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High-Speed Range Estimation Based on Intensity Gradient Analysis - Kurt D. Skifstad
2011-09-26

A fast and reasonably accurate perception of the environment is essential for successful navigation of an autonomous agent. Although many modes of sensing are applicable to this

task and have been used, vision remains the most appealing due to its passive nature, good range, and resolution. Most vision techniques to recover depth for navigation use stereo. In the last few years, researchers have started studying techniques to combine stereo with the motion of the camera. Skifstad's dissertation proposes a

new approach to recover depth information using known camera motion. This approach results in a robust technique for fast estimation of distances to objects in an image using only one translating camera. A very interesting aspect of the approach pursued by Skifstad is the method used to bypass the most difficult and computationally expensive step in using stereo or similar approaches for the vision-based depth estimation. The correspondence problem has been the focus of research in most stereo approaches. Skifstad trades the correspondence problem for the known translational motion by using the fact that it is easier to detect single pixel disparities in a sequence of images rather than arbitrary disparities after two frames. A very attractive feature of this approach is that the computations required to detect single pixel disparities are local and hence can be easily parallelized. Another useful feature of the approach, particularly in navigation applications, is that the closer objects are

detected earlier.

Powerful Teaching - Pooja K. Agarwal
2019-05-13

Unleash powerful teaching and the science of learning in your classroom Powerful Teaching: Unleash the Science of Learning empowers educators to harness rigorous research on how students learn and unleash it in their classrooms. In this book, cognitive scientist Pooja K. Agarwal, Ph.D., and veteran K-12 teacher Patrice M. Bain, Ed.S., decipher cognitive science research and illustrate ways to successfully apply the science of learning in classrooms settings. This practical resource is filled with evidence-based strategies that are easily implemented in less than a minute—without additional prepping, grading, or funding! Research demonstrates that these powerful strategies raise student achievement by a letter grade or more; boost learning for diverse students, grade levels, and subject areas; and enhance students' higher order

learning and transfer of knowledge beyond the classroom. Drawing on a fifteen-year scientist-teacher collaboration, more than 100 years of research on learning, and rich experiences from educators in K-12 and higher education, the authors present highly accessible step-by-step guidance on how to transform teaching with four essential strategies: Retrieval practice, spacing, interleaving, and feedback-driven metacognition. With *Powerful Teaching*, you will: Develop a deep understanding of powerful teaching strategies based on the science of learning Gain insight from real-world examples of how evidence-based strategies are being implemented in a variety of academic settings Think critically about your current teaching practices from a research-based perspective Develop tools to share the science of learning with students and parents, ensuring success inside and outside the classroom *Powerful Teaching: Unleash the Science of Learning* is an indispensable resource for educators who want

to take their instruction to the next level. Equipped with scientific knowledge and evidence-based tools, turn your teaching into powerful teaching and unleash student learning in your classroom.

Molecular Aggregation - Angelo Gavezzotti
2007

This title provides a brief but accurate summary of all the basic ideas, theories, methods, and conspicuous results of structure analysis and molecular modelling of the condensed phases of organic compounds.

Hybrid Intelligence for Image Analysis and Understanding - Siddhartha Bhattacharyya
2017-10-02

A synergy of techniques on hybrid intelligence for real-life image analysis *Hybrid Intelligence for Image Analysis and Understanding* brings together research on the latest results and progress in the development of hybrid intelligent techniques for faithful image analysis and understanding. As such, the focus is on the

methods of computational intelligence, with an emphasis on hybrid intelligent methods applied to image analysis and understanding. The book offers a diverse range of hybrid intelligence techniques under the umbrellas of image thresholding, image segmentation, image analysis and video analysis. Key features: Provides in-depth analysis of hybrid intelligent paradigms. Divided into self-contained chapters. Provides ample case studies, illustrations and photographs of real-life examples to illustrate findings and applications of different hybrid intelligent paradigms. Offers new solutions to recent problems in computer science, specifically in the application of hybrid intelligent techniques for image analysis and understanding, using well-known contemporary algorithms. The book is essential reading for lecturers, researchers and graduate students in electrical engineering and computer science. *Just Great Teaching* - Ross Morrison McGill
2019-09-05

