

# Newsletter 05

Prof. Kazuhiko Yamamoto, general chair of the 2nd ICDAR ([yamamoto@etl.go.jp](mailto:yamamoto@etl.go.jp)), kindly sent me an electronic version of the ICDAR'93 advance program and asked me to distribute it. That's the reason for this new mailing just a day after the last one. For the benefit of all those who haven't received it through another channel... Please feel free to circulate it to all those who might be interested.

Karl Tombre.

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[From the conference Secretariat V.3]

This article is an electronic version of the Advance Program of ICDAR'93 (Second International Conference on Document Analysis and Recognition), which will be held on October 20-22, 1993 at Tsukuba, Japan.

If you want a printed copy of the program as well as those of the Registration Form and the Hotel Reservation Form, please contact:

ICDAR'93 Conference Secretariat  
c/o Prof. K. Yamamoto, Head of Image Understanding Section  
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This electronic version does not contain the Registration Form and the Hotel Reservation Form. The Secretariat will send them on demand via ordinary mail. If you have a postscript printer, you are recommended to obtain the postscript file of the images via e-mail. Please send a request mail to the E-mail address shown above.

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Advance Program  
ICDAR'93  
Second International Conference on Document  
Analysis and Recognition

Tsukuba Dai-ichi Hotel  
Tsukuba Science City, Japan  
October 20 - 22, 1993

Sponsored by IAPR TC-11, TC-10 and IGS  
Supported by IEICE, IPSJ, IEEJ, JEIDA, JNNS and AVIRG  
In cooperation with IEEE-CS

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[Conference]

You are cordially invited to participate in the Second International Conference on Document Analysis and Recognition, ICDAR'93, to be held on October 20 - 22, 1993 in Tsukuba Science City, Japan. Automatic intelligent processing of documents and multimedia information is at the intersection of many fields of technology, especially of computer science, image analysis, pattern recognition, artificial intelligence, computer linguistics, and so on. The conference provides an international forum for research and development

people to exchange ideas and issues in these fields, and to encourage novel system and application developments.

It includes invited talks, presentations of refereed papers and poster presentations as well as demonstrations of presented work.

The conference is sponsored by the International Association for Pattern Recognition (IAPR) Technical Committees 10 and 11, and International Graphonomics Society (IGS), in cooperation with IEEE-CS. The supporting organizations are IEICE, IPSJ, IEEJ, JEIDA, JNNS and AVIRG. Financial supports are given by the Tsukuba EXPO'85 Memorial Foundation and also by Japanese industrial firms.

#### Topics-----

Character segmentation and recognition  
Document structure analysis  
Map and drawing interpretation  
Document image processing  
On-line recognition  
Hypermedia processing  
Neural network and psychological approaches  
Implementations, applications and systems  
Research environments

#### Technical Sessions-----

Over 250 technical papers were received by the program committee. They were >from 23 countries, in almost equal numbers from Asia, Europe and North America. There are 28 sessions in total covering about 150 oral presentations and 66 posters. Oral presentations include five invited papers, 20 long papers and 124 short papers, marked as (I), (L) and (S) in the program. They will be given 30, 25 and 15 minutes, respectively. These presentations are in three parallel sessions.

A keynote speech (K) and two invited talks (T) will be given in the plenary sessions by internationally distinguished speakers from the fields of multimedia, pattern recognition and document analysis.

#### Demonstrations-----

The organizing committee provides several SUN Sparc workstations and several IBM PCs with basic operating systems at the conference site for the conference period.

The accepted paper/poster presenters may make demonstrations of their system and/or algorithm in the time and machine constraints. Volunteers may communicate with the organizing committee to allocate a time slot and to negotiate the machine conditions.

#### Keynote Speech-----

Norman Meyrowitz, Director of System/User Software at GO Corporation will talk on "Personal Communicators, Handwriting, Hypertext, and the New Mobility." The talk will cover the emerging market of handheld, mobile devices, and examine how handwriting recognition and hypertext/electronic book technologies will be merged to create a personal information and communications device that could become the telephone of the 21st century.

He directs the groups that develop the graphics, handwriting, application frameworks, system applications, user interface and international components of the PenPoint operating system. Most recently, he was in charge of the development effort for the Japanese version of PenPoint.

Before joining GO, he was Co-Director of Brown University's Institute for Research in Information and Scholarship (IRIS), where he was the principal architect of Intermedia system, a networked, shared, multi-user hypermedia system for research and education. He has served on the program committees of a variety of conferences including Hypertext'91.

#### Invited Talk I-----

Dr. Toshiyuki Sakai, Dean, Faculty of Science and Technology, Ryukoku University will give a talk titled "A History and Evolution of Document Information Processing." As a pioneer of the fields of speech and character recognition and image processing, he talks about the past and the future of document information processing from his original viewpoint.

Starting from the analysis of speech sounds for the telephone systems, he expanded his work into character recognition in 1960s. He has devoted himself to the researches on pattern understanding of speech, images and documents. He has been one of the most influential leaders of the field in Japan.

He served for various academic associations and the government as various kinds of committee member. Among these are the presidents of IPSJ (1983-85) and IAPR (1984-86). He received numerous awards including Imperial Purple Ribbon Medal. After his retirement from Kyoto University in 1988, he is also Professor Emeritus, Kyoto University.

#### Invited Talk II-----

Prof. Dr. Andreas Dengel, Scientific Director of the German Research Center for Artificial Intelligence (DFKI), Germany, will talk on "The Role of Document Analysis and Understanding in Multi-Media Information Systems." He observes that one obstacle for the development of general and homogeneous information systems is the lacking possibilities for combining the information processing capabilities of the electronic medium and traditional ways in which information is generated, interchanged, categorized, processed or stored.

He will outline the role and the potential of the document analysis and understanding technology to overcome this problem. He will also give an overview of their efforts focusing on the integration of such techniques into active interfaces for multimedia information systems.

Dr. A. Dengel is also a Professor in the Computer Science Department at the University of Kaiserslautern. He received the Ph. D. degree from the University of Stuttgart in 1989. In 1988, his work was honored by an award >from the German Society for Pattern Recognition (DAGM).

#### [Social Events]

International Panel Discussion-----

A panel discussion by three world-famous scholars is planned to be held as a pre-opening event from 17:30 through 20:00 on October 19 at Nova Hall. The Hall is adjacent to Tsukuba Dai-ichi Hotel which is the main venue of the conference and it has the capacity of 1000 people. The admission is free and open to the public.

The panelists are Dr. Leo Esaki, President of Tsukuba University, a Nobel Prize laureate, Dr. Jean-Claude Simon, Professor Emeritus, Université P. et M. Curie, France, and Prof. Makoto Nagao, Kyoto University.

