depth from Optical Flow

Thursday afternoon - working groups

14-15.30 group meetings

Thursday late afternoon

16-18 **SESSION 7: Discrimination and Matching**

chair: Georgy L. Gimel'farb

16:00-16:30 Mohamed Tajine, University of Strasbourg
New Methods for Testing Linear Separability

16:30-17:00 Takeshi Tokuyama, Tohoku University
Discrepancy Problems in Data Rounding Related to Digital Halftoning

17:00-17:30 Remco Veltkamp, Utrecht University
Polygon Decomposition Based on Straight-line Skeletons

17:30-18:00 Kokichi Sugihara, University of Tokyo
Theory of Hyperfigures

Thursday evening after dinner

19.30 **WG PRELIMINARY REPORTS:** chair: Atsushi Imiya
round-table discussion

chairs of working groups present their reports

Friday morning

9-12 **SESSION 8: Discrete Geometry / 3**

chair: Ulrich Eckhardt

09:00-09:50 Atsushi Imiya, Chiba University
Discrete Variational Method for Non-Parametric Surface Reconstruction from
Noisy Sample Clouds

09:50-10:15 Akihiko Torii, Chiba University
Inverse Quantization in 2D and 3D

10:15-10:30 BREAK

10:30-11:15 Peter Veelaert, Hogent - Ghent
Reestablishing Consistency of Uncertain Geometric Relations Detected in Digital
Images

11:15-12:00 Hartmut Prautzsch, Universität Karlsruhe
Fan Clouds versus Triangular Meshes