MVA '96 **IAPR Workshop on Machine Vision Applications**

Advance Program

November 12 - 14, 1996
Kita-Shinkan Hall
Keio University
Mita, Minato-ku, Tokyo, Japan

Tuesday, November 12, 1996

Registration (9:00-9:20)

Opening Session (9:20-9:40)

Session 1: Motion and Focal Plane Architectures
(9:40-11:20)

1-1 **Visual Tracking Using Active Search for Color**
V.V. Vinod and H. Murase, *NTT Basic Research Laboratories, Japan*

1-2 **A Kalman Filter-Based Update Scheme for Road Following**
H. Sahli, P. de Muynck and J. Cornelis, *VUB ETRO-IRIS, Belgium*

1-3 **Real-time Tracking with Kalman Filter**
D-S. Jang, G-Y. Kim and H-I. Choi, *Soongsil Univ., Korea*

1-4 **Video Enhancement Sensor Using Motion Adaptive Storage Time**
T. Hamamoto, K. Aizawa and M. Hatori, *Univ. of Tokyo, Japan*

1-5 **A Focal Plane Array for Hot Punctual Target Identification and Tracking**
M.C. Vasiliu and F. Devos, *Paris-Sud Univ., France*

Coffee Break (11:20-11:40)

Session 2: Algorithms
(11:40-12:40)

2-1 **Automatic Configuration of Systems for Texture Analysis**
C. Kueblbeck, T. Wagner and C. Schittko, *Fraunhofer Institute for Integrated Circuits, Germany*

2-2 **An Adaptive Thresholding Method for Gray Scale Character Images**
M. Yu and S. Ozawa, *Keio Univ., Japan*

2-3 **Comparing Top-Down with Botom-Up Image Analysis in Terms of Complexity**
A.A. Abkar and N.J. Mulder, *International Institute for Aerospace Survey and Earth Science, The Netherlands*

Lunch (12:40-13:40)

Session 3: Poster Session 1
(13:40-15:30)

3-1 **Parallel Image Processing on Heterogeneous SIMD-MIMD Machines**
P. Jonker, E. Olk and K. Volker, *Delft Univ. of Tech., The Netherlands*

3-2 **A Coarse Parallel Image Processing System for Remote Sensing**
J. Iisaka, *Canada Centre for Remote Sensing, Canada*

3-3 **A Modularized Vision System Using a Distributed Cooperative Architecture**
T. Hamada, *Hitachi, Ltd., Japan*

3-4 **Automatic Spinal Deformity Detection by Two Characteristic Axes**
H. Ueno*, S. Ishikawa*, Y. Otsuka** and K. Kato*, **Kyushu Institute of Tech., **Chiba Higashi Hospital, Japan*

3-5 **Analog and Digital Meter Recognition Using Computer Vision**
K-H. Kim, *Systems Engineering Research Institute, Korea*

3-6 **A Method of Resolving an Entangled Cord**
Y. Nogami, S. Ishikawa and K. Kato, *Kyushu Institute of Tech., Japan*

3-7 **A Compact and High Performance Wood Inspection System Using Smart Sensor Technique and Real-Time Parallel Processing**
A. Åaström and E. Åastrand, *Linköping Univ., Sweden*

3-8 **Creation of Plane-Spatiotemporal-Image Using a Selected Slit**
C. Li*, P. Wang*, H. Zen** and M.Sakauchi*, **Univ. of Tokyo, **Tokyo Univ. of Mercantile Marine, Japan*

Session 4: Invited Talk 1
(15:30-16:30)

4-1 **Perturbation Models: A New Approach to Improved Handwriting Recognition**
Horst Bunke, *Universität Bern, Switzerland*

Session 5: Architectures
(16:30-18:10)

5-1 **Efficient Implementation of Image Processing Algorithms on Linear Processor Arrays Using the Data Parallel Language 1DC**
S. Kyo* and K. Sato**, **NEC Corporation, **NEC Informatec Systems, Ltd., Japan*

