

Age Recognition Opencv Source Code

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International Conference on Artificial Intelligence and Sustainable Engineering - Goutam Sanyal

This book comprises select papers from the International Conference on Artificial Intelligence and Sustainable Engineering (AISE 2020). The volume focuses on the recent advancements in artificial intelligence and addresses how it is useful in achieving truly sustainable solutions. The key strands of this book include artificial intelligence in healthcare, IoT for modern life, security and surveillance, big data analytics, machine learning and computing, communication technologies, gesture technology, virtual intelligence, and audio & speech processing. The book addresses sustainability challenges in various computing techniques and opportunities for sustainable engineering based on AI and supporting tools such as engineering design for sustainable development using IoT/AI, smart cities: waste minimization, remanufacturing, reuse and recycling technologies using IoT/AI, industry 4.0, intelligent and smart grid systems, energy conservation using technology, green engineering/technology, robotic process automation (RPA) and water and air quality management. This book can be a valuable resource for academicians, researchers, and professionals working in AI and its applications.

InECCE2019 - Ahmad Nor Kasruddin Nasir 2020-03-23

This book presents the proceedings of the 5th International Conference on Electrical, Control & Computer Engineering 2019, held in Kuantan, Pahang, Malaysia, on 29th July 2019. Consisting of two parts, it covers the conferences' main foci: Part 1 discusses instrumentation, robotics and control, while Part 2 addresses electrical power systems. The book appeals to professionals, scientists and researchers with experience in industry. The conference provided a platform for professionals, scientists and researchers with experience in industry.

Encyclopedia of Information Science and Technology, Fourth Edition - Khosrow-Pour, D.B.A., Mehdi 2017-06-20

In recent years, our world has experienced a profound shift and progression in available computing and knowledge sharing innovations. These emerging advancements have developed at a rapid pace, disseminating into and affecting numerous aspects of contemporary society. This has created a pivotal need for an innovative compendium encompassing the latest trends, concepts, and issues surrounding this relevant discipline area. During the past 15 years, the Encyclopedia of Information Science and Technology has become recognized as one of the landmark sources of the latest knowledge and discoveries in this discipline. The Encyclopedia of Information Science and Technology, Fourth Edition is a 10-volume set which includes 705 original and

previously unpublished research articles covering a full range of perspectives, applications, and techniques contributed by thousands of experts and researchers from around the globe. This authoritative encyclopedia is an all-encompassing, well-established reference source that is ideally designed to disseminate the most forward-thinking and diverse research findings. With critical perspectives on the impact of information science management and new technologies in modern settings, including but not limited to computer science, education, healthcare, government, engineering, business, and natural and physical sciences, it is a pivotal and relevant source of knowledge that will benefit every professional within the field of information science and technology and is an invaluable addition to every academic and corporate library.

OpenCV By Example - Prateek Joshi 2016-01-22

Enhance your understanding of Computer Vision and image processing by developing real-world projects in OpenCV 3 About This Book Get to grips with the basics of Computer Vision and image processing This is a step-by-step guide to developing several real-world Computer Vision projects using OpenCV 3 This book takes a special focus on working with Tesseract OCR, a free, open-source library to recognize text in images Who This Book Is For If you are a software developer with a basic understanding of Computer Vision and image processing and want to develop interesting Computer Vision applications with Open CV, this is the book for you. Knowledge of C++ is required. What You Will Learn Install OpenCV 3 on your operating system Create the required CMake scripts to compile the C++ application and manage its dependencies Get to grips with the Computer Vision workflows and understand the basic image matrix format and filters Understand the segmentation and feature extraction techniques Remove backgrounds from a static scene to identify moving objects for video surveillance Track different objects in a live video using various techniques Use the new OpenCV functions for text detection and recognition with Tesseract In Detail Open CV is a cross-platform, free-for-use library that is primarily used for real-time Computer Vision and image processing. It is considered to be one of the best open source libraries that helps developers focus on constructing

complete projects on image processing, motion detection, and image segmentation. Whether you are completely new to the concept of Computer Vision or have a basic understanding of it, this book will be your guide to understanding the basic OpenCV concepts and algorithms through amazing real-world examples and projects. Starting from the installation of OpenCV on your system and understanding the basics of image processing, we swiftly move on to creating optical flow video analysis or text recognition in complex scenes, and will take you through the commonly used Computer Vision techniques to build your own Open CV projects from scratch. By the end of this book, you will be familiar with the basics of Open CV such as matrix operations, filters, and histograms, as well as more advanced concepts such as segmentation, machine learning, complex video analysis, and text recognition. Style and approach This book is a practical guide with lots of tips, and is closely focused on developing Computer vision applications with OpenCV. Beginning with the fundamentals, the complexity increases with each chapter. Sample applications are developed throughout the book that you can execute and use in your own projects.

