Matlab Code For Image Classification Using Svm | 4d8091a344ecf88cd62cd7f2b6b335f6

Archives of Pathology & Laboratory Medicine

Image and Signal Processing for Remote Sensing

This book describes the principles of image and video compression techniques and introduces current and popular compression standards, such as the MPEG series. Derivations of relevant compression algorithms are developed in an easy-to-follow fashion. Numerous examples are provided in each chapter to illustrate the concepts.

Introduction to Statistical Machine Learning

Emerging Trends in Image Processing, Computer Vision, and Pattern Recognition discusses the latest in trends in imaging science which at its core consists of three intertwined computer science fields, namely: Image Processing, Computer Vision, and Pattern Recognition. There is significant renewed interest in each of these three fields
Where To Download Matlab Code For Image Classification Using Svm

fueled by Big Data and Data Analytic initiatives including but not limited to; applications as diverse as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering. These three core topics discussed here provide a solid introduction to image processing along with low-level processing techniques, computer vision fundamentals along with examples of applied applications and pattern recognition algorithms and methodologies that will be of value to the image processing and computer vision research communities. Drawing upon the knowledge of recognized experts with years of practical experience and discussing new and novel applications Editors’ Leonidas Deligiannidis and Hamid Arabnia cover; Many perspectives of image processing spanning from fundamental mathematical theory and sampling, to image representation and reconstruction, filtering in spatial and frequency domain, geometrical transformations, and image restoration and segmentation Key application techniques in computer vision some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication Pattern recognition algorithms including but not limited to; Supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms. How to use image processing and visualization to analyze big data. Discusses novel applications that can benefit from image processing, computer vision and pattern recognition such as computational biology, biometrics, biomedical imaging, robotics, security, and knowledge engineering. Covers key application techniques in computer vision from fundamentals to mid to high level processing some of which are camera networks and vision, image feature extraction, face and gesture recognition and biometric authentication. Presents a number of pattern recognition algorithms and methodologies including but not limited to: supervised and unsupervised classification algorithms, Ensemble learning algorithms, and parsing algorithms. Explains how to use image processing and visualization to analyze big data.

Still Image and Video Compression with MATLAB

Introduction to Pattern Recognition

Thanks to recent advances in sensors, communication and satellite technology, data storage, processing and networking capabilities, satellite image acquisition and mining are now on the rise. In turn, satellite images play a vital role in providing essential geographical information. Highly accurate automatic classification and decision support systems can facilitate the efforts of data analysts, reduce human error, and allow the rapid and rigorous analysis of land use and land cover information. Integrating Machine Learning (ML) technology with the human visual psychometric can help meet geologists’ demands for more efficient and higher-quality classification in real time. This book introduces readers to key concepts, methods and models for satellite image analysis; highlights state-of-the-art classification and clustering techniques; discusses recent developments and remaining challenges; and addresses various applications, making it a valuable asset for engineers, data analysts and researchers in the fields of geographic information systems and remote sensing engineering.

Practical Image and Video Processing Using MATLAB

The organization of the ICIAP 2003 proceedings reflects the main topics of the Conference: shape analysis and reconstruction, 3D models, early vision and image analysis, pattern recognition and image inference, visual processing for communication and various application domains. The major topics discussed in the text are on use of image analysis and processing techniques and tools both in standard application environments and in the new scenario of internet based delivery of information.

Satellite Image Analysis: Clustering and Classification

Introduction to Pattern Recognition: A Matlab Approach is an accompanying manual to Theodoridis/Koutroumbas’ Pattern Recognition. It includes Matlab code of the most common methods and algorithms in the book, together with a descriptive summary and solved examples, and including real-life data sets in imaging and audio recognition. This text is designed for electronic engineering, computer science, computer engineering, biomedical engineering and applied mathematics students taking graduate courses on pattern recognition and machine learning as well as R&D engineers and university researchers in image and signal processing/analysis, and computer vision. Matlab code and descriptive summary of the most common methods and algorithms in Theodoridis/Koutroumbas, Pattern Recognition, Fourth Edition Solved examples in Matlab, including real-life data sets in imaging and audio recognition Available separately or at a special package price with the main text (ISBN for package: 978-0-12-374491-3)
Textile Asia