The main theme of the discussion will be "Evolution and Innovation - The Frontiers of Science and Technology in the Age of Information Society." Each of the panelists will make a keynote speech at first and then receive questions and discussions from the floor. Dr. L. Esaki will first talk on "Creativity and originality in the basic research" based on his long career of research activities in the United States and Japan.

Dr. J.-C. Simon will talk about "Chaos and flexibility in the human vision and machine vision." His research areas have been artificial intelligence and pattern recognition. Recent work includes handwritten cursive word recognition. He has been one of the most influential leaders of this field in France.

Prof. M. Nagao will talk on "Artificial intelligence and pattern recognition" based on his research activities in the areas of pattern recognition, image processing, natural language processing and machine translation. He is one of the pioneers in the field of machine translation especially.

#### Technical Tour-----

As Tsukuba is a high-tech, science city, a laboratory tour visiting the following institutions will be held on Tuesday, October 19.

Electrotechnical Laboratory  
University of Tsukuba

Real World Computing Partnership Tsukuba Research Center  
RWCP is a new research organization to carry out the "Real World Computing Program" which has been established by the Japanese government in 1992.

The tour bus will start at Tsukuba Dai-ichi Hotel at 13:00 and return there before 17:00. You may join the international panel discussion. The tour is free of charge but a reservation is required. For reservation, please indicate it in the registration form.

#### Spouse Programs-----

The following programs are planned to let you feel "real" Japan. They are free of charge but a reservation is required for each. For reservation, please indicate it in the registration form.

Thursday, October 21

Full Day Tour: 9:00 - 15:00

You will visit Kasama-Inari Shrine that is famous for its chrysanthemum flowers that are best in October. You may enjoy pottery workshops around the area too.

Friday, October 22

Half Day Tour: 9:00 - 12:00 noon

The tour will include a tea ceremony and flower arrangement demonstrations at an old Japanese house in Tsukuba.

#### [Commemorative CD-ROM]

The ICDAR'93 commemorative version of CD-ROM databases will be available at the site of the conference. There are four kinds of CD-ROMs that are collections from the character sets of ETL-1 through ETL-9 holding 1.6 million character samples, and a Japanese document image database.

CD-ROM-A: ETL-1 and ETL-2; handwritten alphanumerics and printed kanji's.

CD-ROM-B: ETL-3 thru ETL-7; handwritten alphanumerics, symbols, hira-kana's

and kata-kana's. CD-ROM-C: ETL-8 and ETL-9; handwritten kanji's. CD-ROM-D:

Document page images from ten different kinds of documents, mostly Japanese, including newspaper (A2 full-page in 600 dpi), novels, technical papers, patent gazette, etc.

Registrants including students may obtain one of the four kinds of CD-ROMs for free. See another section to see how to apply.

#### [Location of the Conference]

The location, Tsukuba Science City, is a well-known academic, high-tech area in Japan. It is about 60 km north-east of metropolitan Tokyo. Foods and accommodations are much less expensive there than in Tokyo.

The conference's main venue is Tsukuba Dai-ichi Hotel whose address is Tsukuba Center Buildings, Azuma 1-chome, Tsukuba 305, Japan. Registration, technical sessions, demonstrations and banquet will be in the hotel. The plenary sessions, the poster session and the pre-opening event will take place at Nova Hall which is adjacent to Dai-ichi Hotel.

The ground transportation from the Narita International Airport to the hotel is explained in another section.

#### [Schedule]

(All technical sessions 1-1-A thru 3-4-C are in Annex Subaru-A, -B and -C.)

Tuesday, October 19-----

16:00-18:00 Registration Annex Lobby

17:30-20:00 Nova Hall

Panel Discussion by Dr. L. Esaki, Prof. J.-C. Simon and Prof. M. Nagao

20:00-21:00 Registration Annex Lobby

Wednesday, October 20-----

8:30-10:00 Registration Annex Lobby

10:00-11:15 Session 1-1-A Handwritten Character Recognition I

Session 1-1-B Feature Extraction

Session 1-1-C Image Enhancement and Bar Codes

11:30-13:00 Session 1-2-A Model-Directed Character Recognition

Session 1-2-B Layout Analysis I

Session 1-2-C Map Interpretation I

13:00-14:15 Lunch

14:15-16:00 Session 1-3-A HMM Based Approaches

Session 1-3-B Classification and Pre-classification I

Session 1-3-C On-Line Character Recognition  
16:30-17:00 Plenary Session: Award Presentations Nova Hall  
17:00-18:00 Nova Hall

Keynote Speech by Norman Meyrowitz, GO Corporation  
18:00-20:00 Reception Saiun & Shiun

Thursday, October 21-----

9:00-10:45 Session 2-1-A Contextual Processing I

Session 2-1-B Neural Networks

Session 2-1-C Thinning and Thresholding

11:00-13:00 Session 2-2-A Cursive Word Recognition

Session 2-2-B Layout Analysis II

Session 2-2-C Interpretation of Drawings

13:00-14:15 Lunch

14:15-15:15 Nova Hall

Invited Talks by Prof. T. Sakai and Prof. Dr. A. Dengel

15:30-17:30 Poster session Nova Hall

18:30-20:30 Banquet Annex Subaru

Friday, October 22-----

9:00-10:45 Session 3-1-A Handwritten Character Recognition II

Session 3-1-B Robust Recognition of Printed Documents

Session 3-1-C Systems and Applications

11:00-13:00 Session 3-2-A Databases for OCR

Session 3-2-B Analysis of Forms, Equations and Tables

Session 3-2-C Hypermedia and Content Retrieval

13:00-14:15 Lunch

14:15-15:45 Session 3-3-A Segmentation of Touching Characters

Session 3-3-B Classification and Pre-classification II

Session 3-3-C Component Recognition in Drawings

16:00-17:15 Session 3-4-A Contextual Processing II

Session 3-4-B Layout Generation and Decomposition

Session 3-4-C Map Interpretation II

17:15 Conference Ends

[Technical Sessions]

Wednesday October 20-----

10:00 - 11:15

Session 1-1-A Handwritten Character Recognition I

(S) An Extended-Shadow-Code Based Approach for Off-Line Signature Verification

Robert Sabourin, Mohamed Cheriet and Ginette Genest (CANADA)

(S) Extended Relaxation Matching, Including DP Matching

T. Horiuchi, K. Toraichi, K. Yamamoto and H. Yamada (JAPAN)

(S) Design and Implementation of Optimized Nearest Neighbor Classifiers for

Handwritten Digit Recognition

Hong Yan (AUSTRALIA)

(S) Handprinted Numeral Recognition with The Learning Quadratic Discriminant

Function

Takahiko Kawatani (JAPAN)

