

1. Record Nr.	UNINA9910792084103321
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Titolo	Multimodal Interactive handwritten text transcription [[electronic resource] /] / Veronica Romero, Alejandra Hector Toselli, Enrique Vidal
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific Pub, c2012
ISBN	1-283-59373-4 9786613906182 981-4390-34-8
Descrizione fisica	1 online resource (180 p.)
Collana	Series in machine perception and artificial intelligence ; ; v. 80
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Disciplina	006.425
Soggetti	Writing - Data processing Multimodal user interfaces (Computer systems) Human-computer interaction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical reference (p. 155-164) and index.
Nota di contenuto	Contents; Preface; 1. Preliminaries; 1.1 Introduction; 1.2 State of the Art; 1.2.1 Optical Character Recognition; 1.2.2 Handwritten Text Recognition; 1.3 Formal Background; 1.3.1 Hidden Markov Models; Continuous HMM; Basic algorithms for HMMs; The Decoding Problem and the Viterbi Algorithm; The Learning Problem and the Baum-Welch Algorithm; 1.3.2 Language models: N-grams; n-grams modelled by a stochastic finite state automaton; 1.3.3 Interactive Pattern Recognition; 1.3.4 Word-graphs; 1.4 Assessing Computer Assisted Transcription of Handwritten Text Images; 2. Corpora; 2.1 Introduction 2.2 CS2.3 ODEC; 2.4 IAMDB; 2.5 UNIPEN; 3. Handwritten Text Recognition; 3.1 Introduction; 3.2 Off-line Handwritten Text Recognition; 3.2.1 Preprocessing; 3.2.2 Feature Extraction; 3.2.3 Recognition; 3.2.4 Experimental Framework; 3.2.5 Meta-parameter Adjustment Experiments; 3.2.6 Discussion of Results; 3.3 On-line Handwritten Text Recognition; 3.3.1 Preprocessing; 3.3.2 Feature Extraction; 3.3.3 Recognition; 3.3.4 Experimental Framework; 3.3.5 Results; 3.4 Summary and Conclusions; 4. Computer Assisted Transcription of Handwritten Text Images; 4.1 Introduction; 4.2 Formal

Framework

4.3 Adapting the Language Model; 4.4 Searching; 4.4.1 Direct Viterbi-based Approach; 4.4.2 Word-graph based Approach; 4.4.2.1 Error-correction parsing; 4.5 Increasing Interaction Ergonomy; 4.5.1 Language Modelling and Search; 4.6 Interacting at the Character Level; 4.6.1 Language Modelling and Search; 4.7 Experimental Framework; 4.7.1 Assessment Measures; 4.7.2 Parameters and Meta-Parameters; 4.8 Results; Direct Viterbi-based approach; Word-graph based approach; Using Pointer Actions in the CATTI interaction process (PA-CATTI); CATTI at the character level; 4.9 Conclusions and Future Work

5. Multimodal Computer Assisted Transcription of Handwritten Text Images; 5.1 Introduction; 5.2 Formal Framework; 5.3 Adapting the Language Model; 5.4 Searching; 5.5 Experimental Framework; 5.5.1 Corpora; 5.5.2 Assessment Measures; 5.6 Results; 5.7 Conclusions; 6. A Web-based Demonstrator of Interactive Multimodal Transcription; 6.1 Introduction; 6.2 User Interaction Protocol; 6.3 System Description; 6.3.1 Application Programming Interface; 6.3.2 MM-CATTI Server; 6.3.3 Web Interface; 6.3.4 Electronic Pen or Touchscreen Interaction; 6.3.5 Keyboard and Mouse Interaction; 6.4 Evaluation; 6.4.1 Assessment Measures; 6.4.2 Corpus; 6.4.3 Participants; 6.4.4 Apparatus; 6.4.5 Procedure; 6.4.6 Design; 6.5 Results and Discussion; 6.5.1 Quantitative Analysis; 6.5.1.1 Analysis of Time; 6.5.1.2 Analysis of rWER; 6.5.1.3 Analysis of WSR; 6.5.2 Qualitative Analysis; 6.5.3 Correlation Analysis; 6.5.3.1 Correlation between trials; 6.5.3.2 Correlation between metrics; 6.5.4 Limitations of the Study; 6.6 Conclusions; 7. Conclusions and Outlook; 7.1 Conclusions; 7.2 Outlook; Acknowledgements; Appendix A Symbols and Acronyms; A.1 Symbols; A.2 Acronyms; Bibliography; Index

Sommario/riassunto

This book presents an interactive multimodal approach for efficient transcription of handwritten text images. This approach, rather than full automation, assists the expert in the recognition and transcription process. Until now, handwritten text recognition (HTR) systems are far from being perfect and heavy human intervention is often required to check and correct the results of such systems. The interactive scenario studied in this book combines the efficiency of automatic handwriting recognition systems with the accuracy of the experts, leading to a cost-effective perfect transcription of th