This is an introductory to intermediate level text on the science of image processing, which employs the Matlab programming language to illustrate some of the elementary, key concepts in modern image processing and pattern recognition. The approach taken is essentially practical and the book offers a framework within which the concepts can be understood by a series of well chosen examples, exercises and computer experiments, drawing on specific examples from within science, medicine and engineering. Clearly divided into eleven distinct chapters, the book begins with a fast-start introduction to image processing to enhance the accessibility of later topics. Subsequent chapters offer increasingly advanced discussion of topics involving more challenging concepts, with the final chapter looking at the application of automated image classification (with Matlab examples). Matlab is frequently used in the book as a tool for demonstrations, conducting experiments and for solving problems, as it is both ideally suited to this role and is widely available. Prior experience of Matlab is not required and those without access to Matlab can still benefit from the independent presentation of topics and numerous examples. Features a companion website www.wiley.com/go/solomon/fundamentals containing a Matlab fast-start primer, further exercises, examples, instructor resources and accessibility to all files corresponding to the examples and exercises within the book itself. Includes numerous examples, graded exercises and computer experiments to support both students and instructors alike.

Still Image and Video Compression with MATLAB

A Practical Approach for Machine Learning and Deep Learning Algorithms

This reader-friendly textbook presents a comprehensive review of the essentials of image data mining, and the latest cutting-edge techniques used in the field. The coverage spans all aspects of image analysis and understanding, offering deep insights into areas of feature extraction, machine learning, and image retrieval. The theoretical coverage is supported by practical mathematical models and algorithms, utilizing data from real-world examples and experiments. Topics and features: describes the essential tools for image mining, covering Fourier transforms, Gabor filters, and contemporary wavelet transforms; reviews a varied range of state-of-the-art models, algorithms, and procedures for image mining; emphasizes how to deal with real image data for practical image mining; highlights how such features as color, texture, and shape can be mined or extracted from images for image representation; presents four powerful approaches for classifying image data, namely, Bayesian classification, Support Vector Machines, Neural Networks, and Decision Trees; discusses techniques for indexing, image ranking, and image presentation, along with image database visualization methods; provides self-test exercises with instructions or Matlab code, as well as review summaries at the end of each chapter. This easy-to-follow work illuminates how concepts from fundamental and advanced mathematics can be applied to solve a broad range of image data mining problems encountered by students and researchers of computer science. Students of mathematics and other scientific disciplines will also benefit from the applications and solutions described in the text, together with the hands-on exercises that enable the reader to gain first-hand experience of computing.

Development of a Mammographic Image Processing Environment Using MATLAB.

Breast cancer is a disease that accounts for a disturbingly large number of deaths in females each year. Its prevalence is a topic of concern to all of us since it can affect our families, friends, and coworkers. Although mammographic screening is the most effective method currently available for the early detection of breast cancer, it is far from being an infallible procedure. Mammographic reading is error prone, partly because of the complexity of the task and partly because of the variability in human performance. Computers offer high reproducibility, and when used as an adjunct by the radiologist, may improve diagnostic accuracy and thus the mammographic screening process. The goal of this research was to create using MATLAB version 4.2 (UNIX) and the MATLAB Image Processing Toolbox a menu-based, mouse-driven, and keyboard interactive Mammography Image Processing Program that would support the future research and development of complex segmentation, feature extraction, and classification algorithms. McCall’s software quality factors are used on a general level to assess the program’s operational characteristics, ability to undergo change, and adaptability to new environments. An important criteria driving this research was to build a platform that would provide full source code accountability so that errors in earlier image processing stages could be fixed and not allowed to propagate through to later stages.
Digital Image Processing and Analysis

Digital Image Processing

MATLAB has the tool Neural Network Toolbox that provides algorithms, functions, and apps to create, train, visualize, and simulate neural networks. You can perform classification, regression, clustering, dimensionality reduction, time-series forecasting, and dynamic system modeling and control. The toolbox includes convolutional neural network and autoencoder deep learning algorithms for image classification and feature learning tasks. To speed up training of large data sets, you can distribute computations and data across multicore processors, GPUs, and computer clusters using Parallel Computing Toolbox. The more important features are the following: *Deep learning, including convolutional neural networks and autoencoders *Parallel computing and GPU support for accelerating training (with Parallel Computing Toolbox) *Supervised learning algorithms, including multilayer, radial basis, learning vector quantization (LVQ), time-delay, nonlinear autoregressive (NARX), and recurrent neural network (RNN) *Unsupervised learning algorithms, including self-organizing maps and competitive layers “Apps for data-fitting, pattern recognition, and clustering *Preprocessing, postprocessing, and network visualization for improving training efficiency and assessing network performance “Simulink(r) blocks for building and evaluating neural networks and for control systems applications