Qt 5 and OpenCV 4 Computer Vision Projects - Zhuo Qingliang 2019-06-21

Create image processing, object detection and face recognition apps by leveraging the power of machine learning and deep learning with OpenCV 4 and Qt 5 Key Features Gain practical insights into code for all projects covered in this book Understand modern computer vision concepts such as character recognition, image processing and modification Learn to use a graphics processing unit (GPU) and its parallel processing power for filtering images quickly Book Description OpenCV and Qt have proven to be a winning combination for developing cross-platform computer vision applications. By leveraging their power, you can create robust applications with both an intuitive graphical user interface (GUI) and high-performance capabilities. This book will help you learn through a variety of real-world projects on image processing, face and text recognition, object detection, and high-performance computing. You'll be able to progressively build on your skills by working

on projects of increasing complexity. You'll begin by creating an image viewer application, building a user interface from scratch by adding menus, performing actions based on key-presses, and applying other functions. As you progress, the book will guide you through using OpenCV image processing and modification functions to edit an image with filters and transformation features. In addition to this, you'll explore the complex motion analysis and facial landmark detection algorithms, which you can use to build security and face detection applications. Finally, you'll learn to use pretrained deep learning models in OpenCV and GPUs to filter images quickly. By the end of this book, you will have learned how to effectively develop full-fledged computer vision applications with OpenCV and Qt. What you will learn

- Create an image viewer with all the basic requirements
- Construct an image editor to filter or transform images
- Develop a security app to detect movement and secure homes
- Build an app to detect facial landmarks and apply masks to faces
- Create an app to extract text from scanned documents and photos
- Train and use cascade classifiers and DL models for object detection
- Build an app to measure the distance between detected objects
- Implement high-speed image filters on GPU with Open Graphics Library (OpenGL)

Who this book is for This book is for engineers and developers who are familiar with both Qt and OpenCV frameworks and are capable of creating simple projects using them, but want to build their skills to create professional-level projects using them. Familiarity with the C++ language is a must to follow the example source codes in this book.

Graphics Interface 2014 - Paul G. Kry 2020-11-26

This book is the proceedings of the 40th annual Graphics Interface conference-the oldest continuously scheduled conference in the field. The book includes high-quality papers on recent advances in interactive systems, human computer interaction, and graphics from around the world. It covers the following topics: shading and rendering, geometric modeling and meshing, image-based rendering, image synthesis and realism, computer animation, real-time rendering, non-photorealistic rendering, interaction techniques, human interface devices, augmented

reality, data and information visualization, mobile computing, haptic and tangible interfaces, and perception.

Mastering OpenCV 4 - Roy Shilkrot 2018-12-27

Work on practical computer vision projects covering advanced object detector techniques and modern deep learning and machine learning algorithms

Key Features

- Learn about the new features that help unlock the full potential of OpenCV 4
- Build face detection applications with a cascade classifier using face landmarks
- Create an optical character recognition (OCR) model using deep learning and convolutional neural networks

Book Description

Mastering OpenCV, now in its third edition, targets computer vision engineers taking their first steps toward mastering OpenCV. Keeping the mathematical formulations to a solid but bare minimum, the book delivers complete projects from ideation to running code, targeting current hot topics in computer vision such as face recognition, landmark detection and pose estimation, and number recognition with deep convolutional networks. You'll learn from experienced OpenCV experts how to implement computer vision products and projects both in academia and industry in a comfortable package. You'll get acquainted with API functionality and gain insights into design choices in a complete computer vision project. You'll also go beyond the basics of computer vision to implement solutions for complex image processing projects. By the end of the book, you will have created various working prototypes with the help of projects in the book and be well versed with the new features of OpenCV4. What you will learn

- Build real-world computer vision problems with working OpenCV code samples
- Uncover best practices in engineering and maintaining OpenCV projects
- Explore algorithmic design approaches for complex computer vision tasks
- Work with OpenCV's most updated API (v4.0.0) through projects
- Understand 3D scene reconstruction and Structure from Motion (SfM)
- Study camera calibration and overlay AR using the ArUco Module

Who this book is for This book is for those who have a basic knowledge of OpenCV and are competent C++ programmers. You need to have an understanding of some of the more theoretical/mathematical concepts, as we move quite quickly throughout the book.

Learn OpenCV 4 by Building Projects - David Millán Escrivá
2018-11-30

Explore OpenCV 4 to create visually appealing cross-platform computer vision applications

Key Features

- Understand basic OpenCV 4 concepts and algorithms
- Grasp advanced OpenCV techniques such as 3D reconstruction, machine learning, and artificial neural networks

Work with Tesseract OCR, an open-source library to recognize text in images

Book Description OpenCV is one of the best open source libraries available, and can help you focus on constructing complete projects on image processing, motion detection, and image segmentation. Whether you're completely new to computer vision, or have a basic understanding of its concepts, *Learn OpenCV 4 by Building Projects - Second edition* will be your guide to understanding OpenCV concepts and algorithms through real-world examples and projects. You'll begin with the installation of OpenCV and the basics of image processing. Then, you'll cover user interfaces and get deeper into image processing. As you progress through the book, you'll learn complex computer vision algorithms and explore machine learning and face detection. The book then guides you in creating optical flow video analysis and background subtraction in complex scenes. In the concluding chapters, you'll also learn about text segmentation and recognition and understand the basics of the new and improved deep learning module. By the end of this book, you'll be familiar with the basics of Open CV, such as matrix operations, filters, and histograms, and you'll have mastered commonly used computer vision techniques to build OpenCV projects from scratch. What you will learn

- Install OpenCV 4 on your operating system
- Create CMake scripts to compile your C++ application
- Understand basic image matrix formats and filters
- Explore segmentation and feature extraction techniques
- Remove backgrounds from static scenes to identify moving objects for surveillance
- Employ various techniques to track objects in a live video
- Work with new OpenCV functions for text detection and recognition with Tesseract
- Get acquainted with important deep learning tools for image classification

Who this book is for If you are a software developer with a basic understanding of computer vision and image

processing and want to develop interesting computer vision applications with OpenCV, *Learn OpenCV 4 by Building Projects* for you. Prior knowledge of C++ will help you understand the concepts covered in this book.