(S) Improvements of A Lexicon Directed Algorithm for Recognition of

Unconstrained Handwritten Words

F. Kimura, M. Shridhar and Z. Chen (JAPAN)

Session 1-1-B Feature Extraction

(S) Primitives segmentation and association for a line character

Yung-Sheng Chen (CHINESE, Taipei)

(S) Structural Feature Extraction on Multiple Bases with Application to

Handwritten Character Recognition Systems

Hirobumi Nishida (JAPAN)

(S) A Multi-Stage Algorithm of Extracting Joint Points for Generating

Function-Fonts

R. Haruki, Y. Ohtaki and K. Toraichi (JAPAN)

(L) Stroke Segmentation as a Basis for Structural Matching of Chinese

Characters

F. Chang, Y.-C. Chen, H.-S. Don, W.-L. Hsu and C.-I. Kao

(CHINESE, Taipei)

Session 1-1-C Image Enhancement and Bar Codes

(S) Bar Code Localization Using Texture Analysis

Anil K. Jain and Yao Chen (USA)

(S) A Bar Code Location Algorithm Using a Two-Dimensional Approach

Christian Viard-Gaudin (FRANCE)

(S) Document Skew Detection Based on Local Region Complexity

Yasuto Ishitani (JAPAN)

(S) Image Continuation

Nina Billawala, Peter E. Hart and Mark Peairs (USA)

(S) A Character Image Enhancement Method from Characters with Various

Background Images

Hideaki Ozawa and Toru Nakagawa (JAPAN)

11:15 - 11:30 Break

11:30 - 13:00

Session 1-2-A Model-Directed Character Recognition

(I) Document Image Defect Models and Their Uses

Henry S. Baird (USA)

(S) A Model-Based Classifier in A Scheme of Recognition Filter

Yu Nakajima and Shunji Mori (JAPAN)

(S) A Markov Language Model in Handwritten Chinese Text Recognition

Hsi-Jian Lee and Che-Hui Chang Chien (CHINESE, Taipei)

(S) Making a Personal Recognition Dictionary from Characters Automatically

Generated by Using Handwriting Model

Nobuyuki Kita (JAPAN)

(S) An Elastic Matching Approach Applied to Digit Recognition

Jean-Michel Bertille (FRANCE)

Session 1-2-B Layout Analysis I

(S) Initial Learning of Document Structure  
Andreas Dengel (GERMANY)  
(S) A Block Segmentation Method for Document Images with Complicated Column Structures  
Yuki Hirayama (JAPAN)  
(S) Document Recognition/Authentication Based on Medium-Embedded Random Patterns  
D. Brzakovic and N. Vujovic (USA)  
(S) Document Structures: A Survey  
Yuan Y. Tang and Ching Y. Suen (CANADA)  
(S) Document Architecture Language (DAL) Approach to Document Processing  
Chiu L. Yu, Yuan Y. Tang and Ching Y. Suen (CANADA)  
(S) An Intelligent Document Understanding System  
Suzanne Liebowitz Taylor, Mark Lipshutz,  
Deborah A. Dahl and Carl Weir(USA)

#### Session 1-2-C Map Interpretation I

(S) Color Map Image Segmentation Using Optimized Nearest Neighbor Classifiers  
Hong Yan (AUSTRALIA)  
(S) Computer-Aided Cartographical System for Map Digitizing  
S. Ablameyko, B. Beregov and A. Kryuchkov (BELARUS)  
(L) Drawing Image Understanding System with Capability of Rule Learning  
Shin'ichi Satoh and Masao Sakauchi (JAPAN)  
(S) Evaluation Method for an Automatic Map Interpretation System for Cadastral Map  
Rik D. T. Janssen, Robert P. W. Duin and Albert M. Vossepoel  
(THE NETHERLANDS)  
(S) Automatic Lettering of Cadastral Maps  
V. Consorti, L. P. Cordella and M. Iaccarino (ITALY)

13:00 - 14:15 Lunch

14:15 - 16:00

Session 1-3-A HMM Based Approaches  
(L) Detecting and Locating Partially Specified Keywords in Scanned Images Using Hidden Markov Models  
Francine R. Chen, Lynn D. Wilcox and Dan S. Bloomberg (USA)  
(S) Sophisticated Topology of Hidden Markov Models for Cursive Script Recognition  
A. Kaltenmeier, T. Caesar, J. M. Gloger and E. Mandler (GERMANY)  
(S) Handwritten Hangul Recognition with Multiple Stochastic Models  
Hee-Seon Park and Seong-Whan Lee (KOREA)  
(S) A Statistical Approach with HMMs for On-Line Cursive Hangul (Korean Script) Recognition  
Bong Kee Sin and Jin Hyung Kim (KOREA)  
(S) Reading Constrained Text Using Hierarchical Hidden Markov Models  
Stephen W. Lam and Waikwan Hui (USA)  
(S) Joint Normalization and Recognition of Degraded Document Images Using Pseudo-2D Hidden Markov Models  
Oscar E. Agazzi and Shyh-shiaw Kuo (USA)

#### Session 1-3-B Classification and Pre-classification

(S) European Language Determination from Image  
Takehiro Nakayama and A. Lawrence Spitz (USA)  
(S) Classifier Combination for Hand-Printed Digit Recognition  
Michael Sabourin, Amar Mitiche, Danny Thomas and George Nagy (CANADA)  
(S) Handwritten Numeral Recognition Based on Multiple Feature Extractors  
L. Heutte, J. V. Moreau, B. Plessis, J. L. Plangnaud and Y. Lecourtier  
(FRANCE)  
(S) On The Bias of Mahalanobis Distance due to Limited Sample Size Effect  
Tetsuo Takeshita, Shigeyuki Nozawa and Fumitaka Kimura (JAPAN)  
(S) A Structural Indexing Method for Character Recognition  
Angelo Marcellini, Natasha Likhareva and Theo Pavlidis (USA)  
(S) Two-Stage Box Connectivity Algorithm for Optical Character Recognition  
Radovan Krtolica and Sophia Malitsky (USA)  
(S) A Zip Code Recognition System Using the Localized Arc Pattern Method  
Mitsu Yoshimura, Tatsuro Shimizu and Isao Yoshimura (JAPAN)