Ross Morrison McGill, bestselling author of *Mark. Plan. Teach.* and *Teacher Toolkit*, pinpoints the top ten key issues that schools in Great Britain are facing today, and provides strategies, ideas and techniques for how these issues can be tackled most effectively. We often talk about the challenges of teacher recruitment and retention, about new initiatives and political landscapes, but day in, day out, teachers and schools are delivering exceptional teaching and most of it is invisible. Ross uncovers, celebrates, analyses and disseminates best practice in teaching. This is supported by case studies and research undertaken by Ross in ten primary and secondary schools across Great Britain, including a pupil referral unit and private, state and grammar schools, as well as explanations from influential educationalists as to why and how these ideas work. Ross explores the issues of marking and assessment, planning, teaching and learning, teacher wellbeing, student mental health, behaviour and exclusions, SEND,

curriculum, research-led practice and CPD. This book inspires readers to open their eyes to how particular problems can be resolved and how other schools are already doing this effectively. It is packed with ideas and advice for all primary and secondary classroom teachers and school leaders keen to provide the best education they possibly can for our young people today.

Improving GIS-based Wildlife-Habitat

Analysis - Jeffrey K. Keller 2014-10-01

Geographic Information Systems (GIS) provide a powerful tool for the investigation of species-habitat relationships and the development of wildlife management and conservation programs. However, the relative ease of data manipulation and analysis using GIS, associated landscape metrics packages, and sophisticated statistical tests may sometimes cause investigators to overlook important species-habitat functional relationships. Additionally, underlying assumptions of the study design or technology may have unrecognized

consequences. This volume examines how initial researcher choices of image resolution, scale(s) of analysis, response and explanatory variables, and location and area of samples can influence analysis results, interpretation, predictive capability, and study-derived management prescriptions. Overall, most studies in this realm employ relatively low resolution imagery that allows neither identification nor accurate classification of habitat components.

Additionally, the landscape metrics typically employed do not adequately quantify component spatial arrangement associated with species occupation. To address this latter issue, the authors introduce two novel landscape metrics that measure the functional size and location in the landscape of taxon-specific 'solid' and 'edge' habitat types. Keller and Smith conclude that investigators conducting GIS-based analyses of species-habitat relationships should more carefully 1) match the resolution of remotely sensed imagery to the scale of habitat functional

relationships of the focal taxon, 2) identify attributes (explanatory variables) of habitat architecture, size, configuration, quality, and context that reflect the way the focal taxon uses the subset of the landscape it occupies, and 3) match the location and scale of habitat samples, whether GIS- or ground-based, to corresponding species' detection locations and scales of habitat use.

Assessment and Learning - John Gardner
2011-12-07

Assessment and Learning places learning at the centre of our concerns and explicitly underscores the importance of assessment in that learning. This new edition provides a comprehensive overview of assessment that is used to support learning, practice-based theory on assessment for learning, and formative assessment to support individual development and motivate learners. With a strong list of existing and new contributors, this second edition has been updated to include the latest

work on assessment. Readers will find research-informed insights from a wide variety of international contexts. It features: - New chapters on e-assessment, the learner's perspective on assessment and learning and the influence of assessment on how we value learning - Teacher-friendly assessment topics - Practical examples and chapter summaries throughout This book is useful to teacher educators and researchers on postgraduate courses in education, teaching, learning and assessment. John Gardner is a professor of education at Queens University Belfast, and President of the British Educational Research Association.

Object-Based Image Analysis and Treaty Verification - Sven Nussbaum 2010-11-10

This book describes recent progress in object-based image interpretation. It presents new results in its application to verification of nuclear non-proliferation. A comprehensive workflow and newly developed algorithms for

object-based high resolution image (pre-) processing, feature extraction, change detection, classification and interpretation are developed, applied and evaluated. The analysis chain is demonstrated with satellite imagery acquired over Iranian nuclear facilities.

Bridging the Semantic Gap in Image and Video Analysis - Halina Kwaśnicka 2018-02-20

This book presents cutting-edge research on various ways to bridge the semantic gap in image and video analysis. The respective chapters address different stages of image processing, revealing that the first step is a feature extraction, the second is a segmentation process, the third is object recognition, and the fourth and last involve the semantic interpretation of the image. The semantic gap is a challenging area of research, and describes the difference between low-level features extracted from the image and the high-level semantic meanings that people can derive from the image. The result greatly depends on lower

level vision techniques, such as feature selection, segmentation, object recognition, and so on. The use of deep models has freed humans from manually selecting and extracting the set of features. Deep learning does this automatically, developing more abstract features at the successive levels. The book offers a valuable resource for researchers, practitioners, students and professors in Computer Engineering, Computer Science and related fields whose work involves images, video analysis, image interpretation and so on.

