

# ICDAR'01 Final program

**Friday, September 7-8, 2001**  
**Workshop on Graphics Recognition (GREC 2001)**  
**Kingston Ontario Canada**

**Saturday September 8, 2001**  
**1 :00PM – 5 :00PM**  
**Tutorial : Artificial Neural Networks for Document Analysis and Recognition**  
**Marco Gori, Simone Marinai, Giovanni Soda**

**Saturday September 8, 2001**  
**9:30AM – 5:00PM**  
**Workshop: Web Document Analysis**  
**Apostolos Antonacopoulos, Jianying Hu**

**Sunday September 9, 2001**  
**1 :00PM – 5 :00PM**  
**Tutorial : Engineering Drawing Understanding and CAD Conversion**  
**Dov Dori , Liu Wenyin**

**Sunday September 9, 2001**  
**9 :30AM – 5 :00PM**  
**Workshop : Document Layout Interpretation and Its Applications**  
**Thomas Breuel, Marcel Worring**

**Monday, September 10, 2001**

**9:00**

**Plenary Session: Opening remarks**  
**Plenary speaker: George Nagy, Advanced Character Recognition 6610**  
**Doubletree Ballroom**

<b>10:00</b>	<b>Coffee Break</b>
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<b>10:20</b>	<b>Monday, September 10</b> <b>Handwriting Classifiers I</b> <b>Chair: A. Downton</b> <b>Dallas Room</b>	
<b>10:20</b>	A Candidate Reduction Method for Handwritten Kanji Character Recognition	Eiki Ishidera, Atsushi Sato
<b>10:40</b>	Recognition of Unconstrained Handwritten Numeral Strings Using Decision Value Generator	Kye Kyung Kim, Yun Koo Chung, Jin Ho Kim, Ching Y. Suen
<b>11:00</b>	A Scanning N-tuple Classifier for Online Recognition of Handwritten Digits	Eugene Ratzlaff
<b>11:20</b>	Bayesian Network Modeling of Strokes and Their Relationships for On-line Handwriting Recognition	Sung J. Cho , Jin H. Kim
<b>11:40</b>	An Hybrid MLP-SVM Handwritten Digit Recognizer	Abdelouahab Bellili, Michel Gilloux, Patrick Gallinari

<b>10:20</b>	<b>Monday, September 10</b>  <b>Image Processing I</b> <b>Chair: E. Barney-Smith</b> <b>Phoenix Room</b>	
<b>10:20</b>	Binarizing Document Images Using Coplanar Filter	Liyang Fan, Lixin Fan, Chew Lim Tan
<b>10:40</b>	Handwritten Character Recognition Using Piecewise Linear Two-Dimensional Warping	Mohammad Asad Ronee, Seiichi Uchida, Hiroaki Sakoe
<b>11:00</b>	Separation of Overlapping Text from Graphics	Ruini Cao, Chew Lim Tan
<b>11:20</b>	Binarization of Document Images Using Image Dependent Model	Amer Dawoud, Mohamed Kamel
<b>11:40</b>	Binarising Camera Images for OCR	Mauritius Seeger, Christopher R. Dance

<b>10:20</b>	<b>Monday, September 10</b> <b>OCR &amp; Document Understanding</b> <b>Chair: H. Fujisawa</b> <b>Monterey Room</b>	
<b>10:20</b>	Character Spotting Using Image-based Stochastic Models	Seon-Kyu Kim, Bong-Kee Sin
<b>10:40</b>	A Class-Modularity for Character Recognition	Il-Seok Oh, Jin-Seon Lee, Ching Y. Suen
<b>11:00</b>	Planar Markov Modeling for Arabic Writing Recognition: Advancement State	Housseem Miled, Najoua Ben AmarA
<b>11:20</b>	Character Preclassification Based on Fuzzy Typographical Analysis	Lu Da, Brendan McCane, Pu Wei
<b>11:40</b>	Fine-grained Document Genre Classification Using First Order Random Graphs	Andrew D. Bagdanov, Marcel Worring

<b>12:00</b>	<i>Lunch (On your own)</i>
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<p><b>13:15</b></p>	<p align="center"><b>Monday, September 10</b></p> <p align="center"><b>Handwriting Features &amp; Writer Identification</b></p> <p align="center"><b>Chair: G. Leedham</b></p> <p align="center"><b>Dallas Room</b></p>	
<p><b>13:15</b></p>	<p>Handwriting Recognition Using Local Methods for Normalization and Global Methods for Recognition</p>	<p>Ch. Choisy, A. Belaid</p>
<p><b>13:35</b></p>	<p>Writer Identification Using Text Line Based Features</p>	<p>H. Bunke, U.-V. Marti, R. Messerli</p>
<p><b>13:55</b></p>	<p>Building Skeletal Graphs for Structural Feature Extraction on Handwriting Images</p>	<p>Hanhong Xue, Venu Govindaraju</p>
<p><b>14:15</b></p>	<p>Handwriting Stroke Extraction Using a New XYTC Transform</p>	<p>Gilles F. Houle, Katerina Blinova, M. Shridhar</p>
<p><b>14:35</b></p>	<p>Individuality of Handwriting: A Validation Study</p>	<p>Sargur N. Srihari, Sung-Hyuk Cha, Hina Arora, Sangjik Lee</p>
<p><b>14:55</b></p>	<p>Fuzzy Modeling Based Signature Verification System</p>	<p>M Hanmandlu, K R Murali Mohan, Sourav Chakraborty, Gaurav Garg</p>