#### Session 1-3-C On-Line Character Recognition

(S) Writer-Adaptation for On-Line Handwritten Character Recognition  
N. Matic, I. Guyon, J. Denker and V. Vapnik (USA)  
(S) A New Approach to On-Line Handwritten Chinese Character Recognition  
Y. Liu, L. Zhang and J. W. Tai (CHINA)  
(S) Multiple Word Segmentation with Interactive Look-Up for Cursive Script Recognition  
R. K. Powalka, N. Sherkat, L. J. Evett and R. J. Whitrow (UK)  
(S) A Cursive On-Line Hangul Recognition System Based on the Combination of Line Segments  
Oh-Sung Kwon and Young-Bin Kwon (KOREA)  
(S) On-Line Japanese Character Recognition Experiments by an Off-Line Method Based on Normalization-Cooperated Feature Extraction  
Masahiko Hamanaka, Keiji Yamada and Jun Tsukumo (JAPAN)  
(S) An On-Line Character Recognition System for Effective Japanese Input  
K. Toyokawa, K. Kitamura, S. Katoh, H. Kaneko, N. Itoh and M. Fujita  
(JAPAN)

16:30 - 17:00 Plenary Session  
Award Presentations

17:00 - 18:00 Invited Speech  
(K) Personal Communicators, Handwriting, Hypertext, and the New Mobility  
Norman K. Meyrowitz, Director, System/User Software, GO Corporation (USA)

18:00 - 20:00 Reception

Thursday October 21-----

9:00 - 10:45

Session 2-1-A Contextual Processing I

(S) Improving Speed of Japanese OCR through Linguistic Preprocessing

Kenichiro Kigo (JAPAN)

(S) A Post-Processing Method for Handwritten Kanji Name Recognition Using Furigana Information

K. Marukawa, M. Koga, Y. Shima and H. Fujisawa (JAPAN)

(S) Text Recognition Enhancement with a Probabilistic Lattice Chart Parser

Tao Hong and Jonathan J. Hull (USA)

(L) On Virtual Partitioning of Large Dictionaries for Contextual Post-Processing to Improve Character Recognition

Rainer Hoch and Thomas Kieninger (GERMANY)

(S) Efficient Postprocessing Algorithms for Error Correction in Hangul Address and Human Name Recognition

Seong-Whan Lee, Eun Sun Kim and Byung Woo Min (KOREA)

(S) Semantic Analysis for Large Vocabulary Cursive Script Recognition

T. G. Rose, L. J. Evett and R. J. Whitrow (UK)

Session 2-1-B Neural Networks

(I) Connected Character Recognition with a Neural Network

Kunihiko Fukushima (JAPAN)

(L) Optimal Design of Reference Model Using Simulated Annealing Combined with Improved LVQ3

Hee-Heon Song and Seong-Whan Lee (KOREA)

(S) Printed Japanese Character Recognition Based on Multiple Modified LVQ Neural Network

Kageyasu Miyahara and Fumio Yoda (JAPAN)

(S) Feedback Pattern Recognition by Inverse Recall Neural Network Model

Keiji Yamada (JAPAN)

(S) Dynamic Handwritten Chinese Signature Verification

Hong-De Chang, Jhing-Fa Wang and Hong-Ming Suen (CHINESE, Taipei)

Session 2-1-C Thinning and Thresholding

(I) Validation of Preprocessing Algorithms: A Methodology and its Applications to the Design of a Thinning Algorithm for Handwritten Characters

Rejean Plamondon, Marc Bourdeau, Claude Chouinard and Ching Y. Suen (CANADA)

(S) Thresholding Using An Illumination Model

J. R. Parker, C. Jennings and A. G. Salkauskas (CANADA)

(S) Threshold Selection Using Second Derivatives of the Gray Scale Image

Theo Pavlidis (USA)

(S) An Object Attribute Thresholding Algorithm for Document Image Binarization

Ying Liu, Richard Fenrich and Sargur N. Srihari (USA)

(S) A Methodology for The Characterization of the Performance of Thinning Algorithms

M. Y. Jaisimha, Robert M. Haralick and Dov Dori (USA)

(S) Evaluation of Thinning Algorithms from an OCR Viewpoint

Louisa Lam and Ching Y. Suen (CANADA)

10:45 - 11:00 Break

11:00 - 13:00

Session 2-2-A Cursive Word Recognition

(S) Interpretation of Handwritten Address in US Mail Stream

Sargur N. Srihari, Venu Govindaraju and Ajay Shekhawat (USA)

(S) Using n-Grams for The Definition of a Training Set for Cursive Handwriting Recognition

Volkmar Pflug (GERMANY)

(L) Recognition of Handwriting Words in a Limited Dynamic Vocabulary

Michel Gilloux, Jean-Michel Bertille and Manuel Lerox (FRANCE)

(L) Using Constrained Snakes for Feature Spotting in Off-line Cursive Script

Andrew W. Senior and F. Fallside (UK)

(S) Cursive Script Recognition: A Fast Reader Scheme

Didier Guillevic and Ching Y. Suen (CANADA)

(S) Performance Analysis of an OCR System via a Handwritten Character Generator

Cheng-Huang Tung, Yuan-Jong Chen and Hsi-Jian Lee (CHINESE, Taipei)

Session 2-2-B Layout Analysis II

(S) Nested Segmentation: An Approach for Layout Analysis in Document Classification

Xiaolong Hao, Jason T. L. Wang and Peter A. Ng (USA)

(L) Document Image Segmentation and Text Area Ordering

Takashi Saitoh, Michiyoshi Tachikawa and Toshifumi Yamaai (JAPAN)

(L) Address Block Location Using Character Recognition and Address Syntax

Jen-chyou Lii, Paul W. Palumbo and Sargur N. Srihari (USA)

(S) Language-Free Layout Analysis

David J. Ittner and Henry S. Baird (USA)

(S) Page Segmentation by Segment Tracing

O. T. Akindele and A. Belaid (FRANCE)

(S) A Method to Extract Templates for Robust Symbol Recognition

C. De Stefano, F. Tortorella and M. Vento (ITALY)

Session 2-2-C Interpretation of Drawings

(S) Recognition of Logic Diagrams by Identifying Loops and Rectilinear Polylines

Soo Hyung Kim and Jin Hyung Kim (KOREA)

(L) Raster-to-Vector Conversion by Line Fitting Based on Contours and Skeletons

Osamu Hori and Satohide Tanigawa (JAPAN)

(L) Adaptable Drawing Interpretation Using Object-Oriented and Constraint-Based Graphic Specification

Boris Pasternak and Bernd Neumann (GERMANY)

(S) Interpretation of Telephone System Manhole Drawings

Juan F. Arias, Chan Pyng Lai, Surekha Chandran, Rangachar Kasturi and Atul Chhabra (USA)

(S) A New System for the Analysis of Schematic Diagrams  
Anja Habacha Hamada (FRANCE)  
(S) Recognition of Dimensions in Engineering Drawings Based on Arrowhead-Match  
Weidong Min, Zesheng Tang and Long Tang (CHINA)