Handbuch der Operatoren für die Bildbearbeitung

This introduction to the fundamental concepts and methodologies of image processing is suitable for first-year postgraduate and senior undergraduate students in almost every engineering discipline, and in particular meets the requirement of the prescribed courses in the streams: Electronics and Communication, Computer Science and Engineering, Information Technology, and Computer Applications. The book, now in its second edition, continues to offer a balanced exposition of the basic principles and applications of image processing. It lays considerable emphasis on the algorithmic approach in order to teach students how to write good practical programs for problem solving. Major topics covered in the book include Image fundamentals, Different image transforms, Image enhancement in the spatial and frequency domains, Restoration, Image analysis, Image description, Image compression, Image reconstruction from projections, and Applications of image processing in the areas of biometrics, speaker recognition, satellite imaging, medical imaging, and many more. The style of presentation is comprehensive and application oriented, comprising examples, diagrams, image results, case studies of applications, and review questions—making it easy for students to understand key ideas, their practical relevance and applications. NEW TO THIS EDITION • Object representation, recognition and classification • MATLAB programs for image processing • OpenCV programs for image processing

DIGITAL IMAGE PROCESSING

Written specifically for biomedical engineers, Biosignal and Medical Image Processing, Third Edition provides a complete set of signal and image processing tools, including diagnostic decision-making tools, and classification methods. Thoroughly revised and updated, it supplies important new material on nonlinear methods for describing and classifying signals, including entropy-based methods and scaling methods. A full set of PowerPoint slides covering the material in each chapter and problem solutions is available to instructors for download. See What's New in the Third Edition: Two new chapters on nonlinear methods for describing and classifying signals. Additional examples with biological data such as EEG, ECG, respiration and heart rate variability Nearly double the number of end-of-chapter problems MATLAB® incorporated throughout the text Data “cleaning” methods commonly used in such areas as heart rate variability studies The text provides a general understanding of image processing sufficient to allow intelligent application of the concepts, including a description of the underlying mathematical principles when needed. Throughout this textbook, signal and image processing concepts are implemented using the MATLAB® software package and several of its toolboxes. The challenge of covering a broad range of topics at a useful, working depth is motivated by current trends in biomedical engineering education, particularly at the graduate level where a comprehensive education must be attained with a minimum number of courses. This has led to the development of “core” courses to be taken by all students. This text was written for just such a core course. It is also suitable for an upper-level undergraduate course and would also be of value for students in other disciplines that would benefit from a working knowledge of signal and image processing.

Conference Record of the Thirty-Fourth Asilomar Conference on Signals, Systems & Computers
This book describes the principles of image and video compression techniques and introduces current and popular compression standards, such as the MPEG series. Derivations of relevant compression algorithms are developed in an easy-to-follow fashion. Numerous examples are provided in each chapter to illustrate the concepts.

Foundations of Computer Vision

Digital image processing and analysis is a field that continues to experience rapid growth, with applications in many facets of our lives. Areas such as medicine, agriculture, manufacturing, transportation, communication systems, and space exploration are just a few of the application areas. This book takes an engineering approach to image processing and analysis, including more examples and images throughout the text than the previous edition. It provides more material for illustrating the concepts, along with new PowerPoint slides. The application development has been expanded and updated, and the related chapter provides step-by-step tutorial examples for this type of development. The new edition also includes supplementary exercises, as well as MATLAB-based exercises, to aid both the reader and student in development of their skills.

1998 IEEE International Conference on Electronics, Circuits and Systems

Face, Expression, and Iris Recognition Using Learning-based Approaches

Applied Signal Processing: A MATLAB-Based Proof of Concept benefits readers by including the teaching background of experts in various applied signal processing fields and presenting them in a project-oriented framework. Unlike many other MATLAB-based textbooks which only use MATLAB to illustrate theoretical aspects, this book provides fully commented MATLAB code for working proofs-of-concept. The MATLAB code provided on the accompanying online files is the very heart of the material. In addition each chapter offers a functional introduction to the theory required to understand the code as well as a formatted presentation of the contents and outputs of the MATLAB code. Each chapter exposes how digital signal processing is applied for solving a real engineering problem used in a consumer product. The chapters are organized with a description of the problem in its applicative context and a functional review of the theory related to its solution appearing first. Equations are only used for a precise description of the problem and its final solutions. Then a step-by-step MATLAB-based proof of concept, with full code, graphs, and comments follows. The solutions are simple enough for readers with general signal processing background to understand and they use state-of-the-art signal processing principles. Applied Signal Processing: A MATLAB-Based Proof of Concept is an ideal companion for most signal processing course books. It can be used for preparing student labs and projects.

