DOCBIB
Document Understanding Bibliography

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Contents

1 Introduction

This document contains information about **DOCBIB**, a Document Understanding Bibliography which has been available on-line from the University of Maryland since the Fall of 1993.

The complete bibliography contains selected references from before 1980, major references for the 1980's and a more complete set of references for 1990 and beyond. References are included for topics such as preprocessing, representation, on- and off-line recognition, graphics interpretation, page analysis, and signature verification, among others.

The bibliography is not intended to be comprehensive of all document understanding literature, but rather is a resource which can be used to obtain entry points into the document literature. The current bibliography is skewed toward document image understanding, with some on-line recognition references. The bibliography is updated periodically as new sources emerge or as additional topics are added by interested parties.

This report contains only entries for the calendar year 1997; additional entries for previous years are available online. Each entry appears only once in its major category. Although a given category may be blank, there may be relevant entries listed in other categories. Users are encouraged to make use of the on-line search capabilities to obtain a more comprehensive list.

SPECIAL NOTE: In the online version of this document, many of the categories have changed and several were added for 1997. Unfortunately, they have not yet filtered back through previous years. For example, BASELINE was added for Baseline detection, but references from previous years may still fall in other categories. The category classification is not intended to be comprehensive, but rather representative. The best way to search the literature is on-line.

1.1 Sources

References have been gathered from a wide variety of sources, but are primarily from the computer vision and pattern recognition literature. The next two sections contain lists of primarily conference and journal sources, respectively.

1.1.1 Conference and Workshop Proceedings

Abbreviation	*Conference*	*Years*
CVPR	IEEE Computer Society Conference on Computer Vision and Pattern Recognition	1985-
DAS	Document Analysis Systems	
GREC	International Workshop on Graphics Recognition	
ICIP	International Conference on Image Processing	
ICPR	International Conference on Pattern Recognition	1984-
ICDAR	International Conference on Document Analysis and Recognition	1991-
IWFHR	International Workshop on Frontiers in Handwriting Recognition	1990-
SDIUT	Symposium on Document Image Understanding Technology	1995-
SPIE	SPIE - Character Recognition and Document Analysis Meetings	
SSPR	Syntactic and Structural Pattern Recognition	
VF	Visual Form	

1.1.2 Journals

Abbreviation	*Journal*	*Years*
AI	Artificial Intelligence	1987
BC	Biological Cybernetics	1990-
CGIP	Computer Graphics and Image Processing	
COMPUTER	IEEE Computer	
CVGIP	Computer Vision, Graphics and Image Processing	1984-
CVIP	Computer Vision and Image Processing	1992-
CVIU	Computer Vision and Image Understanding	
GMIP	Graphical Models and Image Processing (CVGIP)	1992-
IBMJRD	IBM Journal of Research and Development	
IBMSYS	IBM Systems Journal	
IJCV	International Journal of Computer Vision	
IJPRAI	International Journal of Pattern Recognition and Artificial Intelligence	
IPL	Information Processing Letters	
IU	Image Understanding (CVGIP)	1992-
IVC	Image and Vision Computing	
JVCIR	Journal of Visual Communication and Image Representation	
MVA	Machine Vision and Applications	
PIEEE	Proceedings of the IEEE	
PR	Pattern Recognition	1983-
PRL	Pattern Recognition Letters	1983-
SP	Signal Processing	
TCOMP	IEEE Transactions on Computers	
TIP	IEEE Transactions on Image Processing	
TPAMI	IEEE Transactions on Pattern Analysis and Machine Intelligence	
TSMC	IEEE Transactions on Systems, Man, and Cybernetics	
TSE	IEEE Transactions on Software Engineering	
VC	The Visual Computer	

1.2 Organization of Bibliography

This bibliography is stored in BibTeX format, with all of the standard fields and an additional "CATEGORY" field which contains a broad categorization of the article into the hierarchy presented below.

Not all references fit cleanly into a single category. The hardcopy version of the bibliography places each reference into the *most appropriate* primary category[1]. Secondary keywords are appended to provide a more specific categorization of the topic described or the approach taken in the work.

