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KYLAN SAIGE

*The Fusion of Internet of Things, Artificial
Intelligence, and Cloud Computing in
Health Care* IGI Global

Content-based image classification, search
and retrieval is a rapidly-expanding
research area. With the advent of

inexpensive digital cameras, cheap data
storage, fast computing speeds and ever-
increasing data transfer rates, millions of
images are stored and shared over the
Internet every day. This necessitates the
development of systems that can classify
these images into various categories
without human intervention and on being
presented a query image, can identify its
contents in order to retrieve similar
images. Towards that end, this

dissertation focuses on investigating novel
image descriptors based on texture,
shape, color, and local information for
advancing content-based image search.
Specifically, first, a new color multi-mask
Local Binary Patterns (mLBP) descriptor is
presented to improve upon the traditional
Local Binary Patterns (LBP) texture
descriptor for better image classification
performance. Second, the mLBP
descriptors from different color spaces are

fused to form the Color LBP Fusion (CLF) and Color Grayscale LBP Fusion (CGLF) descriptors that further improve image classification performance. Third, a new HaarHOG descriptor, which integrates the Haar wavelet transform and the Histograms of Oriented Gradients (HOG), is presented for extracting both shape and local information for image classification. Next, a novel three Dimensional Local Binary Patterns (3D-LBP) descriptor is proposed for color images by encoding both color and texture information for image search. Furthermore, the novel 3DLH and 3DLH-fusion descriptors are proposed, which combine the HaarHOG and the 3D-LBP descriptors by means of Principal Component Analysis (PCA) and are able to improve upon the individual HaarHOG and 3D-LBP descriptors for image search. Subsequently, the innovative H-descriptor, and the H-fusion descriptor are presented that improve upon the 3DLH descriptor. Finally, the innovative Bag of Words-LBP (BoWL) descriptor is introduced that combines the idea of LBP with a bag-of-words representation to further improve image classification performance. To assess the

feasibility of the proposed new image descriptors, two classification frameworks are used. In one, the PCA and the Enhanced Fisher Model (EFM) are applied for feature extraction and the nearest neighbor classification rule for classification. In the other, a Support Vector Machine (SVM) is used for classification. The classification performance is tested on several widely used and publicly available image datasets. The experimental results show that the proposed new image descriptors achieve an image classification performance better than or comparable to other popular image descriptors, such as the Scale Invariant Feature Transform (SIFT), the Pyramid Histograms of visual Words (PHOW), the Pyramid Histograms of Oriented Gradients (PHOG), the Spatial Envelope (SE), the Color SIFT four Concentric Circles (C4CC), the Object Bank (OB), the Hierarchical Matching Pursuit (HMP), the Kernel Spatial Pyramid Matching (KSPM), the SIFT Sparse-coded Spatial Pyramid Matching (ScSPM), the Kernel Codebook (KC) and the LBP. Deep Learning for Biomedical Data Analysis Springer Science & Business

Media

The thesis investigates various machine learning approaches to reducing data dimensionality, and studies the impact of asymmetric data on learning in image retrieval. Efficient algorithms are proposed to reduce the data dimensionality. Integration strategies for one-class classification are designed to address asymmetric data issue and improve retrieval effectiveness.

Transactions on Computational Science XXV Elsevier

This book constitutes the refereed proceedings of the Third MICCAI Workshop on Medical Content-Based Retrieval for Clinical Decision Support, MCBR-CBS 2012, held in Nice, France, in October 2012. The 10 revised full papers presented together with 2 invited talks were carefully reviewed and selected from 15 submissions. The papers are divided on several topics on image analysis of visual or multimodal medical data (X-ray, MRI, CT, echo videos, time series data), machine learning of disease correlations in visual or multimodal data, algorithms for indexing and retrieval of data from visual or multimodal medical databases, disease

model-building and clinical decision support systems based on visual or multimodal analysis, algorithms for medical image retrieval or classification, systems of retrieval or classification using the ImageCLEF collection.