5-2 **The LAPCAM, Linear Array Processors Using Content Addressable Memory: A New Design of Machine Vision for Parallel Image Computations**
E. Mozef, S. Weber, J. Jaber and E. Tisserand, *Université de Nancy, France*

5-3 **IMAP-VISION: An SIMD Processor with High-Speed On-chip Memory and Large Capacity External Memory**
Y. Fujita, N. Yamashita and S. Okazaki, *NEC Corp., Japan*

5-4 **TMP5X5T1M: A Configurable Binary Morphological and Template Matching Processor**
Y. Yanuhardi, T. Adiono and T.L.R. Mengko, *Institute Technology of Bandung, Indonesia*

5-5 **Real Time Circle Extraction Using CAM-Based Hough Transform**
M. Meribout*, T. Ogura* and M. Nakanishi**, **NTT LSI Laboratories, **NTT Electronics Technology Corp., Japan*

Wednesday, November 13, 1996

Session 6: Applications 1
(9:00-10:40)

6-1 **Automatic Visual Control of a Pedestrian Traffic Light**
M. Loria and A. Machi', *CNR, Italy*

6-2 **Human-Robot Interface with Appropriate Frame Selection**
K. Hayashi, Y. Kuno and Y. Shirai, *Osaka Univ., Japan*

6-3 **Aligning Articles in TV Newscasts and Newspapers**
Y. Watanabe*, Y. Okada*, T. Tsunoda** and M. Nagao**, **Ryukoku Univ., **Kyoto Univ., Japan*

6-4 **Low Complexity Disparity Estimation and Object-Based Image Synthesis for Multi-Viewpoint Stereoscopic Videoconferencing**
M.E. Izquierdo, *Heinrich-Hertz-Institute for Communication Technology, Germany*

6-5 **A System for Non-Intrusive Human Iris Acquisition and Identification**
R. Mandelbaum, K. Hanna, L. Wixson, D. Mishra and V. Paragano, *David Sarnoff Research Center, USA*

Coffee Break (10:40-11:00)

Session 7: Dynamic Image Analysis
(11:00-12:40)

7-1 **3D Data Driven Prediction for Active Contour Models with Application to Car Tracking**
J. Denzler and H. Niemann, *Univ. Erlangen-Nürnberg, Germany*

7-2 **Event Driven Motion Image Classification by Selective Attention Model**
T. Wada and T. Kato, *Okayama Univ., Japan*

7-3 **Applying a Dynamic Recognition Scheme for Vehicle Recognition in Many Object Traffic Scene**
W. Kasprzak* and H. Niemann**, **RIKEN, Japan, **Bavarian Research Center FORWISS, Germany*

7-4 **Fast Visual Detection of Changes in 3D Motion**
A.A. Argyros, M.I.A. Lourakis, P.E. Trahanias and S.C. Orphanoudakis, *FORTH, Greece*

7-5 **Realization of Askant Glance Camera Vision System by Using Extended Hough Transform**
M. Tominaga, K. Kato, K. Murakami and H. Koshimizu, *Chukyo Univ., Japan*

Lunch (12:40-13:40)

Session 8: Poster Session 2
(13:40-15:30)

8-1 **Affine Visual Servoing**
G.M.T. Cross and R. Cipolla, *Univ. of Cambridge, UK*

8-2 **A Vision System with Dual Viewing Angles for Spontaneous Speech Dialogue Environment**
Y-J. Huang, H. Dohi and M. Ishizuka, *Univ. of Tokyo, Japan*

8-3 **An Approach to Automated House Recognition from Digital Stereo Imagery**
Z. Shi and R. Shibasaki, *Univ. of Tokyo, Japan*

8-4 **GIPSY: Knowledge Based Surface Inspection**
O. Dehning and C-E. Liedtke, *Univ. Hannover, Germany*

8-5 **Recovering 3D-Shape from Motion Stereo under Non-Uniform Illumination –A Vision System for Mobile Robot Carring an Illumination Source–**
T. Hara*, T. Kudou*, H. Miike* and A. Nomura**, **Yamaguchi Univ., **Yamaguchi Prefectural Univ., Japan*