Dr. Dobb's Journal - 2000

Computer Vision with SAS - Susan Kahler 2020-07-22

Computer vision is a field of artificial intelligence that trains computers to interpret and understand the visual world. In recent years, computer vision has begun to rival and even surpass human visual abilities in many areas. SAS offers many different solutions to train computers to "see" by identifying and classifying objects, and several groundbreaking papers have been written to demonstrate these techniques. The papers included in this special collection demonstrate how the latest computer vision tools and techniques can be used to solve a variety of business problems.

Computer Vision -- ACCV 2014 - Daniel Cremers 2015-04-16

The five-volume set LNCS 9003--9007 constitutes the thoroughly refereed post-conference proceedings of the 12th Asian Conference on Computer Vision, ACCV 2014, held in Singapore, Singapore, in November 2014. The total of 227 contributions presented in these volumes was carefully reviewed and selected from 814 submissions. The papers are organized in topical sections on recognition; 3D vision; low-level vision and features; segmentation; face and gesture, tracking; stereo, physics, video and events; and poster sessions 1-3.

Dr. Dobb's Journal of Software Tools for the Professional Programmer - 2000

Learning OpenCV 4 Computer Vision with Python 3 - Joseph Howse
2020-02-20

Updated for OpenCV 4 and Python 3, this book covers the latest on depth cameras, 3D tracking, augmented reality, and deep neural networks, helping you solve real-world computer vision problems with practical code

Key Features

- Build powerful computer vision applications in concise code with OpenCV 4 and Python 3
- Learn the fundamental

concepts of image processing, object classification, and 2D and 3D tracking Train, use, and understand machine learning models such as Support Vector Machines (SVMs) and neural networks Book Description Computer vision is a rapidly evolving science, encompassing diverse applications and techniques. This book will not only help those who are getting started with computer vision but also experts in the domain. You'll be able to put theory into practice by building apps with OpenCV 4 and Python 3. You'll start by understanding OpenCV 4 and how to set it up with Python 3 on various platforms. Next, you'll learn how to perform basic operations such as reading, writing, manipulating, and displaying still images, videos, and camera feeds. From taking you through image processing, video analysis, and depth estimation and segmentation, to helping you gain practice by building a GUI app, this book ensures you'll have opportunities for hands-on activities. Next, you'll tackle two popular challenges: face detection and face recognition. You'll also learn about object classification and machine learning concepts, which will enable you to create and use object detectors and classifiers, and even track objects in movies or video camera feed. Later, you'll develop your skills in 3D tracking and augmented reality. Finally, you'll cover ANNs and DNNs, learning how to develop apps for recognizing handwritten digits and classifying a person's gender and age. By the end of this book, you'll have the skills you need to execute real-world computer vision projects. What you will learn Install and familiarize yourself with OpenCV 4's Python 3 bindings Understand image processing and video analysis basics Use a depth camera to distinguish foreground and background regions Detect and identify objects, and track their motion in videos Train and use your own models to match images and classify objects Detect and recognize faces, and classify their gender and age Build an augmented reality application to track an image in 3D Work with machine learning models, including SVMs, artificial neural networks (ANNs), and deep neural networks (DNNs) Who this book is for If you are interested in learning computer vision, machine learning, and OpenCV in the context of practical real-world applications, then this book is for you. This OpenCV book will also be useful for anyone getting started with

computer vision as well as experts who want to stay up-to-date with OpenCV 4 and Python 3. Although no prior knowledge of image processing, computer vision or machine learning is required, familiarity with basic Python programming is a must.

Smart Systems Design, Applications, and Challenges - Rodrigues, João M.F. 2020-02-28

Smart systems when connected to artificial intelligence (AI) are still closely associated with some popular misconceptions that cause the general public to either have unrealistic fears about AI or to expect too much about how it will change our workplace and life in general. It is important to show that such fears are unfounded, and that new trends, technologies, and smart systems will be able to improve the way we live, benefiting society without replacing humans in their core activities. Smart Systems Design, Applications, and Challenges provides emerging research that presents state-of-the-art technologies and available systems in the domains of smart systems and AI and explains solutions from an augmented intelligence perspective, showing that these technologies can be used to benefit, instead of replace, humans by augmenting the information and actions of their daily lives. The book addresses all smart systems that incorporate functions of sensing, actuation, and control in order to describe and analyze a situation and make decisions based on the available data in a predictive or adaptive manner. Highlighting a broad range of topics such as business intelligence, cloud computing, and autonomous vehicles, this book is ideally designed for engineers, investigators, IT professionals, researchers, developers, data analysts, professors, and students.