13:00 - 14:15 Lunch

14:15 - 14:45 Invited Talk I  
(T) A History and Evolution of Document Information Processing  
Dr. Toshiyuki Sakai, Dean, Faculty of Science and Technology,  
Ryukoku University, Professor Emeritus, Kyoto University (JAPAN)

14:45 - 15:15 Invited Talk II  
(T) The Role of Document Analysis and Understanding in Multi-Media Information  
Systems  
Prof. Dr. Andreas Dengel, Scientific Director, German Research Center  
for Artificial Intelligence (DFKI) (GERMANY)

15:15 - 15:30 Break  
15:30 - 17:30 Poster Session (titles are shown below)  
18:30 - 20:30 Banquet

Friday October 22-----

9:00 - 10:45

Session 3-1-A Handwritten Character Recognition II  
(S) State of The Art of Handwritten Numeral Recognition In Japan: Results of  
The First IPTP Character Recognition Competition  
Toshihiro Matsui, Ikuo Yamashita, Toru Wakahara and Makoto Yoshimuro  
(JAPAN)  
(S) High-Order Statistically Derived Combinations of Geometric Features for  
Handprinted Character Recognition  
A. K. Chhabra, Z. An, D. Balick, G. Cerf, P. Sheppard, R. Smith and  
B. Wittner (USA)  
(L) Performance Evaluation of Nonlinear Shape Normalization Methods for the  
Recognition of Large-Set Handwritten Oriental Characters  
Seong-Whan Lee, Jeong-Seon Park and Yuan Y. Tang (KOREA)  
(S) Preprocessing and Feature Extraction for a Handwritten Recognition System  
T. Caesar, J. M. Gloger and E. Mandler (GERMANY)  
(S) Practical Implementation of A Radial Basis Function Network for Handwritten  
Digit Recognition  
Bernard Lemarie (FRANCE)

Session 3-1-B Robust Recognition of Printed Documents  
(I) From Pixels to Paragraphs: the Use of Models in Text Recognition  
Sargur N. Srihari (USA)  
(S) Performance Metrics for Printed Document Understanding Systems  
J. Kanai, T. A. Nartker, S. V. Rice and G. Nagy (USA)  
(S) Optical Recognition of Braille Writing  
J. Mennens, L. Van Tichelen, G. Francois and J. Engelen (BELGIUM)  
(S) Certifiable Optical Character Recognition  
Daniel P. Lopresti and Jonathan S. Sandberg (USA)  
(S) Building an Object-Oriented Environment for Document Processing  
G. Boccignone, A. Chianese, M. De Santo and A. Picariello (ITALY)

Session 3-1-C Systems and Applications  
(S) Robust Recognition of Documents  
Joachim Kreich (GERMANY)  
(S) Understanding Structured Text Documents by a Model Based Document Analysis  
System  
T. A. Bayer (GERMANY)  
(L) An Integrated System for Italian Bankcheck Verification  
G. Dimauro, S. Impedovo and G. Pirlo (ITALY)  
(S) VLSI Implementation for HVRI Algorithm in Pattern Recognition  
Yuan Y. Tang, Tao Li and Seong-Whan Lee (CANADA)  
(L) Refinement and Testing of a Character Recognition System Based on Feature  
Extraction in Grayscale Space  
Bill Sakoda, Jiangying Zhou and Theo Pavlidis (USA)

10:45 - 11:00 Break

11:00 - 13:00

Session 3-2-A Databases for OCR  
(S) Handwritten Korean Character Image Database PE92  
Dae-Hwan Kim, Young-Sup Hwang, Sang-Tae Park, Eun-Jung Kim,  
Sang-Hoon Paek and Sung-Yang Bang (KOREA)  
(S) Sorting The Quality of Handwritten Chinese Characters for Setting Up a  
Research Database  
Sheng-Lin Chou and Shiaw-Shian Yu (CHINESE, Taipei)  
(L) CD-ROM Document Database Standard  
I. T. Phillips, S. Chen and R. M. Haralick (USA)  
(S) The Implementation Methodology for the CD-ROM English Document Database  
I. T. Phillips, J. Ha, R. M. Haralick and D. Dori (USA)  
(L) Interpreting Word Recognition Decisions with a Document Database Graph  
Jonathan J. Hull and Yanhong Li (USA)  
(S) Recognition of Handprinted Digits Using Optimal Bounded Error Matching  
Thomas M. Breuel (SWITZERLAND)

Session 3-2-B Analysis of Forms, Equations and Tables  
(S) The Processing of Form Documents  
David S. Doermann and Azriel Rosenfeld (USA)  
(S) Understanding Mathematical Expressions in a Printed Document  
Hsi-Jian Lee and Min-Chou Lee (CHINESE, Taipei)  
(S) Anatomy of a Form Reader  
Stephen W. Lam, Ladan Javanbakht and Sargur N. Srihari (USA)  
(L) Toward a Practical Document Understanding of Table-Form Documents: Its



#### Framework and Knowledge Representation

Toyohide Watanabe, Qin Luo and Noboru Sugie (JAPAN)

(S) Interpretation of Tables

Surekha Chandran and Rangachar Kasturi (USA)

(S) Multiple Combined Recognition System for Processing of Credit Card Slip Applications

Jonghyun Paik, Sungyun Jung and Yillbyung Lee (KOREA)

(S) An Interactive Document Image Description for OCR of Handwritten Forms

David Monger, Graham Leedham and Andy Downton (UK)

#### Session 3-2-C Hypermedia and Content Retrieval

(S) Using Electronic Facsimiles of Document for Automatic Reconstruction of Underlying Hypertext Structures

A. Myka and U. Guentzer (GERMANY)

(S) A Collaborative Supporting Method between Document Processing and Hypertext Construction

Shin'ichi Satoh, Atsuhiko Takasu and Eishi Katsura (JAPAN)

(S) Retrieval of Document Images Using Layout Knowledge

Per Herrmann (GERMANY)

(L) Document Image Retrieval System Using Character Candidates Generated by Character Recognition Process

Shuji Senda, Michihiko Minoh and Katsuo Ikeda (JAPAN)

(L) Learning of Personal Visual Impression for Image Database Systems

Takio Kurita and Toshikazu Kato (JAPAN)

(S) Radiographs as Medical Documents: Automating Standard Measurements

Dov Dori, Adam I. Harris, Gustavo Gambach and Robert M. Haralick (ISRAEL)

13:00 - 14:15 Lunch

14:15 - 15:45

#### Session 3-3-A Segmentation of Touching Characters

(S) A Projection Reducing the Constraint of Direction

Gerard Lambert (FRANCE)

(S) A Method for Recognizing Character Strings in Maps Using Linguistic Knowledge