8-6 **Traffic Flow Measuring System by Image Processing**
K. Takahashi, T. Kitamura, M. Takatoo, Y. Kobayashi and Y. Satoh, *Hitachi, Ltd., Japan*

8-7 **Computation of Optical Flow Using Dynamic Programming**
G.M. Quénot, *LIMSI-CNRS, France*

8-8 **Eleview: An Active Elevator Monitoring Vision System**
P. Xiao, M.K.H. Leung and K.C. Wong, *Nanyang Technological Univ., Singapore*

8-9 **A Study of Automatically Track of Pedestrian Flows**
K. Kitai, *Kobe Design Univ., Japan*

8-10 **Automated Visual Inspection Algorithm for Solder Joint of Surface Mount Devices Based on Three Dimensional Shape Analysis**
T. Honda*, Y. Matsuyama*, H. Yamamura*, H. Sasazawa*, T. Ninomiya*, L. Listl**, A. Schick**, P. Köllensperger** and R. Schneider**, **Hitachi, Ltd., Japan, **Siemens AG, Germany*

8-11 **Object Recognition from Range Images Using Superquadric Representations**
E.R. van Dop and P.P.L. Regtien, *Univ. of Twente, The Netherlands*

8-12 **Extraction of Topological Features of Integrated Circuit from Grey-Scale Image**
D. Langumovsky*, S. Ablameyko* and M. Kutas**, **Belarusian Academy of Sciences, **INTEGRAL, Belarus*

8-13 **Classification of Rotated and Scaled Textured Images Using Spectral Moments**
Y. Yoshida and Y. Wu, *Kyoto Institute of Tech., Japan*

8-14 **Dynamic Feature in Complicated Pattern Recognition**
S. Jiang and Y-F. Sun, *Chinese Academy of Sciences, PRC*

8-15 **Equidistant Snakes: Accurate Irregular Shaped Contour Detecting**
I. Valdés, Y. Nomura and Y. Mitsuya, *Nagoya Univ., Japan*

8-16 **Inductive Learning of Primitive Shape Features of Closed Contours**
I. Murase, S. Kaneko and S. Igarashi, *Hokkaido Univ., Japan*

8-17 **Highlight Separation Using Multiple Images with Intensities and Ranges**
M. Otsuki and Y. Sato, *Nagoya Institute of Tech., Japan*

8-18 **Measuring Three-Dimensional Shapes of a Human Face Using Photometric Stereo Method with Two Light Sources and Slit Patterns**
H. Saji, *Shizuoka Univ., Japan*

8-19 **Implementation of An Orientation Selective Hierarchical Spatial Filter Using Diffusion Network**
T.W. Choi**, D.H. Ryu* and J.C. Kim**, **ETRI, **Pusan National Univ., Korea*

8-20 **Texture Classification Based on Topographic Image Structure**
P.Suknya, R. Takamatsu and M. Sato, *Tokyo Institute of Tech., Japan*

8-21 **A Criterion for Circumscribed Contours Determination for Image Segmentation**
X. Cufí* and D.A. Casals**, **Univ. of Girona, **Polytechnical Univ. of Catalonia, Spain*

8-22 **A Wide-View VR System with Multi-Level Description and Rendering of 3D Scenes**
Y. Kuno*, T. Yagi** and Y. Uchikawa*, **Nagoya Univ., **RIKEN, Japan*

8-23 **Pitched Baseball Image Extraction in Natural Color TV Scene and Its Trajectory Pursuit**
Y. Murai*, K. Bansho** and Ken-ichi Noda**, **Chofu Women Junior College, **Takushoku Univ., Japan*

8-24 **An Automatic Method of Counting the Passing People through the Gate by Using the Two Space-time Images**
K. Terada*, M. Fujikawa* and J. Yamaguchi**, **Univ. of Tokushima, **Sogo Security Service Co., Ltd., Japan*

8-25 **Interactive Tactile Display System – A Support System for Visually Disabled to Recognize 3D Objects –**
Y. Kawai and F. Tomita, *Electrotechnical Laboratory, Japan*