Proceedings of the First International Conference on Intelligent Human Computer Interaction Springer Science & Business Media

This book provides state-of-the-art coverage of deep learning applications in image analysis. The book demonstrates various deep learning algorithms that can offer practical solutions for various image-related problems; also how these algorithms are used by scientists and scholars in industry and academia. This includes autoencoder and deep convolutional generative adversarial network in improving classification performance of Bangla handwritten characters, dealing with deep learning-based approaches using feature selection methods for automatic diagnosis of covid-19 disease from x-ray images, imbalance image data sets of classification, image captioning using deep transfer learning, developing a vehicle

over speed detection system, creating an intelligent system for video-based proximity analysis, building a melanoma cancer detection system using deep learning, plant diseases classification using AlexNet, dealing with hyperspectral images using deep learning, chest x-ray image classification of pneumonia disease using efficient net and inceptionv3. The book also addresses the difficulty of implementing deep learning in terms of computation time and the complexity of reasoning and modelling different types of data where information is currently encoded. Each chapter has the application of various new or existing deep learning models such as Deep Neural Network (DNN) and Deep Convolutional Neural Networks (DCNN). The detailed utilization of deep learning packages that are available in MATLAB, Python and R programming environments have also been discussed, therefore, the readers will get to know about the practical implementation of deep learning as well. The content of this book is presented in a simple and lucid style for professionals, nonprofessionals, scientists, and students interested in the research area of deep

learning applications in image analysis. *Computer Vision Methods for Fast Image Classification and Retrieval* Universitätsverlag Potsdam
Phishing Detection Using Content-Based Image Classification is an invaluable resource for any deep learning and cybersecurity professional and scholar trying to solve various cybersecurity tasks using new age technologies like Deep Learning and Computer Vision. With various rule-based phishing detection techniques at play which can be bypassed by phishers, this book provides a step-by-step approach to solve this problem using Computer Vision and Deep Learning techniques with significant accuracy. The book offers comprehensive coverage of the most essential topics, including: Programmatically reading and manipulating image data Extracting relevant features from images Building statistical models using image features Using state-of-the-art Deep Learning models for feature extraction Build a robust phishing detection tool even with less data Dimensionality reduction techniques Class imbalance treatment Feature Fusion techniques Building

performance metrics for multi-class classification task. Another unique aspect of this book is it comes with a completely reproducible code base developed by the author and shared via python notebooks for quick launch and running capabilities. They can be leveraged for further enhancing the provided models using new advancement in the field of computer vision and more advanced algorithms.

From Content-based to Semantic Image Retrieval Springer Science & Business Media

"A content-based image retrieval (CBIR) system works on the low-level visual features of a user input query image, which makes it difficult for the users to formulate the query and also does not give satisfactory retrieval results. In the past image annotation was proposed as the best possible system for CBIR which works on the principle of automatically assigning keywords to images that help image retrieval users to query images based on these keywords. Image annotation is often regarded as the problem of image classification where images are represented by some low-level features and the mapping between low-

level features and high-level concepts (class labels) is done by supervised learning algorithms. In a CBIR system learning of effective feature representations and similarity measures is very important for the retrieval performance. Semantic gap has been the key challenge for this problem. A semantic gap exists between low-level image pixels captured by machines and the high-level semantics perceived by humans. The recent successes of deep learning techniques especially Convolutional Neural Networks (CNN) in solving computer vision applications has inspired me to work on this thesis so as to solve the problem of CBIR using a dataset of annotated images."--Abstract.

Feature Dimension Reduction for Content-Based Image Identification CRC Press

This book provides a thorough understanding of the integration of computational intelligence with information retrieval including content-based image retrieval using intelligent techniques, hybrid computational intelligence for pattern recognition, intelligent innovative systems, and protecting and analysing big data on cloud

platforms. The book aims to investigate how computational intelligence frameworks are going to improve information retrieval systems. The emerging and promising state-of-the-art of human-computer interaction is the motivation behind this book. The book covers a wide range of topics, starting from the tools and languages of artificial intelligence to its philosophical implications, and thus provides a plethora of theoretical as well as experimental research, along with surveys and impact studies. Further, the book aims to showcase the basics of information retrieval and computational intelligence for beginners, as well as their integration, and challenge discussions for existing practitioners, including using hybrid application of augmented reality, computational intelligence techniques for recommendation systems in big data, and a fuzzy-based approach for characterization and identification of sentiments.

