AUTOMATIC GENERATION OF MORPHOLOGICAL SET RECOGNITION ALGORITHMS pdf

1: Pattern recognition - Wikipedia

Automatic programming in perception systems has generally been limited to interfaces that allow easy specification of the task using natural language. Clearly, machine learning and automatic programming can make percepÂ- tion systems powerful and easy to use.

A collection of labeled data patterns is input and statistical descriptions of the inputted labeled data patterns are then derived. The optimal classifier performance among the candidate classifier performances is then identified. The operator sequences selected can be chosen from a default set of operators, or may be a user-defined set. The operator sequences may include any morphological operators, such as, erosion, dilation, closing, opening, close-open, and open-close. Under this frameworkmachine vision problems may be solved by image transformations that employ a sequence of parameterized operators. Optimal classifier performance among the candidate classifier performances is identified. The operators may include any morphological operators, such as erosion, dilation, closing, opening, close-open, and open-close. The operators may also include operators that map an input Boolean vector to an output Boolean vector. Additionally, the operators can include an operator that is defined as successive applications of a 1D filter in two orthogonal directions. The collection of data patterns can include various patterns of interest. They can also include patterns of non-interest. The statistical descriptions of the input patterns can be derived using any suitable probability model, such as, for example, a mixture of Hidden Markov Models HMMs , a Bayesian network etc. A probability model that employs a non-parametric density representation may also be used. The criteria for determining an optimal classifier performance can be defined by a user. The criteria will preferably relate to maximizing expected classifier performance. This may involve, for example, balancing the tradeoff of false alarm errors and miss detection errors. The step of determining classifier performance may include, for each candidate operator sequence and corresponding parameter values and a description of the output statistic to the measured, and given derived statistical descriptions for the inputted data patterns, 1. Constructing an Embedded Markov Chain that uses the steps: Calculating the distribution of the output statistic using the EMC. According to another aspect of the invention, a method is provided for determining optimal classifier performance of a plurality of candidate operator sequences and corresponding parameter values. For each candidate operator sequence and corresponding parameter values, the method 1. Constructs an Embedded Markov Chain that uses the steps: Calculating the distribution of the output statistic is using the EMC. An optimal operator sequence and corresponding parameter values will be selected for output. Numerous applications of the pattern classification framework can be realized, including any pattern analysis or classification task, e. These and other aspects, features and advantages of the present invention will become apparent from the following detailed description of preferred embodiments, which is to be read in connection with the accompanying drawings. The difficulty is in defining the statistical models for the input data and the corresponding derivation of the output statistical models. In this invention, the input to the morphological algorithm is viewed as a binary random series. The output is viewed as another binary random series whose statistics e. For each particular morphological operator and its parameters, the corresponding Embeddable Markov Chain EMC model is built, and the EMC approach is applied to analyze the performance of the operator. The analyses gives insights about how one could automate the selection of a morphological operator sequence and its parameters to achieve a given error rate. License Plate detection is provided as a case study to illustrate the utility of the invention. To facilitate a clear understanding of the present invention, illustrative examples are provided herein which describe certain applications of the invention e. However, it is to be appreciated that these illustrations are not meant to limit the scope of the invention, and are provided herein to illustrate certain concepts associated with the invention. It is also to be understood that the present invention may be implemented in various forms of hardware, software, firmware, special purpose processors, or a combination thereof. Preferably, the present invention is implemented in embedded code as a program

tangibly embodied on a program storage device. In addition, various other peripheral devices may be connected to a computer platform such as an additional data storage device and a printing device, as well as various still and video imaging input devices. Let b t denote the ideal unknown function representing the mapping that assigns the true labels e. This representation is convenient in that it provides a natural way to interpret the results of morphological operations. The size distributions of shapes granulometrics have been used in the morphology literature to describe signal statistics. Most research in theory of runs has addressed this problem by using combinatorial analysis. However, the prior art assumed stationary i. Advantageously, the present invention uses a technique that embeds a discrete random variable into a finite Markov chain to numerically compute the probability mass function pmf of the discrete random variable. The main advantage of using this algorithm is that Monte-Carlo simulations are prohibitively slow when probabilities for unlikely events are being estimated. A nonnegative integer random variable Xn can be embedded into a finite Markov chain if:

2: Automatic Generation of Morphological Set Recognition Algorithms : Robert C. Vogt :

Get this from a library! Automatic Generation of Morphological Set Recognition Algorithms. [Robert C Vogt] -- The purpose of this book is to study the process of image development, to see how it may be formalized and partially or fully automated.