Statistics for Microarrays - Ernst Wit 2004-07-23

Interest in microarrays has increased considerably in the last ten years. This increase in the use of microarray technology has led to the need for good standards of microarray experimental notation, data representation, and the introduction of standard experimental controls, as well as standard data normalization and analysis techniques. Statistics for

Microarrays: Design, Analysis and Inference is the first book that presents a coherent and systematic overview of statistical methods in all stages in the process of analysing microarray data - from getting good data to obtaining meaningful results. Provides an overview of statistics for microarrays, including experimental design, data preparation, image analysis, normalization, quality control, and statistical inference. Features many examples throughout using real data from microarray experiments. Computational techniques are integrated into the text. Takes a very practical approach, suitable for statistically-minded biologists. Supported by a Website featuring colour images, software, and data sets. Primarily aimed at statistically-minded biologists, bioinformaticians, biostatisticians, and computer scientists working with microarray data, the book is also suitable for postgraduate students of bioinformatics.

Perspectives on Digital Pathology - M.

García-Rojo 2012-08-28

Multimedia information and digital images are increasingly important in the field of healthcare, but establishing an adequate technological framework for their management, and workable international standards to ensure compatibility and interoperability, are crucial if they are to be employed effectively. This book presents the main research efforts of EURO-TELEPATH, an initiative of the European Corporation in Science and Technology (COST) Action, IC0604. This program began in November 2007, and ran until November 2011. Its aim was to develop the standards and solutions necessary to represent, interpret, browse and retrieve digital medical images, while preserving their diagnostic quality for clinical purposes, education and research. At the end of the project, the most relevant researchers in the field of digital pathology - many of whom had been active members of EURO-TELEPATH - were asked to contribute to a book which would compile the main research

efforts of the European COST Action consortium. The book is divided into six parts. The first is an introduction to the instruments and activities of COST. This is followed by sections dealing with: the state-of-the-art in pathology; pathology business modeling; standards and specifications in pathology; the analysis, processing, retrieval and management of images; technology and automation in pathology; and strategic developments and emerging research. As well as being a comprehensive overview of the IC0604 COST program, the book includes a selection of papers from American and Japanese researchers working in the same field.

Quantification and Visual Outcome Analysis with Posterior Capsular Opacification - Kuang-mon Tuan 2002

Camera Image Quality Benchmarking - Jonathan B. Phillips 2018-01-09
The essential guide to the entire process behind performing a complete characterization and

benchmarking of cameras through image quality analysis Camera Image Quality Benchmarking contains the basic information and approaches for the use of subjectively correlated image quality metrics and outlines a framework for camera benchmarking. The authors show how to quantitatively compare image quality of cameras used for consumer photography. This book helps to fill a void in the literature by detailing the types of objective and subjective metrics that are fundamental to benchmarking still and video imaging devices. Specifically, the book provides an explanation of individual image quality attributes and how they manifest themselves to camera components and explores the key photographic still and video image quality metrics. The text also includes illustrative examples of benchmarking methods so that the practitioner can design a methodology appropriate to the photographic usage in consideration. The authors outline the various techniques used to correlate the measurement

results from the objective methods with subjective results. The text also contains a detailed description on how to set up an image quality characterization lab, with examples where the methodological benchmarking approach described has been implemented successfully. This vital resource: Explains in detail the entire process behind performing a complete characterization and benchmarking of cameras through image quality analysis Provides best practice measurement protocols and methodologies, so readers can develop and define their own camera benchmarking system to industry standards Includes many photographic images and diagrammatical illustrations to clearly convey image quality concepts Champions benchmarking approaches that value the importance of perceptually correlated image quality metrics Written for image scientists, engineers, or managers involved in image quality and evaluating camera performance, Camera Image Quality

Benchmarking combines knowledge from many different engineering fields, correlating objective (perception-independent) image quality with subjective (perception-dependent) image quality metrics.

Hierarchy, Markets and Networks - Toby Greany 2018

The School Leader's Year - Michael Harpham 2021-10-26

This practical handbook offers a month-by-month guide to the curriculum, assessment, progress, and leadership over the school year. It provides a clear, comprehensive, and coherent structure to the academic year helping school leaders to prioritise their time and workload, supporting them and their team to work as efficiently and effectively as possible. Considering the statutory and key leadership activities from admissions, induction, transitions, and parents' evenings to coursework, timetabling, assessment, staff performance, and

much more, the book provides a clear plan of action to ensure school leaders have prepared their work at the optimal time over the year. Each chapter features tried-and-tested strategies to help schools put robust systems and processes in place alongside guidance on sustaining pace, developing resilience, and exam preparation and technique. Full of practical tips to help improve progress and including real-world examples of leadership in action from leaders working in primary and secondary schools, this is essential reading for all school leaders that want their students to be as successful as they can possibly be in every lesson, every day.