Diabetes and Fundus OCT IntechOpen
This book gathers high-quality peer-reviewed research papers presented at the International Conference on Intelligent

Computing and Networking (IC-ICN 2021), organized by the Computer Department, Thakur College of Engineering and Technology, in Mumbai, Maharashtra, India, on February 26-27, 2021. The book includes innovative and novel papers in the areas of intelligent computing, artificial intelligence, machine learning, deep learning, fuzzy logic, natural language processing, human-machine interaction, big data mining, data science and mining, applications of intelligent systems in health ,care, finance, agriculture and manufacturing, high-performance computing, computer networking, sensor and wireless networks, Internet of Things (IoT), software-defined networks, cryptography, mobile computing, digital forensics, and blockchain technology.

Automatic Medical Image Classification for Content-based Image Retrieval Systems
IGI Global

This book reviews the convergence technologies like cloud computing, artificial intelligence (AI) and Internet of Things (IoT) in healthcare and how they can help all stakeholders in the healthcare sector. The book is a proficient guide on

the relationship between AI, IoT and healthcare and gives examples into how IoT is changing all aspects of the healthcare industry. Topics include remote patient monitoring, the telemedicine ecosystem, pattern imaging analytics using AI, disease identification and diagnosis using AI, robotic surgery, prediction of epidemic outbreaks, and more. The contributors include applications and case studies across all areas of computational intelligence in healthcare data. The authors also include workflow in IoT-enabled healthcare technologies and explore privacy and security issues in healthcare-based IoT.

Content-based Microscopic Image Analysis Springer

Dear Reader! Welcome to the proceedings of the First International Conference on Intelligent Human Computer Interaction (IHCI 2009) organized by the Indian Institute of Information Technology Allahabad. This is the first International Conference focused on Human Computer Interaction being organized in India. There is an increased interest in the human factors issues of computer use with a number of systems. The conference aims

to provide an excellent opportunity for the dissemination of interesting new research, discussion about them and the generation of new ideas in these areas. We planned to organize the conference around the following five tracks: Signal and Vision Processing Language Processing Cognitive modeling Sensors and Embedded systems for HCI Graphics, Animation and Gaming Graphics, Animation and Gaming, Signal and Vision Processing, Language Processing and Cognitive modeling attracted due attention in the conference program. Very few papers were submitted in Sensors and Embedded systems and Graphics and Animation. Language is the primary means of communication between humans though usually neglected from HCI perspective. It will be better if human-computer interaction can be done in the same model as human-human communication. This was the main motivation behind including Language Processing as a separate track in the conference. However, some of the papers could not really achieve the application aspect from the HCI perspective. We will improve on this point in the next conference.

Artificial Intelligence for Maximizing Content Based Image Retrieval Springer
What is Content Based Image Retrieval
Content-based image retrieval, also known as query by image content and content-based visual information retrieval (CBVIR), is the application of computer vision techniques to the problem of image retrieval, which is the difficulty of searching for digital images in big databases. Other names for this technique include content-based visual information retriev. In contrast to the conventional concept-based methods, content-based picture retrieval is a more recent development. How you will benefit (I) Insights, and validations about the following topics: Chapter 1: Content-based image retrieval Chapter 2: Information retrieval Chapter 3: Image retrieval Chapter 4: Automatic image annotation Chapter 5: Tag cloud Chapter 6: Video search engine Chapter 7: Image organizer Chapter 8: Image meta search Chapter 9: Reverse image search Chapter 10: Visual search engine (II) Answering the public top questions about content based image retrieval. (III) Real world examples for the usage of content based image retrieval in

many fields. Who this book is for Professionals, undergraduate and graduate students, enthusiasts, hobbyists, and those who want to go beyond basic knowledge or information for any kind of Content Based Image Retrieval.