Please note:

- As a general rule, a topic or category area will be given its own section when it contains 10 references which do not fit cleanly into another category.
- No hyphens are used in any of the keywords.
- The category "GENERAL" is used as a way of extracting references other then the ones in the other subsections.

1.2.1 Hierarchy

			CATEGORY
I	Books	1	[BOOK,*]
II	Meetings	2	[MEETING,*]
III	Special Issues	3	[SPECIAL ISSUE,*]
IV	Pre-processing Tasks		
	Survey	4	[PREPROCESSING,SURVEY]
	Baseline Detection	5	[PREPROCESSING,BASELINE]
	Character Segmentation	6	[PREPROCESSING,CHARACTER SEGMENTATION]
	Word Segmentation	7	[PREPROCESSING,WORD SEGMENTATION]
	Feature Extraction	8	[PREPROCESSING,FEATURE EXTRACTION]
	Skew Detection	9	[PREPROCESSING,SKEW]
	Text/Graphics Discrimination	10	[PREPROCESSING,TEXT GRAPHICS]
	Thinning	11	[PREPROCESSING,THINNING]
	Thresholding	12	[PREPROCESSING,THRESHOLDING]
	Vectorization	13	[PREPROCESSING,VECTORIZATION]
	Enhancement	14	[PREPROCESSING,ENHANCEMENT]
	General References	15	[PREPROCESSING,*]
V	Models, Analysis and Representations		
	Models of Documents	16	[DOCUMENT MODELS]
	Handwriting Models	17	[HANDWRITING MODELS]
	Handwriting Analysis	18	[HANDWRITING ANALYSIS]
	Representations	19	[REPRESENTATION]
VI	Text Processing		
	On-line Recognition		
	Surveys	20	[TEXT PROCESSING,ONLINE,SURVEY]
	Foreign	21	[TEXT PROCESSING,ONLINE,FOREIGN LANGUAGE]
	Gestures and Sketches	22	[TEXT PROCESSING,ONLINE,SKETCHES]
	Script	23	[TEXT PROCESSING,ONLINE,HANDWRITTEN]
	Word Recognition	24	[TEXT PROCESSING,ONLINE,WORD]
	General References	25	[TEXT PROCESSING,ONLINE,*]
	Optical Character Recognition - Latin		
	Surveys	26	[TEXT PROCESSING,OCR,SURVEY]
	Hand-Printed	27	[TEXT PROCESSING,OCR,HAND PRINTED]
	Script	28	[TEXT PROCESSING,OCR,HANDWRITTEN]
	Machine-Printed	29	[TEXT PROCESSING,OCR,MACHINE PRINTED]
	Digit Recognition	30	[TEXT PROCESSING,OCR,DIGIT]
	Word Recognition	31	[TEXT PROCESSING,OCR,WORD]
	General References	32	[TEXT PROCESSING,OCR,*]
	Optical Character Recognition - Foreign		
	Chinese	33	[TEXT PROCESSING,OCR,FOREIGN LANGUAGE,CHINESE]

[1] On-line access to DocBib is described in Section 1.5.2

1.2.2 Primary Category Descriptors

BOOK	Book
MEETING	Meeting
SPECIAL ISSUE	Special Issue
APPLICATIONS	
BASELINE	Baseline Detection
CHARACTER SEGMENTATION	
CHARACTER SET RECOGNITION	Alphabet Identification
CHECKS	Check Processing
COMPRESSION	
CONTEXT	Use of Context or Priors
DATABASES	for Training, Testing or Storage
DIGITAL LIBRARIES	
DOCUMENT MODELS	Page Level Modeling
DOCUMENT PROCESSING	
ENGINEERING DRAWING	Engineering Drawing Interpreation
ENHANCEMENT	
EVALUATION	Error Analysis and Evaluation
FAX	Fax Processing
FEATURE EXTRACTION	Feature Extraction
FOREIGN LANGUAGE	Foreign Language Processing
FORMS	Forms Processing
FORMULAS	Mathematics and Scientific Notation
GENERAL	General References of a Category
GRAPHICS	Graphics Understanding
HAND PRINTED	Hand-Produced Documents
HANDWRITING ANALYSIS	Handwriting Analysis
HANDWRITING MODELS	
HANDWRITTEN	Handwritten (Script) Recognition
HUMAN INTERACTION	
INFORMATION RETRIEVAL	
LANGUAGE RECOGNITION	
LINE DRAWING	
LOGICAL ANALYSIS	Logical Layout Analysis
LOGO	Logo and Seal Processing
MACHINE PRINTED	Machine-produced Documents
MACHINE TRANSLATION	
MAPS	Map Understanding
MUSIC	Music Processing
NATURE	Documents in 3D Scenes
NATURE LANGUAGE	Documents in 3D Scenes
OCR	Optical Character Recognition
ONLINE	On-line Recognition
PAGE CLASSIFICATION	
PAGE SEGMENTATION	
POSTAL	Mail-piece Processing
POSTPROCESSING	
PREPROCESSING	
RETRIEVAL	Retrieval of Document Images
REPRESENTATION	