Mastering OpenCV 3 - Second Edition - Daniel Lélis Baggio 2017-04-28

Practical Computer Vision Projects About This Book* Updated for OpenCV 3, this book covers new features that will help you unlock the full potential of OpenCV 3* Written by a team of 7 experts, each chapter explores a new aspect of OpenCV to help you make amazing computer-vision aware applications* Project-based approach with each chapter being a complete tutorial, showing you how to apply OpenCV to solve

complete problems Who This Book Is For This book is for those who have a basic knowledge of OpenCV and are competent C++ programmers. You need to have an understanding of some of the more theoretical/mathematical concepts, as we move quite quickly throughout the book. What You Will Learn* Execute basic image processing operations and cartoonify an image* Build an OpenCV project natively with Raspberry Pi and cross-compile it for Raspberry Pi. text* Extend the natural feature tracking algorithm to support the tracking of multiple image targets on a video* Use OpenCV 3's new 3D visualization framework to illustrate the 3D scene geometry* Create an application for Automatic Number Plate Recognition (ANPR) using a support vector machine and Artificial Neural Networks* Train and predict pattern-recognition algorithms to decide whether an image is a number plate* Use POSIT for the six degrees of freedom head pose* Train a face recognition database using deep learning and recognize faces from that database In Detail As we become more capable of handling data in every kind, we are becoming more reliant on visual input and what we can do with those self-driving cars, face recognition, and even augmented reality applications and games. This is all powered by Computer Vision. This book will put you straight to work in creating powerful and unique computer vision applications. Each chapter is structured around a central project and deep dives into an important aspect of OpenCV such as facial recognition, image target tracking, making augmented reality applications, the 3D visualization framework, and machine learning. You'll learn how to make AI that can remember and use neural networks to help your applications learn. By the end of the book, you will have created various working prototypes with the projects in the book and will be well versed with the new features of OpenCV3. Style and approach This book takes a project-based approach and helps you learn about the new features by putting them to work by implementing them in your own projects.

Handbook of Signal Processing Systems - Shuvra S. Bhattacharyya
2018-10-13

In this new edition of the Handbook of Signal Processing Systems, many

of the chapters from the previous editions have been updated, and several new chapters have been added. The new contributions include chapters on signal processing methods for light field displays, throughput analysis of dataflow graphs, modeling for reconfigurable signal processing systems, fast Fourier transform architectures, deep neural networks, programmable architectures for histogram of oriented gradients processing, high dynamic range video coding, system-on-chip architectures for data analytics, analysis of finite word-length effects in fixed-point systems, and models of architecture. There are more than 700 tables and illustrations; in this edition over 300 are in color. This new edition of the handbook is organized in three parts. Part I motivates representative applications that drive and apply state-of-the-art methods for design and implementation of signal processing systems; Part II discusses architectures for implementing these applications; and Part III focuses on compilers, as well as models of computation and their associated design tools and methodologies.

OpenCV 3.0 Computer Vision with Java - Daniel Lélis Baggio
2015-07-30

OpenCV 3.0 Computer Vision with Java is a practical tutorial guide that explains fundamental tasks from computer vision while focusing on Java development. This book will teach you how to set up OpenCV for Java and handle matrices using the basic operations of image processing such as filtering and image transforms. It will also help you learn how to use Haar cascades for tracking faces and to detect foreground and background regions with the help of a Kinect device. It will even give you insights into server-side OpenCV. Each chapter is presented with several projects that are ready to use. The functionality of these projects is found in many classes that allow developers to understand computer vision principles and rapidly extend or customize the projects for their needs.

Learning OpenCV 3 - Adrian Kaehler 2016-12-14

"This book provides a working guide to the C++ Open Source Computer Vision Library (OpenCV) version 3.x and gives a general background on the field of computer vision sufficient to help readers use OpenCV effectively."--Preface.

Advances in Distributed Computing and Machine Learning - Jyoti Prakash Sahoo 2021

This book presents recent advances in the field of scalable distributed computing including state-of-the-art research in the field of Cloud Computing, the Internet of Things (IoT), and Blockchain in distributed environments along with applications and findings in broad areas including Data Analytics, AI, and Machine Learning to address complex real-world problems. It features selected high-quality research papers from the 2nd International Conference on Advances in Distributed Computing and Machine Learning (ICADCML 2021), organized by the Department of Computer Science and Information Technology, Institute of Technical Education and Research (ITER), Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, India.

Computer Vision Metrics - Scott Krig 2014-06-14

Computer Vision Metrics provides an extensive survey and analysis of over 100 current and historical feature description and machine vision methods, with a detailed taxonomy for local, regional and global features. This book provides necessary background to develop intuition about why interest point detectors and feature descriptors actually work, how they are designed, with observations about tuning the methods for achieving robustness and invariance targets for specific applications. The survey is broader than it is deep, with over 540 references provided to dig deeper. The taxonomy includes search methods, spectra components, descriptor representation, shape, distance functions, accuracy, efficiency, robustness and invariance attributes, and more. Rather than providing 'how-to' source code examples and shortcuts, this book provides a counterpoint discussion to the many fine opencv community source code resources available for hands-on practitioners.

Towards Autonomous Robotic Systems - Charles Fox 2021-10-30

The volume LNAI 13054 constitutes the refereed proceedings of the 22th Annual Conference Towards Autonomous Robotic Systems, TAROS 2021, held in Lincoln, UK, in September 2021. *The 45 full papers were carefully reviewed and selected from 66 submissions. Organized in the topical sections "Algorithms" and "Systems", they discuss significant

findings and advances in the following areas: artificial intelligence; mechatronics; image processing and computer vision; special purpose and application-based systems; user interfaces and human computer interaction. * The conference was held virtually due to the COVID-19 pandemic.