CLUSTR Analysis With Neural Networks Using MATLAB

In contrast to classical image analysis methods that employ “crisp” mathematics, fuzzy set techniques provide an elegant foundation and a set of rich methodologies for diverse image-processing tasks. However, a solid understanding of fuzzy processing requires a firm grasp of essential principles and background knowledge. Fuzzy Image Processing and Applications with MATLAB® presents the integral science and essential mathematics behind this exciting and dynamic branch of image processing, which is becoming increasingly important to applications in areas such as remote sensing, medical imaging, and video surveillance, to name a few. Many texts cover the use of crisp sets, but this book stands apart by exploring the explosion of interest and significant growth in fuzzy set image processing. The distinguished authors clearly lay out theoretical concepts and applications of fuzzy set theory and their impact on areas such as enhancement, segmentation, filtering, edge detection, content-based image retrieval, pattern recognition, and clustering. They describe all components of fuzzy, detailing preprocessing, threshold detection, and match-based segmentation. Minimize Processing Errors Using Dynamic Fuzzy Set Theory This book serves as a primer on MATLAB and demonstrates how to implement it in fuzzy image processing methods. It illustrates how the code can be used to improve calculations that help prevent or deal with imprecision—whether it is in the grey level of the image, geometry of an object, definition of an object’s edges or boundaries, or in knowledge representation, object recognition, or image interpretation. The text addresses these considerations by applying fuzzy set theory to image thresholding, segmentation, edge detection, enhancement, clustering, color retrieval, clustering in pattern recognition, and other image processing operations. Highlighting key ideas, the authors present the experimental results of their own new fuzzy approaches and those suggested by different authors, offering data and insights that will be useful to teachers, scientists, and engineers, among others.
Fundamentals of Digital Image Processing

Useful as a reference work, this book offers a good balance between theoretical concepts and practical solutions, with more rigorous formulation of certain problems such as motion estimation, sampling, basic coding theory. Provides an in-depth exposition of fundamental theory and techniques for video processing, including frequency domain characterization of video signals and visual perception, video sampling and format conversion, two dimensional and three dimensional motion estimation. Also presents techniques important for video communications, including video coding and error control, and up-to-date coverage on recent international standards on video communications. A chapter is devoted to video streaming over Internet and wireless networks, one of the most popular video communication applications. In addition, it discusses processing and communications of stereoscopic and multiview video. Practicing researchers and engineers.

NEURAL Networks Using Matlab. Cluster Analysis And CLASSIFICATION

Video Processing and Communications

Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery

Image Processing with MATLAB

Guide covering topics from machine learning, regression models, neural network to tensor flow DESCRIPTION Machine learning is mostly sought in the research field and has become an integral part of many research projects nowadays including commercial applications, as well as academic research. Application of machine learning ranges from finding friends on social networking sites to medical diagnosis and even satellite processing. In this book, we have made an honest effort to make the concepts of machine learning easy and give basic programs in MATLAB right from the installation part. Although the real-time application of machine learning is endless, however, the basic concepts and algorithms are discussed using MATLAB language so that not only graduation students but also researchers are benefitted from it. KEY FEATURES Machine learning in MATLAB using basic concepts and algorithms. Deriving and accessing of data in MATLAB and next, pre-processing and preparation of data. Machine learning workflow for health monitoring. The neural network domain and implementation in MATLAB with explicit explanation of code and results. How predictive model can be improved using MATLAB? MATLAB code for an algorithm implementation, rather than for mathematical formula. Machine learning workflow for health monitoring. WHAT WILL YOU LEARN Pre-requisites to machine learning Finding natural patterns in data Building classification methods Data pre-processing in Python Building regression models Creating neural networks Deep learning WHO THIS BOOK IS FOR The book is basically meant for graduate and research students who find the algorithms of machine learning difficult to implement. We have touched all basic algorithms of machine learning in detail with a practical approach. Primarily, beginners will find this book more effective as the chapters are subdivided in a manner that they find the building and implementation of algorithms in MATLAB interesting and easy at the same time. Table of Contents ?1. Pre-requisite to Machine Learning 2. An introduction to Machine Learning 3. Finding Natural Patterns in Data 4. Building Classification Methods 5. Data Pre-Processing in Python 6. Building Regression Models 7. Creating Neural Networks 8. Introduction to Deep Learning