Akira Nakamura (JAPAN)

(S) Cut Classification for Segmentation

T. A. Bayer and U. Kressel (GERMANY)

(S) Segmentation of Touching Characters in Printed Document Recognition

Su Liang, M. Shridhar, M. Ahmadi (USA)

(S) Word Recognition in a Segmentation-Free Approach to OCR

C. H. Chen and J. L. DeCurtins (USA)

(S) Segmentation of Handwritten Digits Using Contour Features

N. W. Strathy, C. Y. Suen and A. Krzyzak (CANADA)

#### Session 3-3-B Classification and Pre-classification II

(S) Writing Style Detection by Statistical Combination of Classifiers in Form Reader Applications

Juergen Franke (GERMANY)

(S) Recognition Enhancement by Linear Tournament Verification

Hiroyasu Takahashi and Thomas D. Griffin (USA)

(S) On Discrimination of Handwritten Similar Kanji Characters by Subspace Method Using Five Features

M. Ohkura, Y. Shimada, M. Shiono and R. Hashimoto (JAPAN)

(S) Perfect Metrics

Tin Kam Ho and Henry S. Baird (USA)

(S) Combination of Multiple Classifiers with Measurement Values

Y. S. Huang and C. Y. Suen (CANADA)

(S) A Solution to the Problem of Touching and Broken Characters

Jairo Rocha and Theo Pavlidis (USA)

#### Session 3-3-C Component Recognition in Drawings

(I) Detection of Dimension Sets in Engineering Drawings

Chan Pyng Lai and Rangachar Kasturi (USA)

(S) Diagram Understanding Utilizing Natural Language Text

Yuichi Nakamura, Ryo Furukawa and Makoto Nagao (JAPAN)

(S) Don't Tell Mom I'm Doing Document Analysis; She Believes I'm in the Computer Vision Field

Suzanne Collin, Karl Tombre and Pascal Vaxiviere (FRANCE)

(S) Appropriate Base Representation Using a Run Graph

Gladys Monagan and Markus Roosli (SWITZERLAND)

(S) Optical Recognition of Chemical Graphics

R. Casey, S. Boyer, P. Healey, A. Miller, B. Oudot and K. Zilles (USA)

15:45 - 16:00 Break

16:00 - 17:15

#### Session 3-4-A Contextual Processing II

(L) A Fast Algorithm for Finding the Nearest Neighbor of a Word in a Dictionary

Horst Bunke (SWITZERLAND)

(S) A Method of Training Dictionaries for Handwritten Character Recognition Using Relaxation Matching

T. Horiuchi, K. Toraichi, K. Yamamoto and H. Yamada (JAPAN)

(S) A Multi-Classifer Combination Strategy for The Recognition of Handwritten Cursive Words

B. Plessis, A. Sicsu, L. Heutte, E. Menu, E. Lecolinet, O. Debon and

J. V. Moreau (FRANCE)

(S) Postprocessing Algorithm Based on the Probabilistic and Semantic Method for Japanese OCR

Akiko Konno (JAPAN)

#### Session 3-4-B Layout Generation and Decomposition

(S) Automated Acquisition of Rules for Document Understanding

F. Esposito, D. Malerba and G. Semeraro (ITALY)

(S) Text String Extraction within Mixed-Mode Documents

Frank Hoeneß and Juergen Lichter (GERMANY)  
(S) Extraction of Character Strings from Unformed Document Images  
Kei Takizawa, Daisaku Arita, Michihiko Minoh and Katsuo Ikeda (JAPAN)  
(S) Intelligent Document Understanding: Understanding Photographs with Captions  
Rohini K. Srihari (USA)  
(S) Incremental Acquisition of Knowledge about Layout Structures from Examples  
of Documents  
Koichi Kise, Naoko Yajima and Noboru Babaguchi (JAPAN)

#### Session 3-4-C Map Interpretation II

(S) Attributes Extraction for French Map Interpretation  
J. M. Ogier, J. Labiche, R. Mullot and Y. Lecourtier (FRANCE)  
(S) Map Understanding for GIS Data Capture: Algorithms for Road Network Graph  
Reconstruction  
Marc Pierrot Deseilligny, Herve Le Men and George Stamon (FRANCE)  
(S) Development of a Map Vectorization Method Involving a Shape Reforming  
Process  
Naoya Tanaka, Takeshi Kamimura and Jun Tsukumo (JAPAN)  
(S) Automatic Generation of Custom Document Image Decoders  
Gary E. Kopec and Phil A. Chou (USA)  
(S) Parallel Automatic Recognition of Cartography for Constructing Electrical  
Distribution Database  
Shigeru Shimada, Yoshinori Takahara, Hiroshi Suenaga and Kouji Tomita  
(JAPAN)