<b>13:15</b>	<b>Monday, September 10</b>  <b>Evaluation</b> <b>Chair: T. Kanungo</b> <b>Phoenix Room</b>	
<b>13:15</b>	Evaluating Document Analysis Results via Graph Probing	Daniel Lopresti, Gordon Wilfong
<b>13:35</b>	Performance Evaluation of a Robust Method for Mathematical Expression Recognition	Hiroki Imai, Kazuhiko Takagi, Masayuki Okamoto
<b>13:55</b>	Why Table Ground–Truthing is Hard	Jianying Hu, Ramanujan Kashi, Daniel Lopresti, George Nagy, Gordon Wilfong
<b>14:15</b>	An Automatic Performance Evaluation Method for Document Page Segmentation	Liangrui Peng
<b>14:35</b>	Benchmarking Commercial OCR Engines for Technical Drawings Indexing	Jean–Christophe Lecoq, Laurent Najman, Olivier Gibot, Eric Turpin
<b>14:55</b>	Truthing, Testing and Evaluation Issues in Complex Systems	Srirangaraj Setlur, Alfred Lawson, Venu Govindaraju, Sargur Srihari

<b>13:15</b>	<b>Monday, September 10</b>  <b>Word Recognition</b> <b>Chair: L. Spitz</b> <b>Monterey Room</b>	
<b>13:15</b>	Robust Word Recognition for Museum Archive Card Indexing	Simon Lucas, Andy Tams, Sung J. Cho, Sungho Ryu, Andy Downton
<b>13:35</b>	Word Discrimination Based On Bigram Co-Occurrences	Adnan El-Nasan, Sriharsha Veeramachaneni, George Nagy
<b>13:55</b>	A Stochastic Model for Handwritten Word Recognition Using Context Dependency Between Character Patterns	Takafumi Koshinaka, Daisuke Nishiwaki, Keiji Yamada
<b>14:15</b>	Probabilistic Model for Segmentation Based Word Recognition with a Lexicon	Sergey Tulyakov, Venu Govindaraju
<b>14:35</b>	Text Line Segmentation and Word Recognition in a System for General Writer Independent Handwriting Recognition	U.-V. Marti, H. Bunke
<b>14:55</b>	Adaptive N-Best List Handwritten Word Recognition	Michael P. Perrone, Thomas Y. Kwok

<b>15:15</b>	<b>Demonstrations and Email Sunrise Room</b>
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<b>15:15</b>	<b>Coffee Break Poster Session 1 Summit Room</b>	
	Automated Discovery of Dependencies Between Logical Components in Document Image Understanding	Donato Malerba, Floriana Esposito, Francesca A. Lisi, Oronzo Altamura
	Flexible Web Document Analysis for Delivery to Narrow- Bandwidth Devices	Gerald Penn, Jianying Hu, Hengbin Luo, Ryan McDonald
	Handwritten Chinese Character Segmentation Using a Two- Stage Approach	Shuyan Zhao, Zheru Chi, Pengfei Shi, Qing Wang
	A Maximum-Likelihood Approach to Segmentation- Based Recognition of Unconstrained Handwriting Text	Shuji Senda, Keiji Yamada
	Word Segmentation in Handwritten Korean Text Lines Based on Gap Clustering Techniques	Soo-Hyung Kim, S. Jeong, Guee-Sang Lee, Ching Y. Suen
	Segmenting Document Images Using Diagonal White Runs and Vertical Edges	Boulos Waked, Ching Suen, Sabine Bergler

	Detection of Word Groups Based on Irregular Pyramid	Poh Kok Loo, Chew Lim Tan
	New Paradigm for Segmentation and Recognition of Handwritten Numeral String	Sungsoo Yoon, Gyeonghwan Kim, Yeongwoo Choi, Yillbyung Lee
	Character Segmentation of Color Images from Digital Camera	Kongqiao Wang, Jari A. Kangas, Wenwen Li
	DMOS: A Generic Document Recognition Method, Application to an Automatic Generator of Musical Scores, Mathematical Formulae and Table Structures Recognition Systems	Bertrand Couasnon
	KMOD – A New Support Vector Machine Kernel With Moderate Decreasing for Pattern Recognition: Application to Digit Image Recognition	N.E. Ayat, M. Cheriet, L. Remaki, C. Suen
	Offline Handwritten Character Recognition Based On Discriminative Training of Orthogonal Gaussian Mixture Model	Rui Zhang, Xiaoqing Ding
	Video-Based On-line Handwriting Recognition	Gernot A. Fink, Markus Wienecke, Gerhard Sagerer

	Multi-Branch and Two-Pass HMM Modeling Approaches for Off-Line Cursive Handwriting Recognition	Gernot A. Fink, Markus Wienecke, Gerhard Sagerer
	Active Radical Modeling for Handwritten Chinese Characters	Wenwei Wang, Anja Brakensiek, Andreas Kosmala, Gerhard Rigoll
	A Comparison of Character N-Grams and Dictionaries Used for Script Recognition	Daming Shi, Steve R Gunn, Robert I Dampier
	How Conditional Independence Assumption Affects Handwritten Character Segmentation	Anja Brakensiek, Gerhard Rigoll
	An Efficient Method for Tuning Handwriting Parameters	M. Maragoudakis, E. Kavallieratou, N. Fakotakis, G. Kokkinakis
	A Handwritten Character Recognition Method with ANN Feedback	Gregory N. Hullender
	On the Influence of Vocabulary Size and Language Models \in Unconstrained Handwritten Text Recognition	Zhu Xiaoyan, Hao Yu, Shi Yifan

	A Study on Improvement to On-line Box-free Handwriting Character Recognition	H. Bunke, U.-V. Marti
	Detection of Curved Text Path Based on the Fuzzy Curve-tracing (FCT) Algorithm	Yuuichi Okano, Takenori Kawamata, Fumio Yoda
	Dual-Binarization and Anisotropic Diffusion of Chinese Characters in Calligraphy Documents	Hong Yan
	A Bezier Curve-based Approach to Shape Description for Chinese Calligraphy Characters	Shen-Zheng Wang, Hsi-Jian Lee
	Arabic Hand-Written Text-Line Extraction	Hsi-Ming Yang, Jainn-Jyh Lu, Hsi-Jian Lee
	Edge-Based Method for Text Detection from Complex Document Images	Abderrazak Zahour, Bruno Taconet, Pascal Mercy, Said Ramdane
	Multi-Skew Detection of Indian Script Documents	Matti Pietikäinen, Oleg Okun