8-26 **A New Type of Video Scene Classification System Based on Typical Model Database**
H. Mo*, Shin'ichi Satoh** and M. Sakauchi*, *Univ. of Tokyo, Japan*

8-27 **A Fast and Robust Approach for Document Segmentation and Classification**
H. Wang, S. Ragupathi and S.Z. Li, *Nanyang Technological Univ., Singapore*

8-28 **Energy-based Method for Road Extraction from Aerial Images**
Q. Ke, J. Xiao, Z. Yang and M.A. Songde, *Chinese Academy of Sciences, PRC*

8-29 **Grammatical Approach for Physical and Logical Structure of Documents Analysis: Application to Summary Documents**
S. Tayeb-Bey, S. Saidi and H. Emptoz, *INSA de Lyon, France*

8-30 **A Practical Data Compression System for Map Images**
Y. Ou, J. Huang and Y. Yu, *South China Univ. of Tech., PRC*

8-31 **Recognition of Composite Elements in Bar Graph**
N. Yokokura and T. Watanabe, *Nagoya Univ., Japan*

Session 9: Invited Talk 2
(15:30-16:30)

9-1 **Using Computer Vision in Real Applications: Two Success Stories**
Gerard Medioni, *Univ. of Southern California, USA*

Session 10: Documents and Maps
(16:30-18:10)

10-1 **Run-time Behavior of Contour Tracing Algorithms for Document Conversion**
P.C.K. Kwok and L.C. Wong, *Univ. of Hong Kong, Hong Kong*

10-2 **A New Method for Extracting Map Elements by Their Colors and Shapes from Color Cartographic Maps**
C-H. Woo and S-Y. Kim, *KAIST, Korea*

10-3 **Identification of Document Types from Various Kinds of Document Images Based on Physical and Layout Features**
H. Masai and T. Watanabe, *Nagoya Univ., Japan*

10-4 **IDA: A System for Automated Sorting, Indexing, and Classification of Documents**
G. Maderlechner, *Siemens AG, Germany*

10-5 **Cooperation between Patterns Recognition and Contextual Analysis: Application to the Reading of Printed Documents**
H. Jean-Luc and L. Frank, *INSA de Lyon, France*

Banquet (18:20-20:00)

Thursday, November 14, 1996

Session 11: Shape
(9:00-10:40)

11-1 **Statistical Recognition Method of Differently Posed 2D Object**
J-S. Kwon and J-S. Choi, *Se-Myung Univ., Korea*

11-2 **Matching for Affine Transformed Pictures Using Hough Planes**
A. Sakai, Y. Nomura and Y. Mitsuya, *Nagoya Univ., Japan*

11-3 **Planar Shape Enhancement by General Geometric Heat Flow**
G. Cong and S-D. Ma, *Chinese Academy of Sciences, PRC*

11-4 **Is That Portal Ghotic? A Hybrid System for Recognising Architectural Portal Shapes**
M. de Gregorio, *CNR, Italy*

11-5 **Automatic Recognition of Regular Figures by Geometric AIC**
I. Triono and K. Kanatani, *Gunma Univ., Japan*

Coffee Break (10:40-11:00)

Session 12: 3D
(11:00-12:40)

12-1 **Very High Speed Multi Resolution Sheet-Of-Light Range Imaging**
A. Åaström and E. Åastrand, *Linköping Univ., Sweden*

12-2 **Inspection of Shiny Surface Using a Laser Range Finder**
I.D. Yun, J.S. Ku and S.U. Lee, *Seoul National Univ., Korea*

12-3 **A Method to Register Multiple Range Images from Unknown Viewing Directions**
I. Shimizu and K. Deguchi, *Univ. of Tokyo, Japan*

12-4 **3D Information Acquisition from Plane Spatio-Temporal Images with Complicated Camera Motion**
P. Wang*, C. Li*, H. Zen** and M.Sakauchi*, **Univ. of Tokyo, **Tokyo Univ. of Mercantile Marine, Japan*

