

Handwritten Text / Word Recognition Systems – Conception, Approaches and Evaluation (Duration: 3 Hrs.)

Speakers

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Volker Märgner received his diploma (Dipl.-Ing.) and doctorate (Dr.-Ing.) degrees in electrical engineering from the Technische Universität Carolo Wilhelmina zu Braunschweig (TUBS), Germany, in 1974 and 1983 respectively. Since 1983, he has been working at the TUBS. Currently he is a member of the research and teaching staff at the Institute for Communications Technology, in the position of an academic director. He lectures in image processing and pattern recognition. His main areas of research are image processing and pattern recognition. Currently, he is working on image pre-processing and pattern recognition methods and their application to industrial quality control as well as to the recognition of cursive handwriting on documents. He developed recognizer for printed German text and for German handwritten words. Robust pre-processing and feature extraction with an HMM based recognizer are the key features of this solution. Since 1991 he is also working on Arabic text recognition, at the beginning on printed text recognition thereafter on handwritten Arabic word recognition. This work is done in close cooperation with Tunisian universities. He developed the IFN/ENIT-database of handwritten words in 2002 and organizes the biennial competition on Arabic handwriting recognition within the ICDAR conference since 2005. He worked on the important task of system evaluation, in particular on the evaluation of document segmentation results. He published more than 60 papers including journal papers and book chapters. He is a member of program committees of conferences and workshops. He is a reviewer for international journals, including IEEE-PAMI, IJDAR, and PR and he is a member of VDE/VDI, DAGM, IAPR (TC10, TC11), and IEEE.

Haikal El Abed is a Senior Research Engineer at the Braunschweig Technical University, Germany. Since 2001, he has been working at the Institute for Communications Technology (IfN), Department of Signal Processing for Mobile Information Systems. He has specialized in image and signal processing, document analysis systems design and configuration, and Arabic/Latin manuscripts recognition. He coordinated different national and international research projects and is one of the developers of the IfN/ENIT-Database (used by more than 100 research groups from more than 30 countries). He organized the Arabic Handwriting Recognition Competition at the ICDAR 2005, 2007 and 2009, and the Handwriting Competition and the Online Arabic Handwriting Competition at ICDAR 2009. He is competition chair at the ICFHR 2010 in India and ICFHR 2012 in Italia. He has organized different special sessions with the topics Arabic\Latin handwriting\printed recognition technologies on international conferences and was invited for different talks. He has more than 40 papers, including journal papers and book chapters. He is a member of IEEE, DAGM, IAPR (TC-10 and TC-11), and VDE/VDI and a frequent reviewer for international journals, including the IEEE Transactions on Pattern Analysis and Machine Intelligence and Pattern Recognition Letters. He is a member of the program committee of different international conferences and workshops.

Abstract

The aim of the tutorial “Handwritten Text/Word Recognition Systems – Conception, Approaches and Evaluation” is to lay the foundations and to encourage further discussions on the development of pattern recognition systems, especially for the recognition of handwritten text. Researchers and practitioners working in the field of pattern recognition will be introduced to handwritten text recognition systems in general, different state-of-the-art approaches, steps of a system evaluation process and techniques to improve recognition quality. The objective of this tutorial is to provide a basis for researchers to improve the quality and performance of a recognition system. The presented methods include detailed analysis of a recognition system, relation between structured data and performance of systems, reject/combination strategies, and post-processing approaches. After this tutorial participants should be able to design their own recognition system or improve an existing one.

Topics to be Covered

Part I: Conception of Pattern Recognition Systems

Part II: State-of-the-Art Recognition Approaches

Part III: Evaluation of Recognition Systems

Data

Competitions

Part IV: Improvement Strategies

Reject

Combination

Post-processing