	A Ruled-Line Extraction Method for Digital Camera Images	U. Pal, M. Mitra, B. B. Chaudhuri
	Text Extraction from Gray Scale Document Images	Katsuhito Fujimoto, Atsuko Ohara, Satoshi Naoi
	Gray Level Use in a Handwriting Fractal Approach and Morphological Properties Quantification	Qing Yuan, Chew Lim Tan
	An Efficient Correlation Computation Method for Binary Images Based on Matrix Factorisation	N. Vincent, T. Freche
	Marginal Noise Removal of Document Images	R. Bogush, S. Maltsev, S. Ablameyko, S. Uchida, S. Kamata
	Pitman Shorthand Inspired Model for Plain Text Compression	Kuo-Chin Fan, Yuan-Kai Wang, Tsann-Ran Lay P Nagabhushan, S Murali

<p><b>16:20</b></p>	<p align="center"><b>Monday, September 10</b></p> <p align="center"><b>Classifiers &amp; Learning</b></p> <p align="center"><b>Chair: H. Bunke</b></p> <p align="center"><b>Dallas Room</b></p>	
<p><b>16:20</b></p>	<p>A Multi-Net Local Learning Framework for Pattern Recognition</p>	<p>Jian-xiong Dong, Adam Krzyzak, Ching Y. Suen</p>
<p><b>16:40</b></p>	<p>Recognition of Hand-Printed Characters Based on Structural Description and Inductive Logic Programming</p>	<p>Adnan Amin</p>
<p><b>17:00</b></p>	<p>Accuracy Improvement of Handwritten Numeral Recognition by Mirror Image Learning</p>	<p>Tetsushi Wakabayahi, Meng Shi, Wataru Ohyama, Fumitaka Kimura</p>
<p><b>17:20</b></p>	<p>Document Image Decoding Using Iterated Complete Path Search with Subsampled Heuristic Scoring</p>	<p>Dan S. Bloomberg, Thomas P. Minka, Kris Popat</p>

<b>17:40</b>	An a priori Indicator of the Discrimination Power of Discrete Hidden Markov Models	Frédéric Grandidier, Robert Sabourin, Michel Gilloux, Ching Y. Suen
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<b>16:20</b>	<b>Monday, September 10</b>  <b>Graphics Recognition</b> <b>Chair: D. Blostein</b> <b>Phoenix Room</b>	
<b>16:20</b>	On-Line Recognition of UML Diagrams	E. Lank, J. Thorley, S. Chen, D. Blostein
<b>16:40</b>	Indexing of Technical Line Drawings Based on F-Signatures	Salvatore Tabbone, Laurent Wendling, Karl Tombre
<b>17:00</b>	Parallel Recognition of Roads from Urban Maps on Generation/Verification Paradigm of Hypotheses	Toyohide Watanabe, Toru Oshitani
<b>17:20</b>	Cadastre Map Assembling: A Puzzle Game Resolution	Jean-Marc Viglino, Laurent Guigues
<b>17:40</b>	High-Quality Polygonal Contour Approximation Based on Relaxation	Artem Mikheev, Luc Vincent, Vance Faber

<b>16:20</b>	<b>Monday, September 10</b> <b>Document Analysis Systems &amp; Check Processing</b> <b>Chair: D. Lopresti</b> <b>Monterey Room</b>	
<b>16:20</b>	Web-based Cooperative Document Understanding	Nicolas Roussel, Oliver Hitz, Rolf Ingold
<b>16:40</b>	AIDAS: Incremental Logical Structure Discovery from PDF Documents	Anjo Anjewierden
<b>17:00</b>	Networking Digital Images of Documents	F. Le Bourgeois, H. Emptoz, E. Trinh, J. Duong
<b>17:20</b>	A Knowledge-based Segmentation System for Handwritten Dates on Bank Cheques	Qizhi Xu, Louisa Lam, Ching Y. Suen
<b>17:40</b>	A Modular System to Recognize Numerical Amounts on Brazilian Bank Checks	Luiz E. S. Oliveira, Robert Sabourin, Flavio Bortolozzi, Ching. Y. Suen

<b>9:00</b>	<b>Tuesday September 11 Demonstrations and Email Sunrise Room</b>
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<b>9:00</b>	<b>Tuesday September 11 Poster session 2 Summit Room</b>	
	Automatic Seal Verification by Evaluating Positive Cost	Takahiko Horiuchi
	A System for Automatic Chinese Business Card Recognition	Wumo Pan, Jianming Jin, Guangshun Shi, Q. R. Wang
	Book Cover Identification by Using Four Directional Features Filed for a Small- scale Library System	Kenji Iwata, Kazuhiko Yamamoto, Masakazu Yasuda, Kunihito Kato, Masahiko Ishida, Keishi Murata
	Indexing Technical Drawings Using Title Block Structure Recognition	Laurent Najman, Olivier Gibot, Stéphane Berche
	Experimental Evaluation of Passage-based Document Retrieval	Koichi Kise, Markus Junker, Andreas Dengel, Keinosuke Matsumoto

	A Document Retrieval Method from Handwritten Characters Based on OCR and Character Shape Information	Taizo Kameshiro, Takashi Hirano, Yasuhiro Okada, Fumio Yoda
	Geometric Method for Document Understanding and Classification Using On-line Machine Learning	Cholwich Nattee, Masayuki Numao
	An Improved Learning Scheme for the Moving Window Classifier	M S Hoque, M C Fairhurst
	Handwritten Numeral Recognition Using Flexible Matching Based on Learning of Stroke Statistics	Takashi Kobayashi, Kaori Nakamura, Hirokazu Muramatsu, Takahiro Sugiyama, Keiichi Abe
	High-Precision Two-Kernel Chinese Character Recognition in General Document Processing Systems	San-Lung Zhao, Hsi-Jian Lee
	A Graph-Based Segmentation and Feature-Extraction Framework for Arabic Text Recognition	Ahmed M. Elgammal, Mohamed A. Ismail