Microarray Quality Control - Wei Zhang

2005-02-18

Microarray technology provides researchers in the life sciences with a revolutionary tool for measuring gene expression. However, this highly developed process involves multiple steps, from sample selection to data analysis,

each susceptible to potentially costly errors. Without sound quality control, experimental microarrays may produce useless or, even worse, misleading results. *Microarray Quality Control* provides a comprehensive resource for ensuring quality control in every step of this complex process. From experimental design to data processing, analysis, and interpretation, the emphasis in this text remains on practical advice for each stage of planning and running a microarray study. Chapters cover: * Quality of biological samples * Quality of DNA * Hybridization protocols Scanning * Data acquisition * Image analysis * Data analysis Written for the broad group of workers-biologists, mathematicians, statisticians, engineers, physicians, and computational scientists-involved in microarray studies, *Microarray Quality Control* features a straightforward style easily accessed by various disciplines. Useful checklists and tips help ensure the integrity of results, and each chapter

contains a thorough review of pertinent literature. The only complete, systematic treatment of the topic available, *Microarray Quality Control* offers students and practitioners an invaluable resource for improving experimental quality and efficiency.

Discrete Fourier Analysis and Wavelets - S. Allen Broughton 2011-10-13

A thorough guide to the classical and contemporary mathematical methods of modern signal and image processing *Discrete Fourier Analysis and Wavelets* presents a thorough introduction to the mathematical foundations of signal and image processing. Key concepts and applications are addressed in a thought-provoking manner and are implemented using vector, matrix, and linear algebra methods. With a balanced focus on mathematical theory and computational techniques, this self-contained book equips readers with the essential knowledge needed to transition smoothly from mathematical models to practical digital data

applications. The book first establishes a complete vector space and matrix framework for analyzing signals and images. Classical methods such as the discrete Fourier transform, the discrete cosine transform, and their application to JPEG compression are outlined followed by coverage of the Fourier series and the general theory of inner product spaces and orthogonal bases. The book then addresses convolution, filtering, and windowing techniques for signals and images. Finally, modern approaches are introduced, including wavelets and the theory of filter banks as a means of understanding the multiscale localized analysis underlying the JPEG 2000 compression standard. Throughout the book, examples using image compression demonstrate how mathematical theory translates into application. Additional applications such as progressive transmission of images, image denoising, spectrographic analysis, and edge detection are discussed. Each chapter provides a series of exercises as well as a MATLAB project

that allows readers to apply mathematical concepts to solving real problems. Additional MATLAB routines are available via the book's related Web site. With its insightful treatment of the underlying mathematics in image compression and signal processing, Discrete Fourier Analysis and Wavelets is an ideal book for mathematics, engineering, and computer science courses at the upper-undergraduate and beginning graduate levels. It is also a valuable resource for mathematicians, engineers, and other practitioners who would like to learn more about the relevance of mathematics in digital data processing.

Fractal Analysis of Breast Masses in Mammograms - Thanh Cabral 2012-10-31

Fractal analysis is useful in digital image processing for the characterization of shape roughness and gray-scale texture or complexity. Breast masses present shape and gray-scale characteristics in mammograms that vary between benign masses and malignant tumors.

This book demonstrates the use of fractal analysis to classify breast masses as benign masses or malignant tumors based on the irregularity exhibited in their contours and the gray-scale variability exhibited in their mammographic images. A few different approaches are described to estimate the fractal dimension (FD) of the contour of a mass, including the ruler method, box-counting method, and the power spectral analysis (PSA) method. Procedures are also described for the estimation of the FD of the gray-scale image of a mass using the blanket method and the PSA method. To facilitate comparative analysis of FD as a feature for pattern classification of breast masses, several other shape features and texture measures are described in the book. The shape features described include compactness, spiculation index, fractional concavity, and Fourier factor. The texture measures described are statistical measures derived from the gray-level cooccurrence matrix of the given image.