12-5 **A Radiometric Noise Model for Estimating Geometrical Parameters of 3-D Bodies from Multispectral Images**
J.C. Glas and F. van der Heijden, *Univ. of Twente, The Netherlands*

Lunch (12:40-13:40)

Session 13: Poster Session 3
(13:40-15:30)

13-1 **Computational Image Sensors for Focal Plane Compression**
K. Aizawa*, Y. Egi*, T. Hamamoto*, A. Motoki*, M. Hatori*, H. Maruyama** and J. Yamazaki**, **Univ. of Tokyo, **NHK, Japan*

13-2 **A Single Processor Realtime Edge-Line Extraction System for Feature Tracking**
G. Magin and C. Robl, *Technische Universiät München, Germany*

13-3 **Parallel Implementation of Features Extraction Using Morphological Filter**
Y. Nagashima*, T. Nakazono* and T. Ishimatsu**, **Sasebo National College of Tech., **Nagasaki Univ., Japan*

13-4 **Real-time 3D Feature Extraction Hardware Algorithm with Feature Point Matching Capability**
E. Hosoya,*, T. Ogura* and M. Nakanishi**, **NTT LSI Laboratories, **NTT Electronics Technology Corp., Japan*

13-5 **Network-Based Multicomputers with ATM Technology in Digital Image Processing Applications**
A. Garrido, P. Cuenca and F. Quiles, *Univ. de Castilla - la Mancha, Spain*

13-6 **Estimating the Propagation Velocity Distribution and the Position of Buried Pipe Using $x - t - v$ Data Matrix of Subsurface Radar Image**
Y. Fujimura*, A. Kawanaka*, H. Hayakawa** and T. Nakauchi**, **Sophia Univ., **Osaka Gas Co., Ltd., Japan*

13-7 **Detection and Visualization of Macro Defects of Color Liquid Crystal Display through Gabor Transform**
H. Nakano* and Y. Yoshida**, **IBM Japan, Ltd., **Kyoto Institute of Tech., Japan*

13-8 **Document Image Segmentation into Text, Tone and Screened-Halftone Region by the Neural Networks**
K. Nakamura*, J. Hao**, S. Yamamoto* and T. Itoh***, *Toyohashi Univ. of Tech., Japan*

13-9 **Train Wheel Abrasion Measurement Method Using Contour Information**
Y. Okamoto*, S. Kusakabe* and H. Hata**, **Toshiba Corp., **Toshiba FA System Engineering Inc., Japan*

13-10 **Hand-Eye Coordination Using Active Stereo Camera**
W.Y. Yau and H. Wang, *Nanyang Technological Univ., Singapore*

13-11 **Automatic Visual Inspection System for Tape Carrier Package Using Unique Image Processing and Human Visual Support**
E. Takahashi*, Y. Goto*, H. Terada*, Y. Nishimoto*, A. Yamaguchi**, H. Yamamuro***, T. Miyawaki***, M. Fujii*** and M. Nakamura***, **Kobe Steel Ltd., **Osaka Univ., ***Genesis Technology Ltd., Japan*

13-12 **Measurement Displacement of Optical Fiber Using Light Intersection Method**
Y. Tamura, H. Kohda, K. Hashimoto and Y. Hattori, *Sumitomo Electric Industries, Ltd., Japan*

13-13 **The Extraction of Characters from Scene Image Using Mathematical Morphology**
L. Gu, N. Naoki, R. M. Haralick and T. Kaneko, *Toyohashi Univ. of Tech., Japan*

13-14 **Feature Extraction and Description from Image Based on the Isochromatic Information**
T. Takeda and Y. Okada, *Ryukoku Univ., Japan*

13-15 **A New Approach for Modelisation of Ellipsoidal-based Shape**
E. Duquenoy*, A. Taleb-Ahmed* and Y. Beral**, *Université du Littoral, France*

13-16 **MDL Mediated by Geometrical Redundancy Reduction and Complement Space**
Z. Yang and S. Ma, *Chinese Academy of Sciences, PRC*