	A System for Recognizing Vietnamese Document Image Based on HMM and Linguistics	Vu Hai Quan, Hoang Kiem, An H Nguyen, Pham Nam Trung, Lam Tri Tin, Nguyen Duc Hoang Ha
	Multi-resolution Recognition of Printed Chinese	Lei Huang, Xiao Huang
	A New Stroke-based Directional Feature Extraction Approach for Handwritten Chinese Character Recognition	Xue Gao, Lianwen Jin, Junxun Yin, Jian-Chen Huang
	Vertical Bar Detection for Gauging Text Similarity of Document Images	Weihua Huang, Chew Lim Tan, Sam Yuang Sung, Yi Xu
	On-Line Signature Verification Using Model-Guided Segmentation and Discriminative Feature Selection for Skilled Forgeries	Taik H. Rhee, Sung J. Cho, Jin H. Kim
	Robust Feature Extraction Based on Run-length Compensation for Degraded Handwritten Character Recognition	Minoru Mori, Minako Sawaki, Norihiro Hagita, Hiroshi Murase, Naoki Mukawa
	Feature Extraction Based on Fuzzy Set Theory for Handwriting Recognition	Natanael Rodrigues Gomes, Lee Luan Ling

	Genetic Algorithms for Feature Selection and Weighting	Faten Hussein, Nawwaf Kharma Rabab Ward
	A Distributed Scheme for Lexicon-Driven Handwritten Word Recognition and its Application to Large Vocabulary Problems	Alessandro L. Koerich, Robert Sabourin, Ching Y. Suen
	Handwritten Isolated Word Recognition: An Approach Based on Mutual Information for Feature Set Validation	Cinthia Freitas, Flávio Bortolozzi, Robert Sabourin
	Application of Slant Correction to Handwritten Japanese Address Recognition	Yimei Ding, Masayuki Okada, Fumitaka Kimura, Yasuji Miyake
	Analysis of Postal Address Fields for Efficient Encoding of Korean Mail Pieces	Gyeonghwan Kim, Seokgoo Lee, Miyong Shin, Yun Seok Nam
	Name Block Location in Facsimile Images Using Spatial/Visual Cues	Laurence Likforman-Sulem
	Handwritten Country Name Identification Using Vector Quantisation and Hidden Markov Model	Graham Leedham, Wei Kei Tan. Weng Lee Yap

	Adaptive Technology for Mail-order Segmentation	A. Belaïd, Y. Belaid, N. Valverde, S. Kébairi
	The Recursive Analysis to Recognize Form Cells	Hiroshi Shinjo, Eiichi Hadano, Katsumi Marukawa, Yoshihiro Shima, Hiroshi Sako
	Form Frame Line Detection with Directional Single-Connected Chain	Yefeng Zheng, Changsong Liu, Xiaoqing Ding, Shiyan Pan
	Form Document Identification Using Line Structure Based Features	Kuo-Chin Fan, Yuan-Kai Wang, Mei-Lin Chang
	Region Segmentation for Table Image with Unknown Complex Structure	Shinji Tsuruoka, Kensuke Takao, Toru Tanaka, Tomohiro Yoshikawa, Tsuyoshi Shinogi

<b>10:00</b>	<b><i>Coffee Break</i></b>
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<b>10:20</b>	<b>Tuesday, September 11</b>  <b>Handwriting Classifiers II</b> <b>Chair: S. Srihari</b> <b>Dallas Room</b>	
<b>10:20</b>	A Two-Stage HMM-Based System for Recognizing Handwritten Numeral Strings	Alceu de S. Britto Jr., Robert Sabourin, Flavio Bortolozzi, Ching Y. Suen
<b>10:40</b>	Active Digit Classifiers: A Separability Optimization Approach to Emulate Cognition	Ankur Teredesai, V. Govindaraju
<b>11:00</b>	Measuring HMM Similarity with the Bayes Probability of Error	Claus Bahlmann, Hans Burkhardt
<b>11:20</b>	Strategies for Combining On-line and Off-line Information in an On-line Handwriting Recognition System	Nadji Gauthier, Thierry Artieres, Bernadetet Dorizzi, Patrick Gallinari
<b>11:40</b>	Off-line Hand-written Character Recognition Using Integrated 1D HMMs Based on Feature Extraction Filters	Hiromitsu Nishimura, Masayoshi Tsutsumi, Minoru Maruyama, Hidetoshi Miyao, Yasuaki Nakano

<b>10:20</b>	<b>Tuesday, September 11</b> <b>Image Processing II</b> <b>Chair: C. Fuh</b> <b>Phoenix Room</b>	
<b>10:20</b>	Handwritten Japanese Character Recognition Using Adaptive Normalization by Global Affine Transformation	Toru Wakahara, Yoshimasa Kimura, Mutsuo Sano
<b>10:40</b>	Recovery of Distorted Document Image from Bound Volumes	Zheng Zhang, Chew Lim Tan
<b>11:00</b>	Nonuniform Slant Correction Using Dynamic Programming	Seiichi Uchida, Eiji Taira, Hiroaki Sakoe
<b>11:20</b>	Separating Handwritten Material from Machine Printed Text Using Hidden Markov Models	Jinhong K. Guo, Matthew Y. Ma
<b>11:40</b>	Efficient Conversion of Digital Documents to Multilayer Raster Formats	Leon Bottou, Patrick Haffner, Yann LeCun