SHORTHAND	Shorthand Processing
SIGNATURE	Signature Verification
SKETCHES	Hand-produced Graphics
SKEW	Skew Detection and Correction
SPECIAL APPLICATIONS	
SURVEY	Survey Papers
SYNTHETIC	
TABLES	Table Processing, Flowcharts
TEXT PROCESSING	
TEXT GRAPHICS	Text/Graphics Discrimination
THINNING	Thinning Algorithms
THRESHOLDING	Thresholding Algorithms
WORD	Whole Word Recognition
WORD SEGMENTATION	
WRITER IDENTIFICATION	
ZONE CLASSIFICATION	

1.2.3 Additional Category Descriptors

General Descriptors

ADDRESS	Address Block Location
COLOR	Processing of Color in Documents
COMPRESSION	Compression and Vectorization
DIGIT	Numeric Digits
FONT	Font Processing
GRAYSCALE	
HARDWARE	Hardware
HOUGH	Hough Transform
MARKOV	Markov Models
MORPHOLOGY	
NGRAM	N-Gram Probabilities
OFFLINE	
PARALLEL	Parallel Algorithms
SYSTEM	Systems
VECTORIZATION	
ZIP CODE	Zip Code Processing

Classifier/Pattern Recognition Descriptors

CLASSIFIER	Classification
CLUSTERING	Clustering Approach
FUZZY LOGIC	
KNOWLEDGE BASED	Expert Systems
LEARNING	Learning-based Approaches
NEURAL NET	Neural Nets
RELAXATION	Relaxation
STATISTICAL	Statistical PR Approaches
STRUCTURAL	Structural Approaches
SYNTACTIC	Syntactic PR Approaches
TEMPLATE MATCHING	

Language Descriptors

ARABIC	
CHINESE	
CHITRA	
CYRILLIC	
DEVANAGARI	
FARSI	
GREEK	
HANGUL	
HEBREW	
ITALIAN	
JAPANESE	KANJI
JAPANESE	HIRAGANA
JAPANESE	KATAKANA
KOREAN	
MANDARIN	
PINYIN	
TAMIL	
TELUGU	

1.3 BibTeX Conventions

- The bibtex-key is constructed by using the author's last name and the last two digits of the year. For multiple references by the same author or authors with the same first three letters of the last name, the letters 'a', 'b', ... are appended.

```
@inproceedings{kasturi88,
    AUTHOR = {R. Kasturi},
    BOOKTITLE =  ICPR,
    PAGES = {255-259 },
    TITLE = {A System for Recognition and Description of Graphics },
    YEAR =  1988,
    CATEGORY =  {DOC, TEXTGRAPH}
}

@article{kasturi88a,
    AUTHOR = {R. Kasturi and J. Alemany },
    JOURNAL =  TSE,
    PAGES = {671-675},
    TITLE = {Information Extraction from Images of Paper-Based Maps },
    VOLUME =  14,
    YEAR =  1988,
    CATEGORY =  {GRAPHICS, MAPS}
}
```

- All `@STRING` commands are kept in one file (DocumentStrings.bib). This file should be the first file in `bibliography` command.

1.4 Bibliography File

The bibliographies are provided in a compiled Postscript version organized by category, with contents, and an author index, and well as in a searchable database.

The 1990–present bibliographies are yearly.

A comprehensive bibliography is also available (.PS), but may differ slightly from older yearly collections because of changes in the organization.