13-17 **A Robust Vision System against the Change of Lighting Condition**
K. Yamada, M. Mizuno, T. Tsukada and S. Yamamoto, *Toyota Central Res. & Develop. Labs., Inc., Japan*

13-18 **A Relaxed Fuzzy ISODATA Algorithm**
S. W-C. Lam, *City Univ. of Hong Kong, Hong Kong*

13-19 **A Neural Network Based Multiple Expert System Model for Conflict Resolution**
N.V. Subba Reddy and P. Nagabhushan, *S.J. College of Engineering, India*

13-20 **A Method for Character String Extraction from Binary Images Using Hough Transform**
O. Shiku*, A. Nakamura**, H. Takahira* and H. Kuroda***, **Sasebo National College of Tech., **Kumamoto Institute of Tech., ***Nagasaki Univ., Japan*

13-21 **Extracting Shape Primitives from Skeleton**
S.V. Ablameyko*, M. Frucci** and A. Marcelli***, **Belarusian Academy of Sciences, Belarus, **Istituto di Cibernetica del CNR, Italy, ***Universita' di Napoli "Federico II", Italy*

13-22 **An Image Retrieving System Based on User-Specified Recognition Model**
W. Wu, H. Mo and M. Sakauchi, *Univ. of Tokyo, Japan*

13-23 **Withdrawn**
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13-24 **Fast Parallel Multimedia Data Base Access Based on Wavelet Multiresolution Pyramidal Decomposition**
J.M. Marie-Julie and H. Essafi, *CEA - Technologies Avancees, France*

13-25 **Vectorization of Engineering Drawings Based on Statistics**
G. Wang, Y. Lin and Y. Song, *NanKai Univ., PRC*

13-26 **A Parallel Processing System for a High-Speed Printed Document Recognition**
K-A. Moon*, H. Lee**, H-J. Yoon** and J-W. Park**, **SERI, **ChungNam National Univ., Korea*

13-27 **Identification of Item Fields in Table-form Documents with/without Line Segments**
T. Sobue and T. Watanabe, *Nagoya Univ., Japan*

13-28 **A Stereo Vision through Creating a Virtual Image Using Affine Transformation**
K. Uno and H. Miike, *Yamaguchi Univ., Japan*

13-29 **A Direct Disparity Estimation Technique for Depth Segmentation**
A. Maki*, T. Uhlin** and J-O. Eklundh**, **Toshiba Corp., Japan, **Royal Institute of Tech., Sweden*

13-30 **Range Data Segmentation with Principal Vectors and Surface Types**
T. Yoshimi, Y. Kawai and F. Tomita, *Electrotechnical Laboratory, Japan*

13-31 **Robust and Fast Edge Detection and Description in Range Images**
X.Y. Jiang and H. Bunke, *Univ. of Bern, Switzerland*

Session 14: Invited Talk 3
(15:30-16:30)

14-1 **Architectures for the Hough Transform: A Survey**
Marco Ferretti, *Università di Pavia, Italy*

Session 15: Application 2
(16:30-18:10)

15-1 **Ultra Sonic Image Interpretation for Non-Destructive Testing Based on Case-Based Reasoning**
P. Perner, *Institute of Computer Vision and Applied Computer Sciences, Germany*

15-2 **Matching of IC Patterns under Non-Uniform Illumination**
S.C. Li and C.K. Lee, *Hong Kong Polytechnic Univ., Hong Kong*

15-3 **Analysis of Bone Shape by Local Control of Deformable Contour for Bone Maturity Estimation**
Itqon*, S. Kaneko**, H. Kobatake*, F. Otsuki***, H. Tanaka* and M. Murata****, **Tokyo Univ. of Agriculture and Tech., **Hokkaido Univ. ***Tokyo Metropolitan Univ., ****Tokyo Women's Medical College, Japan*

15-4 **Automated Weld Tracking**
G.M.T. Cross and R. Cipolla, *Univ. of Cambridge, UK*

15-5 **Design of the Cymet A40 Pap Smear Prescreener**
R. Raz, *Morphometrix, Canada*