<b>10:20</b>	<b>Tuesday, September 11</b>  <b>Applications I</b> <b>Chair: K. Tombre</b> <b>Monterey Room</b>	
<b>10:20</b>	Identification of Case, Digits and Special Symbols Using a Context Window	Tin Kam Ho, George Nagy
<b>10:40</b>	Learning of Structural Descriptions of Graphic Symbols Using Deformable Template Matching	E. Valveny, E. Martí
<b>11:00</b>	Online Recognition of Sketched Electrical Diagrams	Jean-Philippe Valois, Myriam Côté, Mohamed Cheriet
<b>11:20</b>	A Graph Grammar to Recognize Textured Symbols	Gemma Sanchez, Josep Lladós
<b>11:40</b>	ICAR: Identity Card Automatic Reader	Josep Lladós, Felipe Lumbreras, Vicente Chapaprieta, Joan Queralt

<b>12:00</b>	<i>Lunch (On your own)</i>
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<b>13:15</b>	<b>Tuesday, September 11</b>  <b>Online Handwriting</b> <b>Chair: G. Lorette</b> <b>Dallas Room</b>	
<b>13:15</b>	Incremental Hierarchical Discriminant Regression for Online Image Classification	Juyang Weng, Wey-Shiuan Hwang
<b>13:35</b>	Character Recognition Experiments Using Unipen Data	Marc Parizeau, Alexandre Lemieux, Christian Gagné
<b>13:55</b>	Comparing Adaptation Techniques for On-Line Handwriting Recognition	Anja Brakensiek, Andreas Kosmala, Gerhard Rigoll
<b>14:15</b>	On-line Handwriting Kanji Character Recognition Using Substroke HMMs	Mitsuru Nakai, Naoto Akira, Hiroshi Shimodaira, Shigeki Sagayama
<b>14:35</b>	Collection and Analysis of On-line Handwritten Japanese Character Patterns	Kaoru Matsumoto, Takahiro Fukushima, Masaki Nakagawa
<b>14:55</b>	Speeding Up On-line Recognition of Handwritten Characters by Pruning the Prototype Set	Vuokko Vuori, Jorma Laaksonen, Erkki Oja, Jari Kangas

	<b>Tuesday, September 12</b>	
<b>13:15</b>	<b>Tables</b> <b>Chair: K. Yamamoto</b> <b>Phoenix Room</b>	
<b>13:15</b>	Document Understanding Using Probabilistic Relaxation :Application on Tables of Contents of Periodicals	F. Le Bourgeois, H. Emptoz, S. Souafi Bensafi
<b>13:35</b>	Three Approaches to "Industrial" Table Spotting	Bertin Klein, Serdar Gökkus, Thomas Kieninger, Andreas Dengel
<b>13:55</b>	Applying The T-Recs Table Recognition System To The Business Letter Domain	Thomas Kieninger, Andreas Dengel
<b>14:15</b>	Layout and Language: Exploring Text Block Discovery in Tables Using Linguistic Resources	Matthew Hurst
<b>14:35</b>	Automatic Table Ground Truth Generation and A Background-analysis-based Table Structure Extraction Method	Yalin Wang, Ihsin T. Phillips, Robert Haralick
<b>14:55</b>	Table Form Document Synthesis by Grammar-Based Structure Analysis	Akira Amano, Naoki Asada, Takayuki Motoyama, Taiji Sumiyoshi, Koji Suzuki

<b>13:15</b>	<b>Tuesday, September 11</b>  <b>Evaluation &amp; Datasets</b> <b>Chair: A. Chhabra</b> <b>Monterey Room</b>	
<b>13:15</b>	Zone Content Classification and its Performance Evaluation	Yalin Wang, Robert Haralick, Ihsin T. Phillips
<b>13:35</b>	Automatic Performance Evaluation for Video Text Detection	Xian-Sheng Hua , Liu Wenyin, Hong-Jiang Zhang
<b>13:55</b>	Match Between Normalization Schemes and Feature Sets for Handwritten Chinese Character Recognition	Qing Wang, Zheru Chi, David D. Feng, Rongchun Zhao
<b>14:15</b>	Generating Realistic Kanji Character Images from On-Line Patterns	Ondrej Velek, Cheng-Lin Liu, Masaki Nakagawa
<b>14:35</b>	The GRUHD Database of Greek Unconstrained Handwriting	E.Kavallieratou, N.Liolios, E.Koutsogeorgos, N.Fakotakis, G.Kokkinakis
<b>14:55</b>	Two On-Line Japanese Character Databases in Unipen Format	Stefan Jaeger, Masaki Nakagawa

<b>15:15</b>	<p style="text-align: center;"><b>Tuesday, September 11</b></p> <p style="text-align: center;"><b>Plenary session:</b> <b>Daniel Lopresti, moderator</b> <b>Panel discussion on digital conversion projects in</b> <b>libraries</b></p> <p style="text-align: center;"><b>Henry Baird, Andrew Downton, Yann LeCun,</b> <b>Masaki Nakagawa, Marcel Worring</b></p>
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<b>16:15</b>	<b><i>Coffee Break</i></b>
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<p><b>16:40</b></p>	<p style="text-align: center;"><b>Tuesday, September 11</b></p> <p style="text-align: center;"><b>Classification &amp; Language Models</b>  <b>Chair: J. Hull</b>  <b>Dallas Room</b></p>	
<p><b>16:40</b></p>	<p>Reduction of the Classification Cost Using Hierarchical Classifiers based on the k-NN Rule</p>	<p>C. Rodríguez, Soraluze, J. Muguerza, J.I. Martín, G. Alvarez</p>
<p><b>17:00</b></p>	<p>A Framework of Combining Numeric String Recognizers</p>	<p>Xiangyun Ye, Mohamed Cheriet, Ching Y. Suen</p>
<p><b>17:20</b></p>	<p>Creating Word-Level Language Models for Handwriting Recognition</p>	<p>John F. Pitrelli, Amit Roy</p>
<p><b>17:40</b></p>	<p>An Analytical Handwritten Word Recognition System with Word-level Discriminant Training</p>	<p>Yong Haur Tay, Pierre-Michel Lallican, Marzuki Khalid, Stefan Knerr, Christian Viard-Gaudin</p>
<p><b>18:00</b></p>	<p>Sentence Recognition through Hybrid Neuro-Markovian Modeling</p>	<p>Sanparith Marukatat, Thierry Artieres, Bernadette Dorizzi, Patrick Gallinari</p>