Nonlinear scale-space representation with morphological levelings by Fernand Meyer, Petros Maragos - J. In this paper we present a nonlinear scale-space representation based on a general class of morphological strong filters, the levelings, which include the openings and closings by reconstruction. These filters are very useful for image simplification and segmentation. From one scale to the next, det From one scale to the next, details vanish, but the contours of the remaining objects are preserved sharp and perfectly localized. Both the lattice algebraic and the scale-space properties of levelings are analyzed and illustrated. We also develop a nonlinear partial differential equation that models the generation of levelings as the limit of a controlled growth starting from an initial seed signal. Finally, we outline the use of levelings in improving the Gaussian scale-space by using the latter as an initial seed to generate multiscale levelings that have a superior preservation of image edges. Show Context Citation Context The first morphological scale-space approaches have been the granulometries associated to a continuous-scale family of openings or closings; openings operate only on the peaks and closings only on t Multiresolution Segmentation of Natural Images: In this paper, we introduce a framework that merges classical ideas borrowed from scale-space and multi-resolution segmentation with non-linear partial differential equations. A non-linear scale-space stack is constructed by means of an appropriate diffusion equation. This stack is analyzed and a This stack is analyzed and a tree of coherent segments is constructed based on relationships between different scale layers. Pruning this tree proves to be a very efficient tool for unsupervised segmentation of different classes of images e. The choice of one or other principle to obtain the derived set of images at different scales is a matter of the particular application. Morphological Elastic Graph Matching applied to frontal face authentication under well-controlled and real conditions by C. Pitas , " In this paper, morphological elastic graph matching is applied to frontal face authentication on databases ranging from small to large multimedia ones collected under either well-controlled or realworld conditions. It is shown that the morphological elastic graph matching achieves a very low equal e It is shown that the morphological elastic graph matching achieves a very low equal error rate on databases collected under well-controlled conditions. However, its performance deteriorates when it is applied to databases recorded in real-world scenarios. The compensation for variable recording conditions such as changes in illumination, scale differences and varying face position prior to the application of morphological elastic matching is proposed. Keywords Frontal face verification, morphological elastic graph matching, large databases, face normalization, receiver operating characteristics. Introduction The interest and the research activities in automatic face recognition have increased significantly over the past few years. The growth is mainly driven by applicat We present a novel representation of shape for closed planar contours explicitly designed to possess a linear structure. This greatly simplifies linear operations such as averaging, principal component analysis or differentiation in the space of shapes. The representation relies upon embedding the c The representation relies upon embedding the contour on a subset of the space of harmonic functions of which the original contour is the zero level set. Abstractâ€"In this paper, a series of advances in elastic graph matching for facial expression recognition are proposed. More specifically, a new technique for the selection of the most discrim-inant facial landmarks for every facial expression discriminant expression-specific graphs is applied. Furthermore, a novel kernel-based technique for discriminant feature extraction from graphs is presented. This feature extraction technique remedies some of the limitations of the typical kernel Fisher discriminant analysis KFDA which provides a subspace of very limited di-mensionality i. The proposed methods have been applied to the Cohnâ€"Kanade database in which very good performance has been achieved in a fully automatic manner. Both methods have been successfully used for facial image analysis

[18], [20], [21], [36]. Given an image where is the set of integers and is the set of real numbers and a structuring function , the dilation of the image by is denoted by. Its complementary operation, the erosion, is de

The actual subject is the automatic generation of image processing algorithms that recognize certain more Access critical reviews of computing literature. Become a reviewer for Computing Reviews.