Artificial Intelligence with Python - Prateek Joshi 2017-01-27

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and regression techniques Understand the concept of clustering and how to use it to automatically segment data See how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to

use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

Deep Learners and Deep Learner Descriptors for Medical Applications - Loris Nanni 2020-05-15

This book introduces readers to the current trends in using deep learners and deep learner descriptors for medical applications. It reviews the recent literature and presents a variety of medical image and sound applications to illustrate the five major ways deep learners can be utilized: 1) by training a deep learner from scratch (chapters provide tips for handling imbalances and other problems with the medical data); 2) by implementing transfer learning from a pre-trained deep learner and extracting deep features for different CNN layers that can be fed into simpler classifiers, such as the support vector machine; 3) by fine-tuning one or more pre-trained deep learners on an unrelated dataset so that they are able to identify novel medical datasets; 4) by fusing different deep learner architectures; and 5) by combining the above methods to generate a variety of more elaborate ensembles. This book is a value resource for anyone involved in engineering deep learners for medical applications as well as to those interested in learning more about the current techniques in this exciting field. A number of chapters provide source code that can be used to investigate topics further or to kick-start new projects.

INCREaSE 2019 - Janio Monteiro 2019-09-19

This book contains the proceedings of the INternational CongRess on

Engineering and Sustainability in the XXI cEntury - INCREaSE 2019, which was held in Faro, Portugal, from October 09 to 11, 2019. The book promotes a multidisciplinary approach to sustainable development, exploring a number of transversal challenges. Among other topics it discusses Climate Changes and Environmental Protection; Renewable Energy; Energy Efficiency in Buildings; Green Governance and Mobility; Water for Ecosystem and Society; Healthy Food; Sustainable Construction; and Sustainable Tourism, offering perspectives from civil, electronics, mechanical, and food engineering.

Building Computer Vision Projects with OpenCV 4 and C++ - David Millán Escrivá 2019-03-26

Delve into practical computer vision and image processing projects and get up to speed with advanced object detection techniques and machine learning algorithms Key Features Discover best practices for engineering and maintaining OpenCV projects Explore important deep learning tools for image classification Understand basic image matrix formats and filters Book Description OpenCV is one of the best open source libraries available and can help you focus on constructing complete projects on image processing, motion detection, and image segmentation. This Learning Path is your guide to understanding OpenCV concepts and algorithms through real-world examples and activities. Through various projects, you'll also discover how to use complex computer vision and machine learning algorithms and face detection to extract the maximum amount of information from images and videos. In later chapters, you'll learn to enhance your videos and images with optical flow analysis and background subtraction. Sections in the Learning Path will help you get to grips with text segmentation and recognition, in addition to guiding you through the basics of the new and improved deep learning modules. By the end of this Learning Path, you will have mastered commonly used computer vision techniques to build OpenCV projects from scratch. This Learning Path includes content from the following Packt books: *Mastering OpenCV 4 - Third Edition* by Roy Shilkrot and David Millán Escrivá *Learn OpenCV 4 By Building Projects - Second Edition* by David Millán Escrivá, Vinícius G. Mendonça, and Prateek Joshi What you will

learnStay up-to-date with algorithmic design approaches for complex computer vision tasksWork with OpenCV's most up-to-date API through various projectsUnderstand 3D scene reconstruction and Structure from Motion (SfM)Study camera calibration and overlay augmented reality (AR) using the ArUco moduleCreate CMake scripts to compile your C++ applicationExplore segmentation and feature extraction techniquesRemove backgrounds from static scenes to identify moving objects for surveillanceWork with new OpenCV functions to detect and recognize text with TesseractWho this book is for If you are a software developer with a basic understanding of computer vision and image processing and want to develop interesting computer vision applications with OpenCV, this Learning Path is for you. Prior knowledge of C++ and familiarity with mathematical concepts will help you better understand the concepts in this Learning Path.

Deep Learning for Time Series Forecasting - Jason Brownlee

2018-08-30

Deep learning methods offer a lot of promise for time series forecasting, such as the automatic learning of temporal dependence and the automatic handling of temporal structures like trends and seasonality. With clear explanations, standard Python libraries, and step-by-step tutorial lessons you'll discover how to develop deep learning models for your own time series forecasting projects.

Deep Learning for Computer Vision - Jason Brownlee 2019-04-04

Step-by-step tutorials on deep learning neural networks for computer vision in python with Keras.

[Algorithms for Image Processing and Computer Vision](#) - J. R. Parker

2010-11-29

A cookbook of algorithms for common image processing applications Thanks to advances in computer hardware and software, algorithms have been developed that support sophisticated image processing without requiring an extensive background in mathematics. This bestselling book has been fully updated with the newest of these, including 2D vision methods in content-based searches and the use of graphics cards as image processing computational aids. It's an ideal reference for software

engineers and developers, advanced programmers, graphics programmers, scientists, and other specialists who require highly specialized image processing. Algorithms now exist for a wide variety of sophisticated image processing applications required by software engineers and developers, advanced programmers, graphics programmers, scientists, and related specialists This bestselling book has been completely updated to include the latest algorithms, including 2D vision methods in content-based searches, details on modern classifier methods, and graphics cards used as image processing computational aids Saves hours of mathematical calculating by using distributed processing and GPU programming, and gives non-mathematicians the shortcuts needed to program relatively sophisticated applications. Algorithms for Image Processing and Computer Vision, 2nd Edition provides the tools to speed development of image processing applications.