<p><b>16:40</b></p>	<p style="text-align: center;"><b>Tuesday, September 11</b></p> <p style="text-align: center;"><b>Forms</b> <b>Chair: A. Dengel</b> <b>Phoenix Room</b></p>	
<p><b>16:40</b></p>	<p>Field Extraction Method from Existing Forms Transmitted by Facsimile</p>	<p>Takashi Hirano, Yasuhiro Okada, Fumio Yoda</p>
<p><b>17:00</b></p>	<p>Line Detection and Segmentation in Historical Church Registers</p>	<p>Markus Feldbach, Klaus D. Toennies</p>
<p><b>17:20</b></p>	<p>Contextual Focus For Improved Recognition of Hand-Filled Forms</p>	<p>WS Wong, N Sherkat, T Allen</p>
<p><b>17:40</b></p>	<p>Document Image Matching and Annotation Lifting</p>	<p>Ming Ye, Marshall Bern, David Goldberg</p>
<p><b>18:00</b></p>	<p>Printed Form Identification from Moment Invariants</p>	<p>N. Liolios, N. Fakotakis, G. Kokkinakis</p>

<b>16:40</b>	<b>Tuesday, September 11</b>  <b>Applications II</b> <b>Chair: S.-W. Lee</b> <b>Monterey Room</b>	
<b>16:40</b>	Mathematical Formula Recognition Using Virtual Link Network	Yuko Eto, Masakazu Suzuki
<b>17:00</b>	Baseline Structure Analysis of Handwritten Mathematics Notation	R. Zanibbi, D. Blostein, J. Cordy K.
<b>17:20</b>	PenCalc : A Novel Application of On-Line Mathematical Expression Recognition Technology	Kam-Fai Chan, Dit-Yan Yeung
<b>17:40</b>	A Real-World Evaluation of a Generic Document Recognition Method Applied to a Military Form of the 19th Century	Bertrand Couasnon, Laurent Pasquer
<b>18:00</b>	Information Extraction from Complex Circular Charts	A. Antonacopoulos, D.P. Kennedy

<b>19:30</b>	<b>Tuesday, September 11</b>  <b>Banquet</b> <b>Story Teller</b> <b>Awards and Announcements</b> <b>Doubletree Ballroom</b>	
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<b>9:00</b>	<b>Wednesday, September 12</b> <b>Plenary Session: Individuality of Handwriting</b> <b>Sargur Srihari</b> <b>Doubletree Ballroom</b>
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<b>10:00</b>	<i>Coffee Break</i>
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<b>10:20</b>	<b>Wednesday, September 12</b> <b>Non-Latin Alphabets I</b> <b>Chair: H. Baird</b> <b>Dallas Room</b>	
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<b>10:20</b>	Automatic Identification of English, Chinese, Arabic, Devnagari and Bangla Script Line	U. Pal, B. B. Chaudhuri
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<b>10:40</b>	Automatic Recognition of Printed Oriya Script	B.B. Chaudhuri, U. Pal, M. Mitra
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<b>11:00</b>	A Complete OCR for Printed Hindi Text in Devanagari Script	Veena Bansal, R M K Sinha
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<b>11:20</b>	Segmentation of Touching Characters in Printed Devnagari and Bangla Scripts Using Fuzzy Multifactorial Analysis	U. Garain, B.B. Chaudhuri
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<b>11:40</b>	Online Cursive Hangul Character Recognition Based on Dynamic Programming	Jungpil Shin
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<b>10:20</b>	<b>Wednesday, September 12</b> <b>Segmentation I</b> <b>Chair: A. Antonacopoulos</b> <b>Phoenix Room</b>	
<b>10:20</b>	Visual Exploration and Functional Document Labeling	V. Eglin
<b>10:40</b>	Segmentation of Handprinted Letter Strings	Thomas M. Breuel
<b>11:00</b>	Adaptive Segmentation of Document Images	Don Sylwester, Sharad Seth
<b>11:20</b>	Logical Labeling Using Bayesian Networks	S. Souafi-Bensafi, M. Parizeau, L. LeBourgeois, M. H. Emptoz
<b>11:40</b>	A Segmentation Method for Touching Japanese Handwritten Characters Based on Connecting Condition of Lines	Teruyuki Yamaguchi, Tomohiro Yoshikawa, Tsuyoshi Shinogi, Shinji Tsuruoka, Masato Teramoto

<b>10:20</b>	<b>Wednesday, September 12</b>  <b>Web Documents &amp; Video</b> <b>Chair: Y. Tang</b> <b>Monterey Room</b>	
<b>10:20</b>	Structure in On-line Documents	Anil K. Jain, Anoop Namboodiri, Jayashree Subrahmonia
<b>10:40</b>	Classification of HTML Documents by Hidden Tree-Markov Models	Michelangelo Diligenti, Marco Gori, Marco Maggini, Franco Scarselli
<b>11:00</b>	Constructing Web-Based Legacy Index Card Archives Architectural Design Issues and Initial Data Acquisition	C. Downton, A. C. Tams, G.J. Wells, A.C. Holmes, S.M. Lucas, (and 3 others)
<b>11:20</b>	HTML Page Analysis Based on Visual Cues	Yudong Yang, Hongjiang Zhang
<b>11:40</b>	Robust Detection of Stylized Text Events in Digital Video	David Crandall, Sameer Antani, Rangachar Kasturi

