

CONTENTS

PART 1: THE STATE OF THE ART IN HANDWRITING RECOGNITION

Handwriting Recognition or Reading? Situation at the Dawn of the 3rd Millennium	3
<i>G. Lorette</i>	

PART 2: ON-LINE HANDWRITING RECOGNITION

On-line Hand Writing Recognition by Discrete HMM with Fast Learning	19
<i>H. Yasuda, K. Takahashi and T. Matsumoto</i>	

Optimization of Training Texts for Writer-dependent Handwriting Recognition	29
<i>J. F. Pitrelli, J. Subrahmonia, M. P. Perrone and K. S. Nathan</i>	

A Simple Yet Robust Structural Approach for On-line Handwritten Alphanumeric Character Recognition	39
<i>K.-F. Chan and D.-Y. Yeung</i>	

Diacritical Processing Using Efficient Accounting Procedures in a Forward Search	49
<i>G. Seni and J. Seybold</i>	

Coherent Knowledge Source Integration through Perceptual Cycle Framework for Handwriting Recognition	59
<i>L. Pasquer, É. Anquetil and G. Lorette</i>	

A Systematic Comparison of Advanced Modeling Techniques for Very Large Vocabulary On-line Cursive Handwriting Recognition	69
<i>G. Rigoll, A. Kosmala and D. Willett</i>	

PART 3: HANDWRITTEN FORM PROCESSING

Legal Amount Recognition on French Bank Checks Using a Neural Network-hidden Markov Model Hybrid	81
<i>E. Augustin, O. Baret, D. Price and S. Knerr</i>	

Towards an Universal Approach to Background Removal in Images of Bankchecks	91
<i>K. Franke and M. K�oeppen</i>	
A Handwritten Form Reader Architecture	101
<i>C. Cracknell and A. C. Downton</i>	
Error Localization and Correction in Check Processing	111
<i>G. Kaufmann and H. Bunke</i>	
Combining Different Classifiers and Level of Knowledge : A First Step towards an Adaptive Recognition System	121
<i>D. Ollivier, M. Weinfeld and R. Guegan</i>	
A Colour Classification Approach to Form Dropout	131
<i>C. Cracknell and A. C. Downton</i>	
A Natural Learning Algorithm Based on Hough Transform for Text Lines Extraction in Handwritten Documents	141
<i>Y. Pu and Z. Shi</i>	
PART 4: HANDWRITTEN WORD RECOGNITION	
Handwritten Word Recognition – The Approach Proved by Practice	153
<i>G. Dzuba, A. Filatov, D. Gershuny and I. Kil</i>	
Architecture for Handwritten Text Recognition Systems	163
<i>G. Kim, V. Govindaraju and S. N. Srihari</i>	
Search Algorithms for the Recognition of Cursive Phrases without Word Segmentation	173
<i>C. Scagliola</i>	
Handwritten Word Recognition with Contextual Hidden Markov Models	183
<i>C. Farouz, M. Gilloux and J.-M. Bertille</i>	
A Method for the Determination of Features Used in Human Reading of Cursive Handwriting	193
<i>L. Schomaker and E. Segers</i>	
Towards General Cursive Script Recognition	203
<i>U.-V. Marti and H. Bunke</i>	

A HMM-based System for Recognition of Handwritten Address Words	213
<i>M. Schüßler and H. Niemann</i>	

PART 5: SEGMENTATION

Global Methods for Stroke Segmentation	225
<i>Y. Nakajima, S. Mori, S. Takegami and S. Sato</i>	

Robust Deformable Matching for Character Extraction	235
<i>K.-W. Cheung, D.-Y. Yeung and R. T. Chin</i>	

Segmenting Handwritten Character Strings in an ICR System	245
<i>S. Bussi and E. Bruzzone</i>	

An Advanced Segmentation Technique for Cursive Word Recognition	255
<i>G. Dimauro, S. Impedovo, G. Pirlo and A. Salzo</i>	

Writer Adaptive Segmentation of Handwritten Japanese Characters	265
<i>S. Senda, M. Hamanaka and K. Yamada</i>	

PART 6: ORIENTAL SCRIPT PROCESSING

A Probabilistic Model for Candidate Selection in Recognition of Large Character Set	277
<i>C.-L. Liu and M. Nakagawa</i>	

Modular Partially Connected Neural Network via Hidden Layer Coupling for Off-line Handwritten Hangul Recognition	287
<i>S.-I. Chien, Y.-M. Baek and K.-T. Lim</i>	