Texture measures reveal properties about the spatial distribution of the gray levels in the given image; therefore, the performance of texture measures may be dependent on the resolution of the image. For this reason, an analysis of the effect of spatial resolution or pixel size on texture measures in the classification of breast masses is presented in the book. The results demonstrated in the book indicate that fractal analysis is more suitable for characterization of the shape than the gray-level variations of breast masses, with area under the receiver operating characteristics of up to 0.93 with a dataset of 111 mammographic images of masses. The methods and results presented in the book are useful for computer-aided diagnosis of breast cancer. Table of Contents: Computer-Aided Diagnosis of Breast Cancer / Detection and Analysis of Breast Masses / Datasets of Images of Breast Masses / Methods for Fractal Analysis / Pattern Classification / Results of Classification of Breast Masses / Concluding

Remarks

Moment Functions in Image Analysis - R. Mukundan 1998

This book is a comprehensive treatise on the theory and applications of moment functions in image analysis. Moment functions are widely used in various realms of computer vision and image processing. Numerous algorithms and techniques have been developed using image moments, in the areas of pattern recognition object identification, three-dimensional object pose estimation, robot sensing, image coding and reconstruction. This book provides a compilation of the theoretical aspects related to different types of moment functions, and their applications in the above areas. The book is organized into two parts. The first part discusses the fundamental concepts behind important moments such as geometric moments, complex moments, Legendre moments, Zernike moments, and moment tensors. Most of the commonly used properties of moment functions and the

mathematical framework for the derivation of basic theorems and results are discussed in detail. This includes the derivation of moment invariants, implementation aspects of moments, transform properties, and fast methods for computing the moment functions for both binary and gray-level images. The second part presents the key application areas of moments such as pattern recognition, object identification, image-based pose estimation, edge detection, clustering, segmentation, coding and reconstruction. Important algorithms in each of these areas are discussed. A comprehensive list of bibliographical references on image moments is also included.

Two-Dimensional Change Detection Methods -
Murat İlsever 2012-06-24

Change detection using remotely sensed images has many applications, such as urban monitoring, land-cover change analysis, and disaster management. This work investigates two-dimensional change detection methods. The

existing methods in the literature are grouped into four categories: pixel-based, transformation-based, texture analysis-based, and structure-based. In addition to testing existing methods, four new change detection methods are introduced: fuzzy logic-based, shadow detection-based, local feature-based, and bipartite graph matching-based. The latter two methods form the basis for a structural analysis of change detection. Three thresholding algorithms are compared, and their effects on the performance of change detection methods are measured. These tests on existing and novel change detection methods make use of a total of 35 panchromatic and multi-spectral Ikonos image sets. Quantitative test results and their interpretations are provided.

Quality Assessment of Visual Content - Ke
Gu 2022-10-19

This book provides readers with a comprehensive review of image quality assessment technology, particularly applications

on screen content images, 3D-synthesized images, sonar images, enhanced images, light-field images, VR images, and super-resolution images. It covers topics containing structural variation analysis, sparse reference information, multiscale natural scene statistical analysis, task and visual perception, contour degradation measurement, spatial angular measurement, local and global assessment metrics, and more. All of the image quality assessment algorithms of this book have a high efficiency with better performance compared to other image quality assessment algorithms, and the performance of these approaches mentioned above can be demonstrated by the results of experiments on real-world images. On the basis of this, those interested in relevant fields can use the results obtained through these quality assessment algorithms for further image processing. The goal of this book is to facilitate the use of these image quality assessment algorithms by engineers and scientists from various

disciplines, such as optics, electronics, math, photography techniques and computation techniques. The book can serve as a reference for graduate students who are interested in image quality assessment techniques, for front-line researchers practicing these methods, and for domain experts working in this area or conducting related application development.

Handbook of Fourier Analysis & Its Applications

- Robert J Marks II 2009-01-08

This practical, applications-based professional handbook comprehensively covers the theory and applications of Fourier Analysis, spanning topics from engineering mathematics, signal processing and related multidimensional transform theory, and quantum physics to elementary deterministic finance and even the foundations of western music theory.

Modern Vibrational Spectroscopy and Micro-Spectroscopy - Max Diem 2015-06-16

Modern Vibrational Spectroscopy and Micro-Spectroscopy: Theory, Instrumentation and

Biomedical Applications unites the theory and background of conventional vibrational spectroscopy with the principles of microspectroscopy. It starts with basic theory as it applies to small molecules and then expands it to include the large biomolecules which are the main topic of the book with an emphasis on practical experiments, results analysis and medical and diagnostic applications. This book is unique in that it addresses both the parent spectroscopy and the microspectroscopic aspects in one volume. Part I covers the basic theory, principles and instrumentation of classical vibrational, infrared and Raman spectroscopy. It is aimed at researchers with a background in chemistry and physics, and is presented at the level suitable for first year graduate students. The latter half of Part I is devoted to more novel subjects in vibrational spectroscopy, such as resonance and non-linear Raman effects, vibrational optical activity, time resolved spectroscopy and computational