Proceedings, 12th International Conference on Image Analysis and Processing

Algorithms for Synthetic Aperture Radar Imagery

Image Processing with MATLAB: Applications in Medicine and Biology explains complex, theory-laden topics in image processing through examples and MATLAB algorithms. It describes classical as well emerging areas in image processing and analysis. Providing many unique MATLAB codes and functions throughout, the book covers the theory of
Applied Signal Processing

Machine learning allows computers to learn and discern patterns without actually being programmed. When Statistical techniques and machine learning are combined together they are a powerful tool for analysing various kinds of data in many computer science/engineering areas including, image processing, speech processing, natural language processing, robot control, as well as in fundamental sciences such as biology, medicine, astronomy, physics, and materials. Introduction to Statistical Machine Learning provides a general introduction to machine learning that covers a wide range of topics concisely and will help you bridge the gap between theory and practice. Part I discusses the fundamental concepts of statistics and probability that are used in describing machine learning algorithms. Part II and Part III explain the two major approaches of machine learning techniques; generative methods and discriminative methods. While Part III provides an in-depth look at advanced topics that play essential roles in making machine learning algorithms more useful in practice. The accompanying MATLAB/Octave programs provide you with the necessary practical skills needed to accomplish a wide range of data analysis tasks. Provides the necessary background material to understand machine learning such as statistics, probability, linear algebra, and calculus. Complete coverage of the generative approach to statistical pattern recognition and the discriminative approach to statistical machine learning. Includes MATLAB/Octave programs so that readers can test the algorithms numerically and acquire both mathematical and practical skills in a wide range of data analysis tasks Discusses a wide range of applications in machine learning and statistics and provides examples drawn from image processing, speech processing, natural language processing, robot control, as well as biology, medicine, astronomy, physics, and materials.

Medical Image Computing and Computer-assisted Intervention

MATLAB has the tool Neural Network Toolbox that provides algorithms, functions, and apps to create, train, visualize, and simulate neural networks. You can perform classification, regression, clustering, dimensionality reduction, time-series forecasting, and dynamic system modeling and control. The toolbox includes convolutional neural network and autoencoder deep learning algorithms for image classification and feature learning tasks. To speed up training of large data sets, you can distribute computations and data across multicore processors, GPUs, and computer clusters using Parallel Computing Toolbox.

Region-based Image Querying and Classification

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Classification, Parameter Estimation and State Estimation

This book introduces the fundamentals of computer vision (CV), with a focus on extracting useful information from digital images and videos. Including a wealth of methods used in detecting and classifying image objects and their shapes, it is the first book to apply a trio of tools (computational geometry, topology and algorithms) in solving CV problems, shape tracking in image object recognition and detecting the repetition of shapes in single images and video frames. Computational geometry provides a visualization of topological structures such as neighborhoods of points embedded in images, while image topology supplies us with structures useful in the analysis and classification of image regions. Algorithms provide a practical, step-by-step means of viewing image structures. The implementations of CV methods in Matlab and Mathematica; classification of chapter problems with the symbols (easily solved) and (challenging) and its extensive glossary of key words, examples and connections with the fabric of CV make the book an invaluable resource for advanced undergraduate and first year graduate students in Engineering, Computer Science or Applied Mathematics. It offers insights into the design of CV experiments, inclusion of image processing methods in CV projects, as well as the reconstruction and interpretation of recorded natural
Fundamentals of Image Data Mining

Digital Image Processing and Analysis


Image Processing Applications to Galaxy Analysis

Digital image processing and analysis is a field that continues to experience rapid growth, with applications in many facets of our lives. Areas such as medicine, agriculture, manufacturing, transportation, communication systems, and space exploration are just a few of the application areas. This book takes an engineering approach to image processing and analysis, including more examples and images throughout the text than the previous edition. It provides more material for illustrating the concepts, along with new PowerPoint slides. The application development has been expanded and updated, and the related chapter provides step-by-step tutorial examples for this type of development. The new edition also includes supplementary exercises, as well as MATLAB-based exercises, to aid both the reader and student in development of their skills.

Matlab für Dummies

Fuzzy Image Processing and Applications with MATLAB

Meant for students and practicing engineers, this book provides a clear, comprehensive and up-to-date introduction to Digital Image Processing in a pragmatic style. An illustrative approach, practical examples and MATLAB applications given in the book help in bringing the theory to life.