1.5 Accessing DOCBIB

1.5.1 Off-Line

A copy of this document is available by sending a request to the Language and Media Processing Laboratory, Center for Automation Research, University of Maryland, College Park, MD 20742.

1.5.2 On-Line from the Document Information Server

A search form is available via WWW at http://documents.cfar.umd.edu/biblio

```
General Information

       General access information
       Description of DOCBIB (postscript)
       Access the Compiled hardcopy listing (postscript)
          * Pre-1995 Bibliography
          * 1995 Bibliography
          * 1996 Bibliography
          * 1997 Bibliography

Searching DOCBIB
```

Several online search methods are available

* Quick unfielded search fast and simple
* Form-based simple queries allows more complex conjunctive queries
* Custom search most powerful, but uses a complex query language

2 Books

[1] J.J. Hull and S.L. Taylor. *Document Analysis Systems II.* World Scientific, 1997.
KEY: DAS97
CATEGORIES: BOOK

[2] L. OGorman and R. Kasturi. *Document Image Analysis—An Executive Briefing.* IEEE-CS Press, 1997.
KEY: DIA97
CATEGORIES: BOOK

[3] J. Laing and D. Wire. *The Encyclopedia of Signs and Symbols.* Crescent, 1997.
KEY: ESS97
CATEGORIES: BOOK

[4] H. Bunke and P.S.P. Wang. *Handbook of Character Recognition and Document Image Analysis.* World Scientific, 1997.
KEY: OCRHandbook97
CATEGORIES: BOOK

[5] A.C. Downton and S. Impedovo. *Progress in Handwriting Recognition.* World Scientific, 1997.
KEY: PHR97
CATEGORIES: BOOK

[6] H. Dreyfuss. *Symbol Sourcebook.* McGraw Hill, 1997.
KEY: SS97
CATEGORIES: BOOK

3 Meetings

[7] *First Brazilian Symposium on Document Image Analysis*, Curitiba, Brazil, November 3–5 1997.
KEY: BSDAIR97
CATEGORIES: MEETING

[8] *IEEE Computer Society Document Image Analysis Workshop*, San Juan, PR, June 20 1997.
KEY: CVPR-DIA97
CATEGORIES: MEETING

[9] *Second IAPR Workshop on Graphics Recognition*, Nancy, France, August 22–23 1997.
KEY: GREC97
CATEGORIES: MEETING

[10] *International Conference on Computer Processing of Oriental Languages*, Hong Kong, April 2–4 1997.
KEY: ICCPOL97
CATEGORIES: MEETING

[11] *Fourth International Conference on Document Analysis and Recognition*, Ulm, Germany, August 18–20 1997.
KEY: ICDAR97
CATEGORIES: MEETING

[12] *Proceedings, Symposium on Document Image Understanding Technology*, Annapolis, MD, April 30–May 1 1997.
KEY: SDIUT97
CATEGORIES: MEETING

[13] *Document Recognition IV (3027)*, San Jose, CA, February 12–13 1997.
KEY: SPIE97
CATEGORIES: MEETING

4 Special Issues

[14] S. Impedovo, P.S.P. Wang, and H. Bunke. Special issue: Automatic bankcheck processing (part i). *IJPRAI*, 11(4):463–697, 6 1997.
KEY: SIBank97a
CATEGORIES: SPECIAL ISSUE

[15] S. Impedovo, P.S.P. Wang, and H. Bunke. Special issue—Automatic bankcheck processing part ii. *IJPRAI*, 11(5):699–844, 8 1997.
KEY: SIBank97b
CATEGORIES: SPECIAL ISSUE

[16] S.W. Lee. Special issue: Oriental character recognition. *PR*, 30(8):1253–1371, 8 1997.
KEY: SIOCR97
CATEGORIES: SPECIAL ISSUE

5 Pre-processing Tasks

5.1 Survey

5.2 Baseline Detection

[17] B. Gatos, N. Papamarkos, and C. Chamzas. Skew detection and text line position determination in digitized documents. *Pattern Recognition*, pages 1505–1520, 1997.
KEY: gatos97
CATEGORIES: PREPROCESSING, BASELINE, PREPROCESSING, SKEW, PREPROCESSING, CHARACTER SEGMENTATION