methods. Thus, Part 1 represents a short course into modern vibrational spectroscopy. Part II is devoted in its entirety to applications of vibrational spectroscopic techniques to biophysical and bio-structural research, and the more recent extension of vibrational spectroscopy to microscopic data acquisition. Vibrational microscopy (or microspectroscopy) has opened entirely new avenues toward applications in the biomedical sciences, and has created new research fields collectively referred to as Spectral Cytopathology (SCP) and Spectral Histopathology (SHP). In order to fully exploit the information contained in the micro-spectral datasets, methods of multivariate analysis need to be employed. These methods, along with representative results of both SCP and SHP are presented and discussed in detail in Part II.

Photon Counting Detectors for X-ray Imaging - Hiroaki Hayashi 2021-02-15

This book first provides readers with an introduction to the underlying physics and state-

of-the-art application of photon counting detectors for X-ray imaging. The authors explain that a photon-counting imaging detector can realize quantitative analysis because the detector can derive X-ray attenuation information based on the analysis of intensity changes of individual X-ray. To realize this analysis, it is important to consider the physics of an object and detector material. In this book, the authors introduce a novel analytical procedure to create quantitative X-ray images for medical diagnosis.

Digital Classification of Landsat Data for Vegetation and Land-cover Mapping in the Blackfoot River Watershed, Southeastern Idaho - Lawrence R. Pettinger 1982

A case study, including step-by-step procedures for computer-assisted analysis of Landsat digital data, with emphasis on assessment of classification accuracy and generation of output products.

Teacher Toolkit - Ross Morrison McGill

2015-11-19

Ross Morrison McGill, aka @TeacherToolkit believes that becoming a teacher is one of the best decisions you will ever make, but after more than two decades in the classroom, he knows that it is not an easy journey! Packed with countless anecdotes, from disastrous observations to marking in the broom cupboard, TE@CHER TOOLKIT is a compendium of teaching strategies and advice, which aims to motivate, comfort, amuse and above all reduce the workload of a new teacher. The book includes humorous illustrations, photocopyable templates, a new-look 5 minute plan and QR codes to useful videos. This limited edition hardback version will be an invaluable addition to your school CPD library or a long-lasting bible to keep with you throughout your teaching career. As anyone who has followed him on Twitter knows, Ross is not afraid to share the highs and lows of his own successes and failures. He strives to share great teaching practice, to

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save you time and to ensure you are the best teacher you can be, whatever the new policy or framework. His eagerly-awaited new book continues in this vein and is a must-read for all new teachers. Vitruvian teaching will help you survive your first five years: Year 1: Be resilient (surviving your NQT year) Year 2: Be intelligent (refining your teaching) Year 3: Be innovative (take risks) Year 4: Be collaborative (share and work with others now your classroom practice is secure) Year 5: Be aspirational (moving towards middle leadership) Start working towards Vitruvian today.

Curriculum Making in Europe - Mark Priestley 2021-01-20

In the context of profound social, political and technological changes, recent global trends in education have included the emergence of new forms of curriculum policy. Addressing a gap in the literature, this book investigates the ways in which curriculum policy is influenced, formulated, and enacted in a number of

countries-cases in Europe.

3D Imaging, Analysis and Applications - Yonghuai Liu 2020-09-11

This textbook is designed for postgraduate studies in the field of 3D Computer Vision. It also provides a useful reference for industrial practitioners; for example, in the areas of 3D data capture, computer-aided geometric modelling and industrial quality assurance. This second edition is a significant upgrade of existing topics with novel findings. Additionally, it has new material covering consumer-grade RGB-D cameras, 3D morphable models, deep learning on 3D datasets, as well as new applications in the 3D digitization of cultural heritage and the 3D phenotyping of crops.

Overall, the book covers three main areas: ● 3D imaging, including passive 3D imaging, active triangulation 3D imaging, active time-of-flight 3D imaging, consumer RGB-D cameras, and 3D data representation and visualisation; ● 3D shape analysis, including local descriptors,

registration, matching, 3D morphable models, and deep learning on 3D datasets; and ● 3D applications, including 3D face recognition, cultural heritage and 3D phenotyping of plants. 3D computer vision is a rapidly advancing area in computer science. There are many real-world applications that demand high-performance 3D imaging and analysis and, as a result, many new techniques and commercial products have been developed. However, many challenges remain on how to analyse the captured data in a way that is sufficiently fast, robust and accurate for the application. Such challenges include metrology, semantic segmentation, classification and recognition. Thus, 3D imaging, analysis and their applications remain a highly-active research field that will continue to attract intensive attention from the research community with the ultimate goal of fully automating the 3D data capture, analysis and inference pipeline.