X2MORF 1 is a language independent morphological component for the recognition and generation of word forms based on a lexicon of morphs. The approach is based on two-level morphology. Extensions are motivated by linguistic data which call into question an underlying assumption of standard two-level Extensions are motivated by linguistic data which call into question an underlying assumption of standard two-level morphology, namely the independence of morphophonology and morphology as exemplified by two-level rules and continuation classes. Accordingly, I propose a model which allows for interaction between these two parts. Instead of using continuation classes, word formation is described in a feature-based unification grammar. Twolevel rules are provided with a morphological context in the form of feature structures. Information contained in the lexicon and the word formation grammar guides the application of two-level rules by matching the morphological context against the morphs. I present an efficient implementation of that model where rules are compiled into automata as in the standard model and where processing of the feature-based grammar is enhanced using an automaton derived from that grammar as a filter. Document analysis is responsible for an essential progress in office automation. This paper is part of an overview about the combined research efforts in document analysis at DFKI. Common to all document analysis projects is the global goal of providing a high level electronic representation of d Common to all document analysis projects is the global goal of providing a high level electronic representation of documents in terms of iconic, structural, textual, and semantic information. Currently there are three ongoing document analysis projects at DFKI: Although the projects pursue different goals in different application domains, they all share the same problems which have to be resolved with similar techniques. For that reason the activities in these projects are bundled to avoid redundant work. At DFKI we have divided the problem of document analysis into two main tasks, text recognition and information extraction, which themselves are divided into a set of s In this paper a morphological component with a limited capability to automatically interpret and generate derived words is presented. The system combines an ex- tended two-level morphology [Trost, a; Trost, b] with a feature-based word grammar building on a hierarchical lexicon. The absence of the vowelization marks from the modern Arabic text represents a major obstacle in machine translation and other text understanding applications. In this paper we present a formulation of the problem of automatic generation of the Arabic diacritic marks from unvoweled text using a Hidd In this paper we present a formulation of the problem of automatic generation of the Arabic diacritic marks from unvoweled text using a Hidden Markov Model HMM approach. The model considers the word sequence of unvoweled Arabic text as an observation sequence, and the possible diacritized expressions of the words as hidden states. The optimal sequence of diacritized words or states is then obtained efficiently using a dynamic programming algorithm. We present the basic algorithm and its evaluation, and discuss its limitations as well as various ramifications for improving its performance. Show Context Citation Context Arabic writing system consists of 36 letter forms which represent the Arabic consonants. The morphological parsing providing the analysis of words into stems and suffixes was entirely data-driven, in that no knowledge of Ge.? In this paper we present a formulation of the problem of automatic generation of the Arabic diacritical marks from unvoweled text using a Hi In this paper we present a formulation of the problem of automatic generation of the Arabic diacritical marks from unvoweled text using a Hidden Markov Model HMM approach. Research projects conducted at the DFKI are funded by the German Ministry for Research and Technology, by the shareholder companies, or by other industrial contracts. The DFKI conducts application-oriented basic research in the field of artificial intelligence and other related subfields of computer science. The overall goal is to construct systems with technical knowledge and common sense which- by using AI methods- implement a problem solution for a

selected application area. Currently, there are the following research areas at the DFKI: For a detailed discussion see Trost b. Figure 1 gives a sketch of the overall architecture. A novel technique of adding positionwise flags to one-level finite state lexicons is presented. The proposed flags are kinds of morphophonemic markers and they con-stitute a flexible method for describing morphophonological processes with a for-malism that is tightly coupled with lexical entries and The proposed flags are kinds of morphophonemic markers and they con-stitute a flexible method for describing morphophonological processes with a for-malism that is tightly coupled with lexical entries and rule-like regular expressions. The formalism is inspired by the tech-niques used in two-level rule compilation and it practically compiles all the rules in parallel, but in an efficient way. The tech-nique handles morphophonological pro-cesses without a separate morphophone-mic representation. The occurrences of the allomorphophonemes in latent phonologi-cal strings are tracked through a dynamic data structure into which the most promi-nent i. The application of the technique is suspected to give advantages when de-scribing the morphology of Bantu lan-guages and dialects. Adding arbitrarily chosen lexical features Koskenniemi, , p.

Advancing the race: African American education and social progress Crucial problems in Christian perspective Art and its significance American Foreign Policy Since the Vietnam War Olive Shoots Around Your Table Charleston in bloom Wing chun kung fu manual School management system in urdu The Autobiography of a Jukebox (Carnegie Mellon Poetry) Sleep Soundly (Soundwave 2000/Audio Cassette) Horizontal directional drilling good practices guidelines Hans-Ulrich Obrist M/M (Paris) Treasures of Ireland Medical Malpractice Pharmacy Law (Medical Malpractice Series) The Jesse Window, Dorchester Abbey, Oxon 25 Now That Youre Here Birds, great, and small Lets Talk About Living With a Parent With Multiple Sclerosis (Lets Talk About) Algarrobos quartet This Blessed Mess Postcards of Hitlers Germany Evs book for engineering Strains and sprains J. K. Lassers How You Can Profit from the New Tax Laws Fox In The Night (Wwl Mystery , No 280) The birth of inspiration : the end of me Venice and the Venice area Minutes of evidence, Thursday, 17th May, 1973 The American Evangelists, Dwight L. Moody And Ira D. Sankey Maori women in the economy Premarital cohabitation : cautions and concerns The coming of wisdom. German foreign policy, 1871-1914 Compassionate love in an intercultural context. Konica minolta bizhub 350 manual espaÃ±ol Juno and the paycock, by S. OCasey. Microeconomics colander 10th edition 200 and more nmr experiments a practical course Appendix 2. : An abstract of the civil law and statute law now in force in relation to piracy, 1724. Eliot the social function of poetry