[18] Y. Tang, L. Yang, and J. Liu. Quadratic spline wavelet approach to automatic extraction of baselines from document images. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 693–696, 1997.
KEY: tang97c
CATEGORIES: PREPROCESSING, BASELINE, GENERAL, DOCUMENT PROCESSING, PAGE SEGMENTATION, WAVELET

5.3 Character Segmentation

[19] S. Naoi and M. Yabuki. Global interpolation method II for handwritten numbers overlapping a border by automatic knowledge acquisition of overlapped condition. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 540–543, 1997.
KEY: naoi97
CATEGORIES: PREPROCESSING, CHARACTER SEGMENTATION, DIGIT, HANDWRITTEN

[20] Z. Shi and V. Govindaraju. Segmentation and recognition of connected handwritten numeral strings. *Pattern Recognition*, pages 1501–1504, 1997.
KEY: shi97
CATEGORIES: PREPROCESSING, CHARACTER SEGMENTATION, TEXT PROCESSING, OCR, DIGIT, TEXT PROCESSING, ONLINE, HANDWRITTEN

[21] L. Tseng and R.C. Chen. A new method for segmenting handwritten Chinese characters. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 568–571, 1997.
KEY: tseng97a
CATEGORIES: PREPROCESSING, CHARACTER SEGMENTATION, CHINESE, HANDWRITTEN

[22] B. Zhao, H. Su, and S. Xia. A new method for segmenting unconstrained handwritten numeral string. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 524–527, 1997.

KEY: zhao97
CATEGORIES: PREPROCESSING, CHARACTER SEGMENTATION, DIGIT, HANDWRITTEN

5.4 Word Segmentation

[23] M.D. Garris. Component-based handprint segmentation using adaptive writing style model. In *Proceedings of the SPIE - Document Recognition IV*, pages 19–30, 1997.
KEY: garris97a
CATEGORIES: PREPROCESSING, WORD SEGMENTATION, HANDWRITING MODELS

5.5 Feature Extraction

[24] S.Y. Kim and S.W. Lee. Gray-scale nonlinear shape normalization algorithm for handwritten oriental character recognition. In *International Conference on Computer Processing of Oriental Languages*, pages 634–639, 1997.
KEY: kim97i
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, TEXT PROCESSING, OCR, FOREIGN LANGUAGE, CHINESE, KOREAN

[25] C. Lee, B. Wu, and W.C. Huang. Integration of multiple levels of contour information for Chinese-character stroke extraction. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 584–587, 1997.
KEY: lee97f
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, TEXT PROCESSING, OCR, FOREIGN LANGUAGE, CHINESE, HANDWRITTEN

[26] S. Liao and Q. Lu. A study of moment functions and its use in Chinese character recognition. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 572–575, 1997.
KEY: liao97a
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, TEXT PROCESSING, OCR, FOREIGN LANGUAGE, POSTPROCESSING, EVALUATION, CHINESE

[27] K. Miura, R. Sato, and S. Mori. A method of extracting curvature features and its application to handwritten character recognition. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 450–454, 1997.
KEY: miura97
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, TEXT PROCESSING, OCR, HANDWRITTEN

[28] Y.Y. Tang, H. Ma, B.F. Li, J. Liu, and C.Y. Suen. Wavelet transform extracting features in Chinese character recognition. In *International Conference on Computer Processing of Oriental Languages*, pages 262–264, 1997.
KEY: tang97a
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, CHINESE

[29] Y.Y. Tang, L. Yang, and J. Liu. Wavelet-based edge detection in Chinese document. In *International Conference on Computer Processing of Oriental Languages*, pages 333–336, 1997.
KEY: tang97b
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, CHINESE

[30] T. Kadonaga and K. Abe. Comparison of methods for detecting corner points from digital curves. In *Graphics Recognition: Methods and Applications*, pages 23–34. Springer, 1996.
KEY: kadonaga96
CATEGORIES: PREPROCESSING, FEATURE EXTRACTION, DIGIT

5.6 Skew Detection

[31] M. Ali. An object/segment oriented skew-correction technique for document images. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 671–674, 1997.

