Face Recognition Opencv Source Code

Eventually, you will definitely discover a other experience and deed by spending more cash. still when? complete you acknowledge that you require to get those all needs afterward having significantly cash? Why dont you try to get something basic in the beginning? Thats something that will guide you to understand even more approaching the globe, experience, some places, taking into account history, amusement, and a lot more?

It is your certainly own period to put it on reviewing habit. among guides you could enjoy now is **Face Recognition Opencv Source Code** below.

ROS Robotics Projects - Lentin Joseph 2017-03-31
Build a variety of awesome robots that can see, sense, move, and do a lot more using the powerful Robot Operating System About This Book Create and program cool robotic projects using powerful ROS libraries Work through concrete examples that will help you build your own robotic systems of varying complexity levels This book provides relevant and fun-filled examples so you can make your own robots that can run and work Who This Book Is For This book is for robotic enthusiasts and researchers who would like to build robot applications using ROS. If you are looking to explore advanced ROS features in your projects, then this book is for

you. Basic knowledge of ROS, GNU/Linux, and programming concepts is assumed. What You Will Learn Create your own self-driving car using ROS Build an intelligent robotic application using deep learning and ROS Master 3D object recognition Control a robot using virtual reality and ROS Build your own AI chatter-bot using ROS Get to know all about the autonomous navigation of robots using ROS Understand face detection and tracking using ROS Get to grips with teleoperating robots using hand gestures Build ROS-based applications using Matlab and Android Build interactive applications using TurtleBot In Detail Robot Operating System is one of the most widely used software frameworks for robotic research and for companies to model, simulate, and prototype robots. Applying your knowledge of ROS to actual robotics is much more difficult than people realize, but this title will give you what you need to create your own robotics in no time! This book is packed with over 14 ROS robotics projects that can be prototyped without requiring a lot of hardware. The book starts with an introduction of ROS and its installation procedure. After discussing the basics, you'll be taken through great projects, such as building a self-driving car, an autonomous mobile robot, and image recognition using deep learning and ROS. You can find ROS robotics applications for beginner, intermediate, and expert levels inside! This book will be the perfect companion for a robotics enthusiast who really wants to do something big in the field. Style and approach This book is packed with fun-filled, end-to-end projects on mobile, armed, and flying robots, and describes the ROS implementation and execution of these models.

Practical OpenCV - Samarth Brahmbhatt 2013-11-30

Practical OpenCV is a hands-on project book that shows you how to get the best results from OpenCV, the open-source computer vision library. Computer vision is key to technologies

like object recognition, shape detection, and depth estimation. OpenCV is an open-source library with over 2500 algorithms that you can use to do all of these, as well as track moving objects, extract 3D models, and overlay augmented reality. It's used by major companies like Google (in its autonomous car), Intel, and Sony; and it is the backbone of the Robot Operating System's computer vision capability. In short, if you're working with computer vision at all, you need to know OpenCV. With Practical OpenCV, you'll be able to: Get OpenCV up and running on Windows or Linux. Use OpenCV to control the camera board and run vision algorithms on Raspberry Pi. Understand what goes on behind the scenes in computer vision applications like object detection, image stitching, filtering, stereo vision, and more. Code complex computer vision projects for your class/hobby/robot/job, many of which can execute in real time on off-the-shelf processors. Combine different modules that you develop to create your own interactive computer vision app.

Digital Forensics and Cyber Crime - Pavel Gladyshev 2014-12-22

This book constitutes the thoroughly refereed post-conference proceedings of the 5th International ICST Conference on Digital Forensics and Cyber Crime, ICDF2C 2013, held in September 2013 in Moscow, Russia. The 16 revised full papers presented together with 2 extended abstracts and 1 poster paper were carefully reviewed and selected from 38 submissions. The papers cover diverse topics in the field of digital forensics and cybercrime, ranging from regulation of social networks to file carving, as well as technical issues, information warfare, cyber terrorism, critical infrastructure protection, standards, certification, accreditation, automation and digital forensics in the cloud.

Handbook of Research on the Internet of Things Applications in Robotics and Automation - Singh, Rajesh 2019-09-13

With near-universal internet access and ever-advancing electronic devices, the ability to facilitate interactions between various hardware and software provides endless possibilities. Though internet of things (IoT) technology is becoming more popular among individual users and companies, more potential applications of this technology are being sought every day. There is a need for studies and reviews that discuss the methodologies, concepts, and possible problems of a technology that requires little or no human interaction between systems. The Handbook of Research on the Internet of Things Applications in Robotics and Automation is a pivotal reference source on the methods and uses of advancing IoT technology. While highlighting topics including traffic information systems, home security, and automatic parking, this book is ideally designed for network analysts, telecommunication system designers, engineers, academicians, technology specialists, practitioners, researchers, students, and software developers seeking current research on the trends and functions of this life-changing technology.

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 FeaturesDiscover best practices for engineering and maintaining OpenCV projectsExplore important deep learning tools for image classificationUnderstand basic image matrix formats and filtersBook 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 EscriváLearn OpenCV 4 By Building Projects - Second Edition by David Millán Escrivá, Vinícius G. Mendonça, and Prateek JoshiWhat 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.