Phishing Detection Using Content-Based Image Classification CRC Press
The International conference series on Computer Science, Engineering & Applications (ICCSEA) aims to bring together researchers and practitioners from academia and industry to focus on understanding computer science, engineering and applications and to establish new collaborations in these areas. The Second International Conference on Computer Science, Engineering & Applications (ICCSEA-2012), held in Delhi, India, during May 25-27, 2012 attracted many local and international delegates, presenting a balanced mixture of intellect and research both from the East and from the West. Upon a strenuous peer-review process the best submissions were selected leading to an exciting, rich and a high quality technical conference program, which featured high-impact presentations in the

latest developments of various areas of computer science, engineering and applications research.

Deep Learning Applications in Image Analysis Springer Nature

In this dissertation, novel Content-based Microscopic Image Analysis (CBMIA) methods, including Weakly Supervised Learning (WSL), are proposed to aid biological studies. In a CBMIA task, noisy image, image rotation, and object recognition problems need to be addressed. To this end, the first approach is a general supervised learning method, which consists of image segmentation, shape feature extraction, classification, and feature fusion, leading to a semi-automatic approach. In contrast, the second approach is a WSL method, which contains Sparse Coding (SC) feature extraction, classification, and feature fusion, leading to a full-automatic approach. In this WSL approach, the problems of noisy image and object recognition are jointly resolved by a region-based classifier, and the image rotation problem is figured out through SC features. To demonstrate the usefulness and potential of the proposed methods,

experiments are implemented on different practical biological tasks, including environmental microorganism classification, stem cell analysis, and insect tracking.

Data Mining and Knowledge Discovery in Real Life Applications

Springer Nature

Diabetes and Fundus OCT brings together a stellar cast of authors who review the computer-aided diagnostic (CAD) systems developed to diagnose non-proliferative diabetic retinopathy in an automated fashion using Fundus and OCTA images. Academic researchers, bioengineers, new investigators and students interested in diabetes and retinopathy need an authoritative reference to bring this multidisciplinary field together to help reduce the amount of time spent on source-searching and instead focus on actual research and the clinical application. This reference depicts the current clinical understanding of diabetic retinopathy, along with the many scientific advances in understanding this condition. As the role of optical coherence tomography (OCT) in the assessment and management of diabetic retinopathy has

become significant in understanding the vitreo retinal relationships and the internal architecture of the retina, this information is more critical than ever. - Includes unique information for academic clinicians, researchers and bioengineers - Provides insights needed to understand the imaging modalities involved, the unmet clinical need that is being addressed, and the engineering and technical approaches applied - Brings together details on the retinal vasculature in diabetics as imaged by optical coherence tomography angiography and automated detection of retinal disease

Image Analysis And Recognition IGI Global

The book presents selected methods for accelerating image retrieval and classification in large collections of images using what are referred to as 'hand-crafted features.' It introduces readers to novel rapid image description methods based on local and global features, as well as several techniques for comparing images. Developing content-based image comparison, retrieval and classification methods that simulate human visual perception is an arduous and complex

process. The book's main focus is on the application of these methods in a relational database context. The methods presented are suitable for both general-type and medical images. Offering a valuable textbook for upper-level undergraduate or graduate-level courses on computer science or engineering, as well as a guide for computer vision researchers, the book focuses on techniques that work under real-world large-dataset conditions.

Content-Based Image Classification Logos Verlag Berlin GmbH

This book presents four different ways of theoretical and practical advances and applications of data mining in different promising areas like Industrialist, Biological, and Social. Twenty six chapters cover different special topics with proposed novel ideas. Each chapter gives an overview of the subjects and some of the chapters have cases with offered data mining solutions. We hope that this book will be a useful aid in showing a right way for the students, researchers and practitioners in their studies.