KEY: ali97
CATEGORIES: PREPROCESSING, SKEW

[32] A. Antonacopoulos. Local skew angle estimation from background space in text regions. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 684–688, 1997.
KEY: antonacopoulos97
CATEGORIES: PREPROCESSING, SKEW

[33] A. Avanindra and S. Chaudhuri. Robust detection of skew in document images. *IEEE Transactions on Image Processing*, pages 344–348, 1997.
KEY: avanindra97
CATEGORIES: PREPROCESSING, SKEW

[34] B.B. Chaudhuri and U. Pal. Skew angle detection of digitized Indian script documents. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pages 182–186, 1997.
KEY: chaudhuri97
CATEGORIES: PREPROCESSING, SKEW, FOREIGN LANGUAGE

[35] S. Han, M. Lee, and G. Medioni. Non-uniform skew estimation by tensor voting. In *CVPR Workshop on Document Image Analysis*, pages 1–4, 1997.
KEY: han97
CATEGORIES: PREPROCESSING, SKEW

[36] H.F. Jiang, C.C. Han, and K.C. Fan. A fast approach to the detection and correction of skew documents. *Pattern Recognition Letters*, page 675, 1997.
KEY: jiang97
CATEGORIES: PREPROCESSING, SKEW

[37] J. Sauvola, D.S. Doermann, and M. Pietikainen. Locally adaptive document skew detection. In *Proceedings of the SPIE - Document Recognition IV*, pages 96–108, 1997.
KEY: sauvola97e
CATEGORIES: PREPROCESSING, SKEW

[38] K. Sugawara. Weighted Hough transform on a gridded image plane. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 701–704, 1997.
KEY: sugawara97
CATEGORIES: PREPROCESSING, SKEW, HOUGH

5.7 Text/Graphics Discrimination

[39] D. Nishiwaki, M. Kamitani, N. Tanaka, S. Okarazaki, and K.Yamada. A new recognition method of black ruled line form including connected handwritten numerals. In *International Workshop on Graphics Recognition*, pages 152–159, 1997.
KEY: nishiwaki97
CATEGORIES: PREPROCESSING, TEXT GRAPHICS, CHARACTER SEGMENTATION, DIGIT

[40] H. Yuen and L. Hanzo. Block-run run-length coding of handwriting and bilevel graphics based on quadtree segmentation. *Pattern Recognition Letters*, pages 187–192, 1997.
KEY: yuen97
CATEGORIES: PREPROCESSING, TEXT GRAPHICS, REPRESENTATION

5.8 Thinning

[41] M. Frucci and A. Marcelli. Contour pixel classification for character skeletonization. In *First Brazilian Symposium on Document Image Analysis*, pages 141–152, 1997.
KEY: frucci97
CATEGORIES: PREPROCESSING, THINNING

[42] A. Vossepoel, K. Schutte, and C. Delanghe. Memory efficient skeletonization of utility maps. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 797–800,

1997.
KEY: vossepoel97
CATEGORIES: PREPROCESSING, THINNING, GRAPHICS, MAPS, PREPROCESSING, VECTORIZATION

5.9 Thresholding

[43] Y. Liu and S.N. Srihari. Document image binarization based on texture features. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, page 540, 1997.
KEY: liu97
CATEGORIES: PREPROCESSING, THRESHOLDING

[44] Q. Liu. A text-oriented binarization method based on local connectivity. In *International Conference on Computer Processing of Oriental Languages*, pages 25–28, 1997.
KEY: liu97b
CATEGORIES: PREPROCESSING, THRESHOLDING, CHINESE

5.10 Vectorization

[45] D.S. Doermann. An introduction to vectorization and segmentation. In *International Workshop on Graphics Recognition*, pages 1–7, 1997.
KEY: doermann97
CATEGORIES: PREPROCESSING, VECTORIZATION, GRAPHICS, SURVEY, DOCUMENT PROCESSING, CLASSIFICATION, PAGE

[46] A. Jonk, R. van den Boomgard, and A. Smeulders. A line-tracker. In *International Workshop on Graphics Recognition*, pages 38–45, 1997.
KEY: jonk97
CATEGORIES: PREPROCESSING, VECTORIZATION, GRAPHICS