17:15 Conference Ends

#### [Poster Session]

> Block Segmentation and Text Area Extraction of Vertically/Horizontally  
Written Document  
Naohiro Amamoto (JAPAN)  
> A Hybrid Page Segmentation Method  
Masayuki Okamoto and Makoto Takahashi (JAPAN)  
> A Labeling Approach for Mixed Document  
A. Belaid and O. T. Akindele (FRANCE)  
> Classification of Compound Document Image Patterns by MCR Stroke Index  
A. B. C. Zidouri, S. Chinveeraphan and M. Sato (JAPAN)  
> Weak Model-Dependent Page Segmentation and Skew Correction for Processing  
Document Images  
John F. Cullen and Koichi Ejiri (USA)  
> Page Grammars and Page Parsing: A Syntactic Approach to Document Layout  
Recognition  
Alan Conway (IRELAND)  
> Table Structure Recognition Based on Textblock Arrangement and Ruled Line  
Position  
Katsuhiko Itonori (JAPAN)  
> Image Based Typographic Analysis of Documents  
David S. Doermann and Richard Furuta (USA)  
> Raster to Object Conversion Aided by Knowledge Based Image Processing  
Enrico Nardelli, Michelangelo Fossa and Guido Proietti (ITALY)  
> Layout analysis  
Johann Wieser and Axel Pinz (AUSTRIA)  
> A Functional Classification Approach to Layout Analysis of Document Image  
Kazumi Iwane, Masaki Yamaoka and Osamu Iwaki (USA)  
> Cursivewriter: On-Line Cursive Writing Recognition System  
Peng Zhao, Toshihiro Yasuda and Yukio Sato (JAPAN)  
> Real Time Signature Recognition: A Method for Personal Identification  
Giuseppe Gazzolo and Luigi Bruzzone (ITALY)  
> On-Line Text/Drawings Segmentation of Handwritten Patterns  
Kimiyoichi Machii, Hidehiro Fukushima and Masaki Nakagawa (JAPAN)  
> A Contour Fill Method for Alpha-Numeric Character Image Generation  
K. Nakashima, M. Koga, K. Marukawa, Y. Shima and Y. Nakano (JAPAN)  
> A Color Classification Algorithm  
Kansei Iwata and Gabriel Marcu (JAPAN)  
> Global and Local Document Degradation Models  
Tapas Kanungo, Robert M. Haralick and Ihsin Phillips (USA)  
> Visual Interface for Retrieval of Electronic-Formed Books  
Toyohide Watanabe, Yuichi Kanai and Noboru Sugie (JAPAN)  
> Co-Operative Work in a Hypertext System for Universities  
Claudiu Popescu (ROMANIA)  
> Fast Image Filtering Implementation  
M. Shaban Mohammed, S. Lorenzo, L. Nozal and R. M. Boncho (SPAIN)  
> Automatic Generation of Chinese Character Structure Data Based on  
Extracting the Strokes  
Jinghui Wang and Shinji Ozawa (JAPAN)  
> Stamped Character Recognition Method Using Range Image  
M. Inoh, T. Horiuchi, K. Toraichi, H. Yamada and K. Yamamoto (JAPAN)  
> Automatic Seal Identification Using Fluency Function  
Y. Yang, T. Horiuchi and K. Toraichi (JAPAN)  
> A New Method for The Segmentation of Mixed Handprinted Chinese/English  
Characters  
Hsing-Hung Kuo and Jhing-Fa Wang (CHINESE, Taipei)  
> Segmentation and Recognition for Handwritten 2-Letter State Names  
S. Tsuruoka, F. Kimura, Y. Miyake, M. Shridhar and Z. Chen (JAPAN)  
> Recognition and Representation of Text Characters Using Rubber Band  
Jingzhi Jiang, Woontae Kim and Hideyoshi Tominaga (JAPAN)  
> Recognition of Handwritten Digits by Consensus Among Independent Learning  
Vector Quantization  
Tin Kam Ho (USA)  
> Utilization of Large Disordered Sample Sets for Classifier Adaptation  
Complex Domains  
T. Caesar, J. M. Gloger and E. Mandler (GERMANY)  
> Multifont Chinese Character Recognition Using Side-Stroke-End Feature  
Gang-Bai (CHINA)  
> Optical Recognition of Handwritten Chinese Characters by Partial Matching

An-Bang Wang, Jun S. Huang and Kuo-Chin Fan (CHINESE, Taipei)  
 > A Model Based Detecting Approach for Feature Extraction of Off-Line Handwritten Chinese Character Recognition

J. W. Tai, Yin-Jian Liu and Li-Qin Zhang (CHINA)  
 > Script Representation by a Generalized Skeleton

J.-C. Pettier and J. Camillerapp (FRANCE)  
 > Comparison of Methods for Detecting Corner Points from Digital Curves - A Preliminary Report,

Keiichi Abe, Rika Morii, Kaori Nishida and Tokuhisa Kadonaga (JAPAN)  
 > The Feasibility of a Parallel Processing Oriented Character Recognition Method Based on a Dynamic Model

Rodney G. Webster and Masaki Nakagawa (JAPAN)  
 > Effect of the Perturbed Correlation Method for Optical Character Recognition

Michio Yasuda, Kazuhiko Yamamoto and Hiromitsu Yamada (JAPAN)  
 > 2-Stage Character Recognition by Detection and Correction of Error-Identified Characters,

Cheng-Huang Tung and Hsi-Jian Lee (CHINESE, Taipei)  
 > Relationship Between the Construction of Chinese Character and the Correct Ratio of Writer Identification

Yoko Seki and Noriyoshi Takasawa (JAPAN)  
 > On Using Syntactic Constraints in Text Recognition

R. M. K. Sinha (INDIA)  
 > From Engineering Drawings to 3-D CAD Models: Are We Ready Now?

Dov Dori and Karl Tombre (FRANCE)  
 > A Multipurpose Drawing Understanding System with Flexible Object-Oriented Framework

Wei Wu and Masao Sakauchi (JAPAN)  
 > Logo Recognition Using Geometric Invariants

David Doermann, Ehud Rivlin and Isaac Weiss (USA)  
 > A Color Map Processing System PU-CMPS

Qinghuai Gao, Jun He, Guisheng Qiu and Qingyun Shi (CHINA)  
 > An Object-Oriented Kernel for Geographical Information Systems

Ying Ming Lin, Takeshi Sagara, Yutaka Ohsawa and Masao Sakauchi (JAPAN)  
 > Printed Music Recognition

R. Randriamahefa, J-P. Cocquerez, C. Fluhr, F. Pepin and S. Philipp (FRANCE)  
 > Machine Visualization, Understanding and Interpretation of Polyhedral Line-Drawing in Document Analysis,

P. S. P. Wang (USA)  
 > A Study on a Method of Dividing Machine-Parts into Function Group for Technical Illustrations

Inho Lee, Seiichiro Dan, Tadahiro Kitahashi and Norihiro Abe (JAPAN)  
 > An Improved Classification for Cursive Script Recognition

Laurent Duneau and Bernadette Dorizzi (FRANCE)  
 > Pattern Analysis and Evaluation of Printed Circuit Boards

Masayasu Ito, Yoshinori Takeuchi, Isao Fujita and Tooru Uchida (JAPAN)  
 > A Robust Detector for Music Staves

Ivan Leplumey, Jean Camillerapp, and Guy Lorette (FRANCE)  
 > Musical Score Recognition: A Hierarchical and Recursive Approach

Jean-Pierre Armand (FRANCE)  
 > A New Algorithm Separating Text String from Map Images

Tong Xu and Xinggang Lin (CHINA)  
 > Towards Automatic Evaluation of Drawing Analysis Performance - A Statistical Model of Cadastral Map

Dariusz Madej and Andrej Sokolowski (TURKEY)  
 > Symbols Recognition and Reconstruction Surface from Topographic Map by Parallel Method

Kazuhiko Yamamoto, Hiromitsu Yamada and Shigeru Muraki (JAPAN)  
 > Retrieval Method of Textile Pictures Database Using a Complexity Scale

Toru Inohara, Kunio Kondo, Hisashi Satoh and Shizuo Shimada (JAPAN)  
 > Totally Unconstrained Handwritten Numeral Recognition via Fuzzy Graphs

I. S. I. Abuhaiba and P. Ahmed (SAUDI ARABIA)  
 > Intelligent Interactive Map Recognition Using Neural-Networks

Hiroyuki Arai, Shinji Abe and Masakazu Nagura (JAPAN)  
 > Identifying Ability of a Recognition Method Based on the Field of Induction