<b>12:00</b>	<i>Lunch (On your own)</i>
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<b>13:15</b>	<b>Wednesday, September 12</b> <b>Postal Automation &amp; Check Processing</b> <b>Chair: R. Sabourin</b> <b>Dallas Room</b>	
<b>13:15</b>	Adaptation of an Address Reading System to Local Mail Streams	Anja Brakensiek, Jörg Rottland, Frank Wallhoff, Gerhard Rigoll
<b>13:35</b>	Estimation of Home-address Numbers on the Basis of Relationships and Directions among House Blocks	Toyohide Watanabe, Takamasa Shimasaki
<b>13:55</b>	Lexicon-Driven Handwritten Character String Recognition for Japanese Address Reading	Cheng-Lin Liu, Masashi Koga, Hiromichi Fujisawa
<b>14:15</b>	Recognition of Handwritten Country Names	Catalin I Tomai, Sargur N. Srihari
<b>14:35</b>	A Feedback-based Approach for Segmenting Handwritten Legal Amounts on Bank Cheques	Jun Zhou, Ching Y. Suen, Ke Liu

<b>14:55</b>	Water Reservoir Based Approach for Touching Numeral Segmentation	U. Pal, N. Belaïd, O. C. Choisy
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<b>13:15</b>	<b>Wednesday, September 12</b>  <b>Information Retrieval &amp; Word Spotting</b> <b>Chair: V. Govindaraju</b> <b>Phoenix Room</b>	
<b>13:15</b>	APEX An Adaptive Visual Information Retrieval System	Ciro de Mauro, Marco Gori, Marco Maggini
<b>13:35</b>	Creating Generic Text Summaries	Yihong Gong, Xin Liu
<b>13:55</b>	Model-Based Information Extraction Method Tolerant of OCR Errors for Document Images	Yasuto Ishitani
<b>14:15</b>	Document Filtering for Fast Approximate String Matching of Errorneous Text	Atsuhiko Takasu
<b>14:35</b>	An Approach to Word Image Matching Based on Weighted Hausforff Distance	Yue Lu, Chew Lim Tan, Weihua Huang, Liyang Fan

<b>14:55</b>	Automated Assessment: Its Assessment Jim But Not As We Know It	Jonathan Allan, Tony J Allen, Nasser Sherkat
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<b>13:15</b>	<b>Wednesday, September 12</b> <b>Color &amp; Multimedia Documents</b> <b>Chair: J. Liang</b> <b>Monterey Room</b>	
<b>13:15</b>	Alignment of Free Layout Color Texts for Character Recognition	Hiroyuki Hase, Masaaki Yoneda, Toshiyuki Shinokawa, Ching Y. Suen
<b>13:35</b>	Text Extraction from Color Documents – Clustering Approaches in Three and Four Dimensions	T. Perroud, K. Sobottka, L. Hall, H. Bunke
<b>13:55</b>	Use of Colour in Form Layout Analysis	WS Wong, N Sherkat, T Allen
<b>14:15</b>	Video–text OCR Using Hidden Markov Models	Prem Natarajan, Baback Elmieh, Richard Schwartz, John Makhoul
<b>14:35</b>	An Investigation on MPEG Audio Segmentation by Evolutionary Algorithms	C. De Stefano, A. Della Cioppa, A. Marcelli

<b>14:55</b>	Character-like Region Verification for Extracting Text in Scene Images	Wang Hao, Jari Kangas
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<b>15:15</b>	<b><i>Coffee Break</i></b>	
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<b>15:35</b>	<b>Plenary session: Contest Results A.Antonacopoulos Presentation of Contest Papers Doubletree Ballroom</b>	
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<b>16:45</b>	<b>Wednesday, September 12 Demonstrations and Email Sunrise Room</b>	
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<b>16:45</b>	<b>Wednesday, September 12 Poster Session 3 Doubletree Ballroom</b>	
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	Legal Amount Recognition Based on the Segmentation Hypotheses for Bank Check Processing	Kye Kyung Kim, Jin Ho Kim, Yun Koo Chung, Ching Y. Suen
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	Handwritten Month Word Recognition on Brazilian Bank Checks	Marisa Morita, Abdenaim El Yacoubi, Robert Sabourin, Flavio Bortolozzi, Ching Y. Suen
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	The Autonomous Document Object (ADO) Model	Gareth Howells, Hossam Selim, Sanaul Hoque, Michael Fairhurst, Farzin Deravi
	A Recognition Method of the machine-printed Monetary Amounts Based on the Two-dimensional Segmentation and the Bottom-up Parsing	Masashi Koga, Ryuji Mine, Hiroshi Sako, Hiromichi Fujisawa
	Rejection Methods for an Adaptive Committee Classifier	Matti Aksela, Jorma Laaksonen, Erkki Oja, Jari Kangas
	A Genetic Algorithm for Feature Selection in a Neuro-Fuzzy OCR System	Shamik Sural, P.K.Das
	On-line Handwritten Signature Verification Using Wavelets and Back-propagation Neural Networks	Dariusz Z Lejtman, Susan E. George
	Prediction of Handwriting Legibility	Mandana Ebadian Dehkordi, Nasser Sherkat, Tony Allen
	Investigation of a Novel Self-configurable Multiple Classifier System for Character Recognition	K. Sirlantzis, M.C. Fairhurst