Document Understanding Based on Maximum <i>a Posteriori</i> Probability Estimation	297
<i>T. Akagi and H. Mizutani</i>	

Stroke Extraction from Handwritten Kanji Characters by Connecting Segments	307
<i>Y. Okuda and K. Abe</i>	

Automatic Evaluation of Handwriting Qualities for Handwritten Hangul Database KU-1	317
<i>D.-I. Kim and S.-W. Lee</i>	

Recognition of a Handwritten Korean Character by Combining Segments Using Constraint Satisfying Graph	327
<i>Y.-S. Hwang and S.-Y. Bang</i>	

Recovery of Temporal Information from Static Images of Hangul Handwriting Based on Its Structural Information	337
<i>H. Kwak and K. Chung</i>	

Handwritten Korean Character Recognition Based on Hierarchical Random Graph Modeling	347
<i>H. Y. Kim and J. H. Kim</i>	

PART 7: NUMERAL RECOGNITION

Holistic Recognition of Touching Digits	359
<i>X. Wang, V. Govindaraju and S. Srihari</i>	

Quantum Neural Network in Recognition of Handwritten Numerals	368
<i>J. Zhou, Q. Gan, A. Krzyzak and C. Y. Suen</i>	

Expanding the Performance of Polynomial Classifiers by Iterative Learning	378
<i>J. Franke</i>	

Distinctiveness and Similarities of Handwritten Numerals	387
<i>Z. C. Li and C. Y. Suen</i>	

Recognition of Handwritten Numerals Using Multiple Features and Multiple Classifiers	397
<i>Y. G. Song, S. Y. Lee and J. J. Park</i>	

Performance Comparison of Statistical and Neural Network Classifiers in Handwritten Digits Recognition	406
<i>S. W. Jeong, S. H. Kim and W. H. Cho</i>	

A New Numeral String Recognition Method Using Character Touching Type Verification	416
<i>D. Nishiwaki and K. Yamada</i>	

A New Template Representation and Extraction Method for Connected Handwritten Digit Recognition	426
<i>Z. Lu, Z. Chi, W.-C. Siu and P.-F. Shi</i>	

PART 8: EMERGING TECHNIQUES

Multiple-agent Architectures for the Classification of Handwritten Text	439
<i>L. Vuurpijl and L. Schomaker</i>	
Off-line Handwriting Modeling as a Trajectory Tracking Problem	449
<i>P. M. Lallican and C. Viard-Gaudin</i>	
Applying B-spline Wavelet Transform to Contour Detection of Handwritings	459
<i>L. H. Yang, Y. Y. Tang, L. Feng and Z. H. Yang</i>	
Tree Search Technique for the Optimization of the k Nearest Neighbors Algorithm	469
<i>D. Mangalagiu and M. Weinfeld</i>	
Fast Searching on Large Lexicons for Post-processing on Handwriting Recognition	479
<i>M. A. Torres, S. Kuroyanagi and A. Iwata</i>	
Adaptation of Prototype Sets in On-line Recognition of Isolated Handwritten Latin Characters	489
<i>J. Laaksonen, V. Vuori, E. Oja and J. Kangas</i>	
Integration of Dictionaries in the Character Recognition by Relaxation Matching	498
<i>K. Iwata, M. Okamoto, K. Kato and K. Yamamoto</i>	
Number Theoretic Transform Approach to Handwriting Recognition	507
<i>L. Feng, Y. Y. Tang, Q. Sun and L. H. Yang</i>	

PART 9: APPLICATIONS

Combining Shape Matrices and HMMs for Hand-Drawn Pictogram Recognition	519
<i>S. Muller, G. Rigoll, A. Kosmala and D. Mazurenok</i>	
Relevant Classifier Integration Approach and Its Application to On-line Signature Verification	529
<i>X. Xiao, G. Leedham and R. Dai</i>	

On-line Handwritten Formula Recognition	539
<i>A. Kosmala and G. Rigoll</i>	
Utilizing Baum-Welch for On-line Signature Verification	549
<i>R. Martens and L. Claesen</i>	
An Efficient Function-based On-line Signature Recognition System	559
<i>K. K. Lau, P. C. Yuen and Y. Y. Tang</i>	
Signature Verification Using Distribution of Angular Direction of Pen-point Movement	569
<i>T. Matsuura and S. Yamamoto</i>	
Handwriting-based User Interfaces	
Employing On-line Handwriting Recognition	578
<i>M. Nakagawa, K. Akiyama, T. Oguni and N. Kato</i>	