Machine Learning for OpenCV - Michael Beyeler 2017-07-14

Expand your OpenCV knowledge and master key concepts of machine learning using this practical, hands-on guide. About This Book Load, store, edit, and visualize data using OpenCV and Python Grasp the fundamental concepts of classification, regression, and clustering Understand, perform, and experiment with machine learning techniques using this easy-to-follow guide Evaluate, compare, and choose the right algorithm for any task Who This Book Is For This book targets Python programmers who are already familiar with OpenCV; this book will give you the tools and understanding required to build your own machine learning systems, tailored to practical real-world tasks. What You Will Learn Explore and make effective use of OpenCV's machine learning module Learn deep learning for computer vision with Python Master linear regression and regularization techniques Classify objects such as flower species, handwritten digits, and pedestrians Explore the effective use of support vector machines, boosted decision trees, and random forests Get acquainted with neural networks and Deep Learning to address real-world problems Discover hidden structures in your data using k-means clustering Get to grips with data pre-processing and

feature engineering In Detail Machine learning is no longer just a buzzword, it is all around us: from protecting your email, to automatically tagging friends in pictures, to predicting what movies you like. Computer vision is one of today's most exciting application fields of machine learning, with Deep Learning driving innovative systems such as self-driving cars and Google's DeepMind. OpenCV lies at the intersection of these topics, providing a comprehensive open-source library for classic as well as state-of-the-art computer vision and machine learning algorithms. In combination with Python Anaconda, you will have access to all the open-source computing libraries you could possibly ask for. Machine learning for OpenCV begins by introducing you to the essential concepts of statistical learning, such as classification and regression. Once all the basics are covered, you will start exploring various algorithms such as decision trees, support vector machines, and Bayesian networks, and learn how to combine them with other OpenCV functionality. As the book progresses, so will your machine learning skills, until you are ready to take on today's hottest topic in the field: Deep Learning. By the end of this book, you will be ready to take on your own machine learning problems, either by building on the existing source code or developing your own algorithm from scratch! Style and approach OpenCV machine learning connects the fundamental theoretical principles behind machine learning to their practical applications in a way that focuses on asking and answering the right questions. This book walks you through the key elements of OpenCV and its powerful machine learning classes, while demonstrating how to get to grips with a range of models.

Deep Learning with Python - Francois Chollet 2017-11-30

Summary Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher François Chollet, this book builds your understanding through intuitive explanations and practical examples. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Machine learning has made remarkable progress in recent

years. We went from near-unusable speech and image recognition, to near-human accuracy. We went from machines that couldn't beat a serious Go player, to defeating a world champion. Behind this progress is deep learning—a combination of engineering advances, best practices, and theory that enables a wealth of previously impossible smart applications. About the Book Deep Learning with Python introduces the field of deep learning using the Python language and the powerful Keras library. Written by Keras creator and Google AI researcher François Chollet, this book builds your understanding through intuitive explanations and practical examples. You'll explore challenging concepts and practice with applications in computer vision, natural-language processing, and generative models. By the time you finish, you'll have the knowledge and hands-on skills to apply deep learning in your own projects. What's Inside Deep learning from first principles Setting up your own deep-learning environment Image-classification models Deep learning for text and sequences Neural style transfer, text generation, and image generation About the Reader Readers need intermediate Python skills. No previous experience with Keras, TensorFlow, or machine learning is required. About the Author François Chollet works on deep learning at Google in Mountain View, CA. He is the creator of the Keras deep-learning library, as well as a contributor to the TensorFlow machine-learning framework. He also does deep-learning research, with a focus on computer vision and the application of machine learning to formal reasoning. His papers have been published at major conferences in the field, including the Conference on Computer Vision and Pattern Recognition (CVPR), the Conference and Workshop on Neural Information Processing Systems (NIPS), the International Conference on Learning Representations (ICLR), and others. Table of Contents PART 1 - FUNDAMENTALS OF DEEP LEARNING What is deep learning? Before we begin: the mathematical building blocks of neural networks Getting started with neural networks Fundamentals of machine learning PART 2 - DEEP LEARNING IN PRACTICE Deep learning for computer vision Deep learning for text and sequences Advanced deep-learning best practices Generative deep learning Conclusions appendix A

- Installing Keras and its dependencies on Ubuntu appendix B - Running Jupyter notebooks on an EC2 GPU instance