	Clustering with Projection Distance and Pseudo Bayes Discriminant Function for Handwritten Numeral Recognition	Meng Shi, Wataru Ohyama, Tetsushi Wakabayashi, Fumitaka Kimura
	A Bayesian Bi-gram Scheme For HMM Online Handwriting Recognition Algorithm.	Tomoki Hasegawa , Ken Akamatsu, Takashi Matsumoto
	Training with Positive and Negative Data Samples: Effects on a Classifier for Hand-Drawn Geometric Shapes	Hanaa Barakat, Dorothea Blostein
	Experimental Results on the Construction of Multiple Classifiers Recognizing Handwritten Numerals	Hee-Joong Kang
	Off-line Signature Verification Using HMM for Random, Simple and Skilled Forgeries	Edson J. R. Justino, Flávio Bortolozzi, Robert Sabourin
	Dynamic Recognition in the Omni-writer Frame: Application to Hand-printed Text Recognition	Loïc Oudot , Lionel Prevost, Maurice Milgram
	Development of Speedy and High Sensitive Pen System for Writing Pressure and Writer Identification	Mami Kikuchi, Norio Akamatsu

	Transitivity Based Enrollment Strategy for Signature Verification Systems	Claus Vielhauer, Ralf Steinmetz, Astrid Mayerhoefer
	Automatic Signature Verification Based on the Dynamic Feature of Pressure	S. Mori, K. Tanabe, M. Yoshihara, S. Omata, T. Ito
	Smart Sketchpad <sup>a</sup> An On-line Graphics Recognition System	Liu Wenyin, Wenjie Qian, Rong Xiao
	Chart Analysis and Recognition in Document Images	Yanping Zhou, Chew Lim Tan
	A System for Real-time Recognition of Handwritten Mathematical Formulas	Kenichi Toyozumi, Takahiro Suzuki, Kensaku Mori, Yasuhito Suenaga
	A Tool for Generating a Database of Cursive Words	Dave Elliman, Nasser Sherkat
	Automatic Summarisation of Web Content to Smaller Display Devices	F. R. Rahman, H. Alam
	Automatic Text Location in Natural Scene Images	Chuang Li, Xiaoqing Ding, Youshou Wu

	Extracting Textual Inserts from Digital Videos	Andrea Miene, Thorsten Hermes, George Ioannidis
	Character Extraction and Recognition in Natural Scene Images	Xuewen Wang, Xiaoqing Ding, Changsong Liu
	Improvement of Video Text Recognition by Character Selection	Takeshi Mita, Osamu Hori
	Web Pages Indexing Using Hidden Markov Models	Lyonel Serradura, Mohamed Slimane, Nicole Vincent

<b>9:00</b>	<b>Thursday, September 13</b>  <b>Non-Latin Alphabets II</b> <b>Chair: A. Amin</b> <b>Dallas Room</b>	
<b>9:00</b>	Techniques for Language Identification for Hybrid Arabic-English Document Images	Ahmed M. Elgammal, Mohamed A. Ismail

<b>9:20</b>	A Shape Based Post Processor for Gurmukhi OCR	G S Lehal, Chandan Singh, Ritu Lehal
<b>9:40</b>	An OCR System for Telugu	Atul Negi, Chakravarthy Bhagvati, Krishna Buska
<b>10:00</b>	Discrimination of Oriental and Euramerican Scripts Using Fractal Feature	Yu Tao, Yuan Y. Tang
<b>10:20</b>	Recognition of an Indian Script Using Multilayer Perceptrons and Fuzzy Features	Shamik Sural, P.K.Das

<b>9:00</b>	<b>Thursday, September 13</b>  <b>Segmentation II</b> <b>Chair: T. Breuel</b> <b>Phoenix Room</b>	
<b>9:00</b>	Text Area Localization under Complex-Background Using Wavelet Decomposition	Ning Jin, Y. Y. Tang

<b>9:20</b>	Encoding of Modified X–Y Trees for Document Classification	Francesca Cesarini, Marco Lastri, Simone Marinai, Giovanni Soda
<b>9:40</b>	A Model Guided Document Image Analysis Scheme	Gaurav Harit, Santanu Chaudhury, P. Gupta, N. Vohra, S.D.Joshi
<b>10:00</b>	An Analysis of Confidence Value Fusion for Handwritten Word Segmentation	Michael Blumenstein, Brijesh Verma
<b>10:20</b>	Applying Fast Segmentation Techniques at a Binary Image Represented by a Set of Non–Overlapping Blocks	B. Gatos, N. Papamarkos

<b>9:00</b>	<b>Thursday, September 13</b>  <b>Image Quality &amp; Style</b> <b>Chair: M. Fairhurst</b> <b>Monterey Room</b>	
<b>9:00</b>	Pessimal Print: A Reverse Turing Test	Allison L. Coates, Henry S. Baird, Richard J. Fateman
<b>9:20</b>	Synthetic Data for Arabic OCR System Development	V. Märgner, M. Pechwitz

<b>9:40</b>	Scanner Parameter Estimation Using Bilevel Scans of Star Charts	Elisa H. Barney Smith
<b>10:00</b>	Style-consistency in Isogenous Patterns	Prateek Sarkar, George Nagy

<b>11:00</b>	<b>Coffee Break Poster Session 4 Monterey Room</b>	
	A Recognition Method of the machine-printed Monetary Amounts Based on the Two-dimensional Segmentation and the Bottom-up Parsing	Masashi Koga, Ryuji Mine, Hiroshi Sako, Hiromichi Fujisawa

<b>12:00</b>	<b>Plenary session: Panel Discussion. ICDAR: Ten years after. Réjean Plamondon, moderator, with participation of Guy Lorette (ICDAR'91), Kazuhiko Yamamoto (ICDAR'93), Ching Y. Suen (ICDAR'95), Horst Bunke (ICDAR'97), Sargur Srihari (ICDAR'99), Robert M. Haralick (ICDAR'01) Doubletree Ballroom</b>
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<b>1:00</b>	<i>Lunch (On your own)</i>
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**2:45**

**2:45PM – 11:00PM  
Seattle City Tour Trip  
Tillicum Village Tour  
\$75 per person  
Tickets Must Be Purchased**

**Bus Tour of Seattle with Tour Guide  
Ferry Ride  
Salmon Bake  
Northwest Indian Show**