Biosignal and Medical Image Processing, Third Edition

A practical introduction to intelligent computer vision theory, design, implementation, and technology The past decade has witnessed epic growth in image processing and intelligent computer vision technology. Advancements in machine learning methods—especially among adaboost varieties and particle filtering methods—have made machine learning in intelligent computer vision more accurate and reliable than ever before. The need for expert coverage of the state of the art in this burgeoning field has never been greater, and this book satisfies that need. Fully updated and extensively revised, this 2nd Edition of the popular guide provides designers, data analysts, researchers and advanced post-graduates with a fundamental yet wholly practical introduction to intelligent computer vision. The authors walk you through the basics of computer vision, past and present, and they explore the more subtle intricacies of intelligent computer vision, with an emphasis on intelligent measurement systems. Using many timely, real-world examples, they explain and vividly demonstrate the latest developments in image and video processing techniques and technologies for machine learning in computer vision systems, including: PRTools5 software for MATLAB—especially the latest representation and generalization software toolbox for PRTools5 Machine learning applications for computer vision, with detailed discussions of contemporary state estimation techniques vs older content of particle filter methods The latest techniques for classification and supervised learning, with an emphasis on Neural Network, Genetic State Estimation and other particle filter and AI state estimation methods All new coverage of the Adaboost and its implementation in PRTools5. A valuable working resource for professionals and an excellent introduction for advanced-level students, this 2nd Edition features a wealth of illustrative examples, ranging from basic techniques to advanced intelligent computer vision system implementations. Additional examples and tutorials, as well as a
question and solution forum, can be found on a companion website.

Emerging Trends in Image Processing, Computer Vision and Pattern Recognition

This book introduces new techniques for cellular image feature extraction, pattern recognition and classification. The authors use the antinuclear antibodies (ANAs) in patient serum as the subjects and the Indirect Immunofluorescence (IIF) technique as the imaging protocol to illustrate the applications of the described methods. Throughout the book, the authors provide evaluations for the proposed methods on two publicly available human epithelial (HEp-2) cell datasets: ICPR2012 dataset from the ICPR’12 HEp-2 cell classification contest and ICIP2013 training dataset from the ICIP’13 Competition on cells classification by fluorescent image analysis. First, the reading of imaging results is significantly influenced by one’s qualification and reading systems, causing high intra- and inter-laboratory variance. The authors present a low-order LP21 fiber mode for optical single cell manipulation and imaging staining patterns of HEp-2 cells. A focused four-lobed mode distribution is stable and effective in optical tweezer applications, including selective cell pick-up, pairing, grouping or separation, as well as rotation of cell dimers and clusters. Both translational dragging force and rotational torque in the experiments are in good accordance with the theoretical model. With a simple all-fiber configuration, and low peak irradiation to targeted cells, instrumentation of this optical chuck technology will provide a powerful tool in the ANA-IIF laboratories. Chapters focus on the optical, mechanical and computing systems for the clinical trials. Computer programs for GUI and control of the optical tweezers are also discussed. To more discriminative local distance vector by searching for local neighbors of the local feature in the class-specific manifolds. Encoding and pooling the local distance vectors leads to salient image representation. Combined with the traditional coding methods, this method achieves higher classification accuracy. Then, a rotation invariant textural feature of Pairwise Local Ternary Patterns with Spatial Rotation Invariant (PLTP-SRI) is examined. It is invariant to image rotations, meanwhile it is robust to noise and weak illumination. By adding spatial pyramid structure, this method captures spatial layout information. While the proposed PLTP-SRI feature extracts local feature, the BoW framework builds a global image representation. It is reasonable to combine them together to achieve impressive classification performance, as the combined feature takes the advantages of the two kinds of features in different aspects. Finally, the authors design a Co-occurrence Differential Texton (CoDT) feature to represent the local image patches of HEp-2 cells. The CoDT feature reduces the information loss by ignoring the quantization while it utilizes the spatial relations among the differential micro-texton feature. Thus it can increase the discriminative power. A generative model adaptively characterizes the CoDT feature space of the training data. Furthermore, exploiting a discriminant representation allows for HEp-2 cell images based on the adaptive partitioned feature space. Therefore, the resulting representation is adapted to the classification task. By cooperating with linear Support Vector Machine (SVM) classifier, this framework can exploit the advantages of both generative and discriminative approaches for cellular image classification. The book is written for those researchers who would like to develop their own programs, and the working Matlab codes are included for all the important algorithms presented. It can also be used as a reference book for graduate students and senior undergraduates in the area of biomedical imaging, image feature extraction, pattern recognition and classification. Academics, researchers, and professional will find this to be an exceptional resource.

Cellular Image Classification

Neural Networks. Applications and Examples Using Matlab

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