Beyond the Basic Stuff with Python - Al Sweigart 2020-12-16

BRIDGE THE GAP BETWEEN NOVICE AND PROFESSIONAL You've completed a basic Python programming tutorial or finished Al Sweigart's bestseller, Automate the Boring Stuff with Python. What's the next step toward becoming a capable, confident software developer? Welcome to Beyond the Basic Stuff with Python. More than a mere collection of advanced syntax and masterful tips for writing clean code, you'll learn how to advance your Python programming skills by using the command line and other professional tools like code formatters, type checkers, linters, and version control. Sweigart takes you through best practices for setting up your development environment, naming variables, and improving readability, then tackles documentation, organization and performance measurement, as well as object-oriented design and the Big-O algorithm analysis commonly used in coding interviews. The skills you learn will boost your ability to program--not just in Python but in any language. You'll learn: Coding style, and how to use Python's Black auto-formatting tool for cleaner code Common sources of bugs, and how to detect them with static analyzers How to structure the files in your code projects with the Cookiecutter template tool Functional programming techniques like lambda and higher-order functions How to profile the speed of your code with Python's built-in timeit and cProfile modules The computer science behind Big-O algorithm analysis How to make your comments and docstrings informative, and how often to write them How to create classes in object-oriented programming, and why they're used to organize code Toward the end of the book you'll read a detailed source-code breakdown of two classic command-line games, the Tower of Hanoi (a logic puzzle) and Four-in-a-Row (a two-player tile-dropping game), and a breakdown of how their code follows the book's best practices. You'll test your skills by implementing the program yourself. Of course, no single book can make you a professional software developer. But Beyond the Basic Stuff with Python will get you further down that path and make you a better programmer, as you learn to write

readable code that's easy to debug and perfectly Pythonic Requirements: Covers Python 3.6 and higher

Communication Software and Networks - Suresh Chandra Satapathy 2020-10-03

This book highlights a collection of high-quality peer-reviewed research papers presented at the Sixth International Conference on Information System Design and Intelligent Applications (INDIA 2019), held at Lendi Institute of Engineering & Technology, Vizianagaram, Andhra Pradesh, India, from 1 to 2 November 2019. It covers a wide range of topics in computer science and information technology, from wireless networks, social networks, wireless sensor networks, information and network security, to web security, Internet of Things, bioinformatics, geoinformatics and computer networks.

Practical Machine Learning and Image Processing - Himanshu Singh 2019-02-26

Gain insights into image-processing methodologies and algorithms, using machine learning and neural networks in Python. This book begins with the environment setup, understanding basic image-processing terminology, and exploring Python concepts that will be useful for implementing the algorithms discussed in the book. You will then cover all the core image processing algorithms in detail before moving onto the biggest computer vision library: OpenCV. You'll see the OpenCV algorithms and how to use them for image processing. The next section looks at advanced machine learning and deep learning methods for image processing and classification. You'll work with concepts such as pulse coupled neural networks, AdaBoost, XG boost, and convolutional neural networks for image-specific applications. Later you'll explore how models are made in real time and then deployed using various DevOps tools. All the concepts in Practical Machine Learning and Image Processing are explained using real-life scenarios. After reading this book you will be able to apply image processing techniques and make machine learning models for customized application. What You Will Learn Discover image-processing algorithms and their applications using Python Explore image processing using the OpenCV library Use

TensorFlow, scikit-learn, NumPy, and other libraries Work with machine learning and deep learning algorithms for image processing Apply image-processing techniques to five real-time projects Who This Book Is For Data scientists and software developers interested in image processing and computer vision.

Mastering OpenCV with Practical Computer Vision Projects -

Daniel Lélis Baggio 2012-12-03

Each chapter in the book is an individual project and each project is constructed with step-by-step instructions, clearly explained code, and includes the necessary screenshots. You should have basic OpenCV and C/C++ programming experience before reading this book, as it is aimed at Computer Science graduates, researchers, and computer vision experts widening their expertise.

Deep Learning in Medical Image Analysis - Gobert Lee 2020-02-06

This book presents cutting-edge research and applications of deep learning in a broad range of medical imaging scenarios, such as computer-aided diagnosis, image segmentation, tissue recognition and classification, and other areas of medical and healthcare problems. Each of its chapters covers a topic in depth, ranging from medical image synthesis and techniques for musculoskeletal analysis to diagnostic tools for breast lesions on digital mammograms and glaucoma on retinal fundus images. It also provides an overview of deep learning in medical image analysis and highlights issues and challenges encountered by researchers and clinicians, surveying and discussing practical approaches in general and in the context of specific problems. Academics, clinical and industry researchers, as well as young researchers and graduate students in medical imaging, computer-aided-diagnosis, biomedical engineering and computer vision will find this book a great reference and very useful learning resource.

Face validation using skin, eyes and mouth detection - Б. Зено 2022-01-27

В реальных изображениях лиц большие визуальные вариации, такие как различия в выражении лица, его позиции, разный масштаб и освещение, наличие преград перед лицами и другие, вызывают

трудности при отличии лица от фона изображения. В результате возникают области изображений, которые неправильно распознаются как лица (ошибки первого рода), тогда как эффективность алгоритмов распознавания лиц характеризуется низким числом таких ошибок, высокой скоростью обнаружения лиц и высокой скоростью обработки изображений. Таким образом, чтобы уменьшить число описанных областей, вместо того, чтобы разрабатывать точный алгоритм обнаружения лиц, который требует больших временных затрат на работу, после первичного обнаружения лиц будет добавлен этап их валидации. В настоящей статье предлагается новый быстрый метод валидации лиц. Он состоит из двух этапов: первый - определение кожи с использованием метода анализа значений YCbCr-цвета; второй шаг - обнаружение глаз и рта с использованием каскадного подхода. На втором этапе область лица-кандидата делится на две перекрывающиеся области, одна для модели обнаружения глаз, а другая для модели обнаружения рта. Алгоритм обнаружения лиц, основанный на методе опорных векторов, использовался для сравнения с предлагаемым решением. Результаты экспериментов на наборе данных Fddb показали лучшую производительность предлагаемого метода (время валидации 2 мс по сравнению с 500 мс у алгоритма, основанного на методе опорных векторов) при схожем числе ошибок первого рода.