Michihiro Nagaishi (JAPAN)  
 > Segmentation and Classification Using Neural Network for Mixed Text/Image Documents

Shinichi Imade, Seiji Tatsuta and Toshiaki Wada (JAPAN)  
 > Multilayer Perceptron and Uppercase Hand-written Characters Recognition

Gosselin Bernard (BELGIUM)  
 > A Tree Structured Neural Network

Hazem Raafat and Mohsen A. A. Rashwan (CANADA)  
 > Some Ergonomic Improvements of Text Error Detection and Prevention in DTP-Systems

Victor Backmutsky and Vladimir Zmudikov (ISRAEL)  
 > A Symbol Recognition System

David Y. Y. Yun (USA)  
 > Principles of Pen Interface Design for Creative Work

Masaki Nakagawa, Naoki Kato, Kimiyoshi Machii and Toshio Souya (JAPAN)  
 > An OCR System for Business Cards

Hisashi Saiga, Yasuhisa Nakamura, Yoshihiro Kitamura and Toshiaki Morita (JAPAN)  
 > A Contextual Processing for an O.C.R System, Based on Pattern Learning

F. Lebourgeois and J. L. Henry (FRANCE)  
 > Handprinted Character Recognition System Using Artificial Neural Networks

Adnan Amin (AUSTRALIA)

[Ground Transportations]

The location, Tsukuba Science City, is about 60 km northeast of metropolitan Tokyo and 40 km northwest of the New Tokyo International Airport (Narita International Airport).

There is no direct transportation from Narita Airport to Tsukuba. It is not recommended to take a taxi from Narita Airport to Tsukuba because it costs more than 20,000 yen(about \$200). Please go to Tsukuba by way of JR (Japan Rail) Tokyo Station described below.

>From Narita Airport to JR Tokyo Station-----

You may take an airport limousine bus or a JR Narita Express (NEX) which runs directly from Narita Airport to JR Tokyo Station. It takes about 80 minutes by the limousine bus and about one hour by NEX. The fare is 2,600 yen for the limousine bus and 2,890 yen for NEX.

You may also take a local train of JR Sobu line instead of NEX. It runs more often but takes more time, 80 minutes. It costs less expensive 1,260 yen.

>From JR Tokyo Station to Tsukuba-----

At the south part of the Yaesu side of JR Tokyo Station, there is Yaesu Highway Bus Station (The Yaesu side is the east side of the JR station). There, you may buy a ticket for JR/Kantetsu Highway Bus bound for Tsukuba Center. It takes about 70 minutes to Tsukuba Center which is the terminal. The venue of the conference, Tsukuba Dai-ichi Hotel, is only three minute walk from the terminal. The fare of the highway bus is 1,230 yen.

More about the Highway Bus-----

The running time of the highway bus from Tokyo Station to Tsukuba Center sometimes becomes much longer than the usual 70 minutes depending on the traffic.

The highway bus for Tsukuba Center starts from the bus stop number 2 of Yaesu Highway Bus Stops. Please be sure not to take a bus bound for Tsukuba-san (Mt. Tsukuba) which starts from the same bus stop number 2.

As for the bus from Tsukuba to Tokyo, it should be noted that it goes to JR Ueno Station rather than JR Tokyo Station. It usually takes about two hours >from Tsukuba to Ueno. The fare is 1,230 yen. Take a train to go to JR Tokyo Station from JR Ueno Station, which takes only ten minutes.

[Registration]

Please type or print the registration form neatly and send it to the conference secretary no later than September 20, 1993. The registrants will receive a confirmation letter which should be presented at the registration desk to receive conference material. On-site registration is also available on October 19 and 20 .

Conference Fee-----

Members of IAPR, members of its affiliate organizations, and members of organizations that are supporting this conference are given a discount in the conference fee as shown below. To encourage students to participate, a special discount is also available for full-time students. They will be requested to show their identification at the registration to get the discount.

Table 1 Conference fee

Early/Late registration	Before Sept. 1	After Aug. 31
Member	25,000 yen	30,000 yen
Non-member	30,000 yen	35,000 yen
Full-time student	5,000 yen	10,000 yen
Proceedings only	10,000 yen	10,000 yen

Banquet, Tours and CD-ROMs-----

The banquet to be held on Thursday, October 21 requires reservation and 7,000 yen per person. Those who have a food limitation may indicate it in the registration form. Special menu will be available. The technical tour and other social tours require reservations although they are free of charge. Please indicate number of persons in the registration form.

Those who want to receive a commemorative database CD-ROM need to indicate his/her selection of the four kinds of collections in the registration form. They will be requested to fill a separate application form on the site. In the case of students, the form requires a signature of a responsible person of his/her research group.

Hotel Accommodations-----

Hotel rooms for about 340 persons are available. The room rate including the service charge is between 6,200 yen and 10,000 yen for a single room, and between 12,700 yen and 19,000 yen for a twin room. The tax is separate.

The reserved hotels are grouped into three classes based on the price and the distance from the conference venue as in the hotel reservation form. Please indicate your preference in the form and return it to the address shown on the form. You will receive a confirmation letter with detailed information.

The payments can be made at a hotel front. No deposit is required.

Student Housing for 100 people is also available which costs 3,000 yen per night. Most of the student house rooms have a single bed without a bath room. Toilets and bath rooms are for common use. The gate of this house closes at 23:00. The payment need to be made in advance together with the conference fee. Please see the registration form. Please set up your schedule so as to show yourself at the registration before using the student house.

The hotel reservation form need to reach Japan Travel Bureau, Tsukuba Branch no later than September 4. Otherwise, the reservation confirmation depends upon the room availability at the time your request received. Confirmation for dates other than October 19-23 will be on a space-available basis.

Payments of the Registration Fee-----

Payments are accepted in Japanese yen only. Credit cards of Master Card, Visa and American Express are acceptable. When payment is done through a bank, please write the date of the remittance, the bank name and the branch name on the registration form.

Cancellations-----

Refund of 70% of the payment will be made if a cancellation notice and a written request for the refund is received by September 20, 1993. No refunds

will be made for cancellations received after this date.

Notes on registration and payments-----

> Those who want to reserve the Student House also need to fill and return the hotel reservation form. Please indicate the dates you want to reserve.

> In case the Student House has no room, the pre-payment will be fully refunded at the registration. It will be notified in the confirmation letter and a hotel reservation will be requested.

> As for the on-site registration, the cash and traveler's checks in Japanese yen only are accepted. Credit cards will not be accepted there.

Address of Conference Secretary-----

ICDAR'93 Conference Secretary  
c/o Prof. K. Yamamoto, Head of Image Understanding Section

Electrotechnical Laboratory

1-1-4 Umezono, Tsukuba

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