[47] P. Mercy and B. Taconet. A vectorization method for technical drawings adapted to mechanical drawings. In *International Workshop on Graphics Recognition*, pages 23–29, 1997.
KEY: mercy97
CATEGORIES: PREPROCESSING, VECTORIZATION, DRAWING

[48] J.Y. Ramel, N. Vincent, and H. Emptoz. A coarse vectorization as an initial representation for the understanding of line drawing images. In *International Workshop on Graphics Recognition*, pages 30–37, 1997.
KEY: ramel97
CATEGORIES: PREPROCESSING, VECTORIZATION, GRAPHICS, GENERAL, LINE DRAWING

[49] M. Roeoesli and G. Monagan. Adding geometric constraints to the vectorization of line drawings. In *Graphics Recognition: Methods and Applications*, pages 49–56. Springer, 1996.
KEY: roeoesli96
CATEGORIES: PREPROCESSING, VECTORIZATION, GRAPHICS, LINE DRAWING

5.11 Enhancement

[50] T.M. Cannon, P.M. Kelly, S.S. Iyengar, and N. Brener. Automated system for numerically rating document image quality. In *Proceedings of the SPIE - Document Recognition IV*, pages 161–167, 1997.
KEY: cannon97a
CATEGORIES: PREPROCESSING, ENHANCEMENT

[51] A. Doncescu, A. Bouju, and V. Quillet. Former books digital processing: Image warping. In *CVPR Workshop on Document Image Analysis*, pages 5–9, 1997.
KEY: doncescu97
CATEGORIES: PREPROCESSING, ENHANCEMENT, DIGIT

[52] M. Szmurlo. Boundary normalization for recognition of non-touching non-degraded characters. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 463–466, 1997.
KEY: szmurlo97
CATEGORIES: PREPROCESSING, ENHANCEMENT, TEXT PROCESSING, OCR, HAND PRINTED

[53] Y. Zhang, R.P. Loce, and E.R. Dougherty. Document restoration and enhancement using optimal iterative and paired morphological filters. In *Proceedings of the SPIE - Document Recognition IV*, pages 109–123, 1997.
KEY: zhang97c
CATEGORIES: PREPROCESSING, ENHANCEMENT, HANDWRITTEN

5.12 General References

[54] A. Navarro. A dynamic feature classifier based on dynamic programming and clustering. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 835–835, 1997.
KEY: navarro97
CATEGORIES: PREPROCESSING, GENERAL, CLASSIFIER

6 Models, Analysis and Representations

6.1 Models of Documents

6.2 Handwriting Models

[55] H. Nishida. Analysis and synthesis of deformed patterns based on structural models. *Computer Vision and Image Understanding*, pages 59–71, 1997.
KEY: nishida97
CATEGORIES: HANDWRITING MODELS, STRUCTURAL

6.3 Handwriting Analysis

[56] W. Guerfali and R. Plamondon. Effect of variability on letters generation with the vectorial delta-lognormal model. In *First Brazilian Symposium on Document Image Analysis*, pages 74–83, 1997.
KEY: guerfali97
CATEGORIES: HANDWRITING ANALYSIS

[57] S. Jaeger. A psychomotor method for tracking handwriting. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 528–531, 1997.
KEY: jaeger97
CATEGORIES: HANDWRITING ANALYSIS

[58] P. Lallican and C. Viard-Gaudin. A Kalman approach for stroke order recovering from off-line handwriting. In *Proceedings of the International Conference on Document Analysis and Recognition*, pages 519–522, 1997.
KEY: lallican97
CATEGORIES: HANDWRITING ANALYSIS, TEXT PROCESSING, OCR, GENERAL

[59] D.H. Lee and H.G. Cho. A synthesizing method for hand-written Korean scripts. In *International Conference on Computer Processing of Oriental Languages*, pages 180–185, 1997.
KEY: lee97c
CATEGORIES: HANDWRITING ANALYSIS, TEXT PROCESSING, ONLINE, FOREIGN LANGUAGE, CLASSIFIER

[60] A. Malaviya and L. Peters. Fuzzy feature description of handwriting patterns. *Pattern Recognition*, pages 1591–1604, 1997.

KEY: malaviya97
CATEGORIES: HANDWRITING ANALYSIS

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