Methods and Innovations for Multimedia Database Content

Management One Billion Knowledgeable
This book is the first overview on Deep Learning (DL) for biomedical data analysis. It surveys the most recent techniques and approaches in this field, with both a broad coverage and enough depth to be of practical use to working professionals. This book offers enough fundamental and technical information on these techniques, approaches and the related problems without overcrowding the reader's head. It presents the results of the latest investigations in the field of DL for biomedical data analysis. The techniques and approaches presented in this book deal with the most important and/or the newest topics encountered in this field. They combine fundamental theory of Artificial Intelligence (AI), Machine Learning (ML) and DL with practical applications in Biology and Medicine. Certainly, the list of topics covered in this book is not exhaustive but these topics will shed light on the implications of the presented techniques and approaches on other topics in biomedical data analysis. The book finds a balance between theoretical and practical coverage of a wide range of issues in the field of

biomedical data analysis, thanks to DL. The few published books on DL for biomedical data analysis either focus on specific topics or lack technical depth. The chapters presented in this book were selected for quality and relevance. The book also presents experiments that provide qualitative and quantitative overviews in the field of biomedical data analysis. The reader will require some familiarity with AI, ML and DL and will learn about techniques and approaches that deal with the most important and/or the newest topics encountered in the field of DL for biomedical data analysis. He/she will discover both the fundamentals behind DL techniques and approaches, and their applications on biomedical data. This book can also serve as a reference book for graduate courses in Bioinformatics, AI, ML and DL. The book aims not only at professional researchers and practitioners but also graduate students, senior undergraduate students and young researchers. This book will certainly show the way to new techniques and approaches to make new discoveries. [Computational Intelligence for Engineering and Management Applications](#) Springer

Science & Business Media
Image data has portrayed immense potential as a foundation of information for numerous applications. Recent trends in multimedia computing have witnessed a rapid growth in digital image collections, resulting in a need for increased image data management. Feature Dimension Reduction for Content-Based Image Identification is a pivotal reference source that explores the contemporary trends and techniques of content-based image recognition. Including research covering topics such as feature extraction, fusion techniques, and image segmentation, this book explores different theories to facilitate timely identification of image data and managing, archiving, maintaining, and extracting information. This book is ideally designed for engineers, IT specialists, researchers, academicians, and graduate-level students seeking interdisciplinary research on image processing and analysis. [Computational Intelligence for Information Retrieval](#) Springer
Phishing Detection Using Content-Based Image Classification is an invaluable resource for any deep learning and

cybersecurity professional and scholar trying to solve various cybersecurity tasks using new age technologies like Deep Learning and Computer Vision. With various rule-based phishing detection techniques at play which can be bypassed by phishers, this book provides a step-by-step approach to solve this problem using Computer Vision and Deep Learning techniques with significant accuracy. The book offers comprehensive coverage of the most essential topics, including: Programmatically reading and manipulating image data Extracting relevant features from images Building statistical models using image features Using state-of-the-art Deep Learning models for feature extraction Build a

robust phishing detection tool even with less data Dimensionality reduction techniques Class imbalance treatment Feature Fusion techniques Building performance metrics for multi-class classification task Another unique aspect of this book is it comes with a completely reproducible code base developed by the author and shared via python notebooks for quick launch and running capabilities. They can be leveraged for further enhancing the provided models using new advancement in the field of computer vision and more advanced algorithms. Semantic and Interactive Content-based Image Retrieval Springer Content-Based Analysis Of Digital Video focuses on fundamental issues underlying the development of content access

mechanisms for digital video. It treats topics that are critical to successfully automating the video content extraction and retrieval processes, and includes coverage of: - Video parsing, - Video content indexing and representation, - Affective video content analysis. In this well illustrated book the author integrates related information currently scattered throughout the literature and combines it with new ideas into a unified theoretical approach to video content analysis. The material also suggests ideas for future research. Systems developers, researchers and students working in the area of content-based analysis and retrieval of video and multimedia in general will find this book invaluable.