Content-based Microscopic Image Analysis -
Chen Li 2016-05-15

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.

Updating Topographic Map Using Remote Sensing Techniques - Lalitya Narieswari 2012

Image segmentation as basis for object oriented analysis promises high classification accuracy as it also takes structural, textural, contextual and spectral information into account. In this study, vegetation features were extracted on the basis of classification results acquired using the object oriented image analysis and pixel based approaches using fusion of ALOS imagery (PRISM & VNIR) with a spatial resolution of 2.5 m. The main objective of the study is to evaluate the performance of the object oriented image analysis on extracting vegetation features compared to the traditional pixel based classification as an alternative approach for updating the Indonesian topographic map. Beside the accuracy assessment, cost and time assessment was also performed in this study.

Physics at the Terascale - Ian Brock

2011-05-04

Written by authors working at the forefront of research, this accessible treatment presents the current status of the field of collider-based particle physics at the highest energies available, as well as recent results and experimental techniques. It is clearly divided into three sections; The first covers the physics -- discussing the various aspects of the Standard Model as well as its extensions, explaining important experimental results and highlighting the expectations from the Large Hadron Collider (LHC). The second is dedicated to the involved technologies and detector concepts, and the third covers the important - but often neglected - topics of the organisation and financing of high-energy physics research. A useful resource for students and researchers from high-energy physics.

Algorithms Unplugged - Berthold Vöcking

2010-12-10

Algorithms specify the way computers process information and how they execute tasks. Many recent technological innovations and achievements rely on algorithmic ideas - they facilitate new applications in science, medicine, production, logistics, traffic, communication and entertainment. Efficient algorithms not only enable your personal computer to execute the newest generation of games with features unimaginable only a few years ago, they are also key to several recent scientific breakthroughs - for example, the sequencing of the human genome would not have been possible without the invention of new algorithmic ideas that speed up computations by several orders of magnitude. The greatest improvements in the area of algorithms rely on beautiful ideas for tackling computational tasks more efficiently. The problems solved are not restricted to arithmetic tasks in a narrow sense but often relate to exciting questions of nonmathematical flavor, such as: How can I find the exit out of a

maze? How can I partition a treasure map so that the treasure can only be found if all parts of the map are recombined? How should I plan my trip to minimize cost? Solving these challenging problems requires logical reasoning, geometric and combinatorial imagination, and, last but not least, creativity - the skills needed for the design and analysis of algorithms. In this book we present some of the most beautiful algorithmic ideas in 41 articles written in colloquial, nontechnical language. Most of the articles arose out of an initiative among German-language universities to communicate the fascination of algorithms and computer science to high-school students. The book can be understood without any prior knowledge of algorithms and computing, and it will be an enlightening and fun read for students and interested adults.

Visual Saliency: From Pixel-Level to Object-Level Analysis - Jianming Zhang 2019-01-21
This book provides an introduction to recent

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advances in theory, algorithms and application of Boolean map distance for image processing. Applications include modeling what humans find salient or prominent in an image, and then using this for guiding smart image cropping, selective image filtering, image segmentation, image matting, etc. In this book, the authors present methods for both traditional and emerging saliency computation tasks, ranging from classical low-level tasks like pixel-level saliency detection to object-level tasks such as subitizing and salient object detection. For low-level tasks, the authors focus on pixel-level image processing approaches based on efficient distance transform. For object-level tasks, the authors propose data-driven methods using deep convolutional neural networks. The book includes both empirical and theoretical studies, together with implementation details of the proposed methods. Below are the key features for different types of readers. For computer vision and image processing practitioners:

Efficient algorithms based on image distance transforms for two pixel-level saliency tasks; Promising deep learning techniques for two novel object-level saliency tasks; Deep neural network model pre-training with synthetic data; Thorough deep model analysis including useful visualization techniques and generalization tests; Fully reproducible with code, models and datasets available. For researchers interested in the intersection between digital topological theories and computer vision problems: Summary of theoretic findings and analysis of Boolean map distance; Theoretic algorithmic analysis; Applications in salient object detection and eye fixation prediction. Students majoring in image processing, machine learning and computer vision: This book provides up-to-date supplementary reading material for course topics like connectivity based image processing, deep learning for image processing; Some easy-to-implement algorithms for course projects with data provided (as links in the book); Hands-on

programming exercises in digital topology and deep learning.

