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Markov Models for Handwriting Recognition

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Preface

The history of the development of Markov model-based pattern recognition methods is closely related to the field of automatic speech recognition. There, hidden Markov models and related techniques were developed from their infancy into a mature framework for the analysis of sequential data. Not before the 1990s researchers who were working on speech recognition before transferred the technology to the field of optical character recognition with a special focus on handwritten script.

In much the same way the authors of this book made their way from spoken language technology to handwriting recognition research. It started with a project lead by Gernot A. Fink and Gerhard Sagerer at Bielefeld University, Germany, which focussed on camera-based handwriting recognition and first addressed the task of reading handwritten notes on a whiteboard. This research initiative resulted in a successor project lead by the authors at TU Dortmund, Germany, which aimed at a more thorough investigation of the problem of camera-based whiteboard reading.

In the context of these research projects the authors' expertise in the field developed, leading to a first successful tutorial on "Markov Models for Handwriting Recognition" presented at the International Conference on Document Analysis and Recognition (ICDAR) in 2007 [1]. Based on this tutorial, a survey article on the use of Markov models of offline handwriting recognition followed that appeared in the International Journal on Document Analysis and Recognition (IJDAR) in 2009 [2]. This article formed the basis of the material presented in this book. The treatment of Markov model-based techniques was thoroughly revised and extended in order to cover both online and offline recognition approaches.

Over the years the authors' research in handwriting recognition significantly benefitted from the availability of datasets collected by Horst Bunke and his group at University of Bern, Switzerland. Therefore, we would like to express our sincere thanks to Horst Bunke for providing this valuable resource—including some samples used for illustrations in this book—without which our

own and many other people's research in handwriting recognition would not have been possible.

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Newcastle and Dortmund, July 2011 Thomas Plötz
Gernot A. Fink

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