2021 International Conference on Engineering and Emerging Technologies (ICEET) - IEEE Staff 2021-10-27

ICEET 2021 technical tracks span original research in the field of computer, communication and electrical engineering for applications in all fields of science and technology Topics include, but are not limited to Modern Communication Technology Robotics and Automation Nanotechnology Signal Processing Alternate Energy Systems Antenna & Wave Propagation Next Generation Networks Power Electronics and Circuits Heterogeneous Networks Energy Efficient Buildings Wireless Transfer Systems & Meta Materials Technology Entrepreneurship Smart Grids & Energy Management Software Engineering Information Security

VLSI Designs Data Science Pervasive & Ubiquitous Computing
Multimedia Services Artificial Intelligence IT Policy & Business
Management Future Internet Architecture Game Theory & Technology
Computer Networks & Security Education & Technologies (E learning)
Biomedical Engineering & Systems Developments in Aviation
Technologies

Programming Computer Vision with Python - Jan Erik Solem

2012-06-19

If you want a basic understanding of computer vision's underlying theory and algorithms, this hands-on introduction is the ideal place to start. You'll learn techniques for object recognition, 3D reconstruction, stereo imaging, augmented reality, and other computer vision applications as you follow clear examples written in Python. Programming Computer Vision with Python explains computer vision in broad terms that won't bog you down in theory. You get complete code samples with explanations on how to reproduce and build upon each example, along with exercises to help you apply what you've learned. This book is ideal for students, researchers, and enthusiasts with basic programming and standard mathematical skills. Learn techniques used in robot navigation, medical image analysis, and other computer vision applications Work with image mappings and transforms, such as texture warping and panorama creation Compute 3D reconstructions from several images of the same scene Organize images based on similarity or content, using clustering methods Build efficient image retrieval techniques to search for images based on visual content Use algorithms to classify image content and recognize objects Access the popular OpenCV library through a Python interface

Data Engineering and Intelligent Computing - Vikrant Bhateja

2021-05-04

This book features a collection of high-quality, peer-reviewed papers presented at the Fourth International Conference on Intelligent Computing and Communication (ICICC 2020) organized by the Department of Computer Science and Engineering and the Department of Computer Science and Technology, Dayananda Sagar University,

Bengaluru, India, on 18–20 September 2020. The book is organized in two volumes and discusses advanced and multi-disciplinary research regarding the design of smart computing and informatics. It focuses on innovation paradigms in system knowledge, intelligence and sustainability that can be applied to provide practical solutions to a number of problems in society, the environment and industry. Further, the book also addresses the deployment of emerging computational and knowledge transfer approaches, optimizing solutions in various disciplines of science, technology and health care.

Mastering Computer Vision with TensorFlow 2.x - Krishnendu Kar

2020-05-15

Apply neural network architectures to build state-of-the-art computer vision applications using the Python programming language Key Features Gain a fundamental understanding of advanced computer vision and neural network models in use today Cover tasks such as low-level vision, image classification, and object detection Develop deep learning models on cloud platforms and optimize them using TensorFlow Lite and the OpenVINO toolkit Book Description Computer vision allows machines to gain human-level understanding to visualize, process, and analyze images and videos. This book focuses on using TensorFlow to help you learn advanced computer vision tasks such as image acquisition, processing, and analysis. You'll start with the key principles of computer vision and deep learning to build a solid foundation, before covering neural network architectures and understanding how they work rather than using them as a black box. Next, you'll explore architectures such as VGG, ResNet, Inception, R-CNN, SSD, YOLO, and MobileNet. As you advance, you'll learn to use visual search methods using transfer learning. You'll also cover advanced computer vision concepts such as semantic segmentation, image inpainting with GAN's, object tracking, video segmentation, and action recognition. Later, the book focuses on how machine learning and deep learning concepts can be used to perform tasks such as edge detection and face recognition. You'll then discover how to develop powerful neural network models on your PC and on various cloud platforms. Finally, you'll learn to perform model

optimization methods to deploy models on edge devices for real-time inference. By the end of this book, you'll have a solid understanding of computer vision and be able to confidently develop models to automate tasks. What you will learn Explore methods of feature extraction and image retrieval and visualize different layers of the neural network model Use TensorFlow for various visual search methods for real-world scenarios Build neural networks or adjust parameters to optimize the performance of models Understand TensorFlow DeepLab to perform semantic segmentation on images and DCGAN for image

inpainting Evaluate your model and optimize and integrate it into your application to operate at scale Get up to speed with techniques for performing manual and automated image annotation Who this book is for This book is for computer vision professionals, image processing professionals, machine learning engineers and AI developers who have some knowledge of machine learning and deep learning and want to build expert-level computer vision applications. In addition to familiarity with TensorFlow, Python knowledge will be required to get started with this book.