Subtracting Fractions -

Optimization Models in Steganography

Using Metaheuristics - Dipti Kapoor Sarmah
2020-02-25

This book explores the use of a socio-inspired optimization algorithm (the Cohort Intelligence algorithm), along with Cognitive Computing and a Multi-Random Start Local Search optimization algorithm. One of the most important types of media used for steganography is the JPEG image. Considering four important aspects of steganography techniques - picture quality, high data-hiding capacity, secret text security and computational time - the book provides extensive information on four novel image-based steganography approaches that employ JPEG compression. Academics, scientists and engineers engaged in research, development and application of steganography techniques,

optimization and data analytics will find the book's comprehensive coverage an invaluable resource.

Well Packed - Not a Bit Too Much - Olaf Manz 1901

With today's flood of data circulating on storage media and the Internet, compression of digital data remains an immensely important aspect of data transmission and storage. This essential explains, without theoretical superstructure and with elementary mathematical methods, the most important compression methods, such as the entropy encodings of Shannon-Fano and of Huffman, as well as the dictionary encodings of the Lempel-Ziv family. Irrelevance reduction and quantization for optical and acoustic signals, which exploit the inadequacies of the human eye and ear for data compression, are also discussed in detail. The whole is illustrated by means of common practical applications from the everyday environment. The presentation allows for use in, for example, working groups at

schools, introductory courses at universities, and is also suitable for interested laypersons. This Springer essential is a translation of the original German 1st edition essentials, *Gut gepackt Kein Bit zu viel* by Olaf Manz, published by Springer Fachmedien Wiesbaden GmbH, part of Springer Nature in 2020. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation. Springer Nature works continuously to further the development of tools for the production of books and on the related technologies to support the authors. The Content Data transmission and storage Digitization Overview of data compression methods Entropy encodings Dictionary encodings Quantization The Author Dr. Olaf Manz worked as a research assistant and Heisenberg professor at the mathematical institutes of the universities of

Mainz and Heidelberg. He then worked for many years at Siemens in IT product management and also knows data processing from the practical side. He is the author of the books "Fehlerkorrigierende Codes" and "Verschlüsseln, Signieren, Angreifen" published by Springer *The Confident Teacher* - Alex Quigley 2016-05-20

The Confident Teacher offers a practical, step-by-step guide to developing the habits, characteristics and pedagogy that will enable you to do the best job possible. It unveils the tacit knowledge of great teachers and combines it with respected research and popular psychology. Covering topics such as organisation, using your body language effectively, combatting stress, managing student behaviour, questioning and feedback, and developing confident students, it shows how you can build the confidence and skill to flourish in the classroom. This book will be an essential resource for all qualified and trainee teachers

wanting to reach their full potential in this challenging but rewarding profession.

Thinking Mathematically - John Mason 2010
'Thinking Mathematically' seeks to turn this familiar statement into a promise of opportunity and exploration. The examples provided offer both a contextual and procedural base that students can easily build upon.

Perfect ICT Every Lesson - Mark Anderson
2013-09-30

Technology is at the heart of learning for all of us and every teacher needs to be using social media, mobile technologies and transformational digital learning opportunities as an integral part of their range of strategies for helping students make the maximum progress. In this book in the 'Perfect' series, Mark Anderson, the ICT Evangelist, takes the technology-related elements of all the recent subject reports from Ofsted and using them offers clear and practical strategies that are proven to be successful in classrooms and offers up ideas for

how they can be turned into a daily reality for all teachers.

Imaging Measurement Methods for Flow Analysis - Wolfgang Nitsche 2009-04-08

In 2003 the German Research Foundation established a new priority programme on the subject of "Imaging Measurement Methods for Flow Analysis" (SPP 1147). This research programme was based on the fact that experimental flow analysis, in addition to theory and numerics, has always played a predominant part both in flow research and in other areas of industrial practice. At the time, however, comparisons with numerical tools (such as Computational Fluid Dynamics), which were increasingly used in research and practical applications, soon made it clear that there are relatively few experimental procedures which can keep up with state-of-the-art numerical methods in respect of their informative value, e.g. with regard to visuo-spatial analysis or the dynamics of flow fields. The priority programme

“Imaging Measurement Methods for Flow Analysis” was to help close this development gap. Hence the project was to focus on the investigation of efficient measurement methods to analyse complex spatial flow fields. Specific

cooperations with computer sciences and especially measurement physics were to advance flow measurement techniques to a widely renowned key technology, exceeding the classical fields of fluid mechanics by a long chalk.