Raspberry Pi 3 Projects for Java Programmers - Pradeeka Seneviratne 2017-05-31

Learn the art of building enticing projects by

unleashing the potential of Raspberry Pi 3 using Java About This Book Explore the small yet powerful mini computer in order to run java applications Leverage Java libraries to build exciting projects on home automation, IoT, and Robotics by leveraging Java libraries Get acquainted with connecting electronic sensors to your Raspberry Pi 3 using Java APIs. Who This Book Is For The book is aimed at Java programmers who are eager to get their hands-on Raspberry Pi and build interesting projects using java. They have a very basic knowledge of Raspberry Pi. What You Will Learn Use presence detection using the integrated bluetooth chip Automatic light switch using presence detection Use a centralized IoT service to publish data using RPC Control a robot by driving motors using PWM Create a small web service capable of performing actions on the Raspberry Pi and supply readings Image capture using Java together with the OpenCV framework In Detail Raspberry Pi is a small, low cost and yet very powerful development platform. It is used to interact with attached electronics by the use of it's GPIO pins for multiple use cases, mainly Home Automation and Robotics. Our book is a project-based guide that will show you how to utilize the Raspberry Pi's GPIO with Java and how you can leverage this utilization with your knowledge of Java. You will start with installing and setting up the necessary hardware to create a seamless development platform. You will then straightaway start by building a project that will utilize light for presence detection. Next, you will program the application, capable of handling real time data using MQTT and utilize RPC to publish data to adafruit.io. Further, you will build a wireless robot on top of the zuma chassis with the Raspberry Pi as the main controller. Lastly, you will end the book with advanced projects that will help you to create a multi-purpose IoT controller along with building a security camera that will perform image capture and recognize faces with the help of

notifications. By the end of the book, you will be able to build your own real world usable projects not limited to Home Automation, IoT and/or Robotics utilizing logic, user and web interfaces. Style and approach The book will contain projects that ensure a java programmer gets started with building interesting projects using the small yet powerful Raspberry Pi 3. We will start with brushing up your Raspberry Pi skills followed by building 5-6 projects

Learning OpenCV 3 Computer Vision with Python - Joe Minichino 2015-09-29

Unleash the power of computer vision with Python using OpenCV About This Book Create impressive applications with OpenCV and Python Familiarize yourself with advanced machine learning concepts Harness the power of computer vision with this easy-to-follow guide Who This Book Is For Intended for novices to the world of OpenCV and computer vision, as well as OpenCV veterans that want to learn about what's new in OpenCV 3, this book is useful as a reference for experts and a training manual for beginners, or for anybody who wants to familiarize themselves with the concepts of object classification and detection in simple and understandable terms. Basic knowledge about Python and programming concepts is required, although the book has an easy learning curve both from a theoretical and coding point of view. What You Will Learn Install and familiarize yourself with OpenCV 3's Python API Grasp the basics of image processing and video analysis Identify and recognize objects in images and videos Detect and recognize faces using OpenCV Train and use your own object classifiers Learn about machine learning concepts in a computer vision context Work with artificial neural networks using OpenCV Develop your own computer vision real-life application In Detail OpenCV 3 is a state-of-the-art computer vision library that allows a great variety of image and video processing operations. Some of the more spectacular and futuristic features such as face

recognition or object tracking are easily achievable with OpenCV 3. Learning the basic concepts behind computer vision algorithms, models, and OpenCV's API will enable the development of all sorts of real-world applications, including security and surveillance. Starting with basic image processing operations, the book will take you through to advanced computer vision concepts. Computer vision is a rapidly evolving science whose applications in the real world are exploding, so this book will appeal to computer vision novices as well as experts of the subject wanting to learn the brand new OpenCV 3.0.0. You will build a theoretical foundation of image processing and video analysis, and progress to the concepts of classification through machine learning, acquiring the technical know-how that will allow you to create and use object detectors and classifiers, and even track objects in movies or video camera feeds. Finally, the journey will end in the world of artificial neural networks, along with the development of a hand-written digits recognition application. Style and approach This book is a comprehensive guide to the brand new OpenCV 3 with Python to develop real-life computer vision applications.

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 FeaturesLearn about the new features that help unlock the full potential of OpenCV 4Build face detection applications with a cascade classifier using face landmarksCreate an optical character recognition (OCR) model using deep learning and convolutional neural networksBook 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 learnBuild real-world computer vision problems with working OpenCV code samplesUncover best practices in engineering and maintaining OpenCV projectsExplore algorithmic design approaches for complex computer vision tasksWork with OpenCV's most updated API (v4.0.0) through projectsUnderstand 3D scene reconstruction and Structure from Motion (SfM)Study camera calibration and overlay AR using the ArUco ModuleWho 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.

Illumination of Artificial Intelligence in Cybersecurity and Forensics - Sanjay Misra 2022

This book covers a variety of topics that span from industry to academics: hybrid AI model for IDS in IoT, intelligent authentication framework for IoMT mobile devices for extracting bioelectrical signals, security audit in terms of vulnerability analysis to protect the electronic medical records in healthcare system using AI, classification using CNN a multi-face recognition attendance system with anti-spoofing capability, challenges in face morphing attack detection, a

dimensionality reduction and feature-level fusion technique for morphing attack detection (MAD) systems, findings and discussion on AI-assisted forensics, challenges and open issues in the application of AI in forensics, a terrorist computational model that uses Baum-Welch optimization to improve the intelligence and predictive accuracy of the activities of criminal elements, a novel method for detecting security violations in IDSs, graphical-based city block distance algorithm method for E-payment systems, image encryption, and AI methods in ransomware mitigation and detection. It assists the reader in exploring new research areas, wherein AI can be applied to offer solutions through the contribution from researchers and academia.

AI 2007: Advances in Artificial Intelligence - Mehmet A. Orgun 2007-11-23

This book constitutes the refereed proceedings of the 20th Australian Joint Conference on Artificial Intelligence, AI 2007, held in Gold Coast, Australia, in December 2007.The 58 revised full papers and 40 revised short papers presented together with the extended abstracts of three invited speeches were carefully reviewed and selected from 194 submissions. The papers are organized in topical sections on a broad range of subjects.

Getting Started With Raspberry Pi - Shawn Wallace 2021-10-29

The Raspberry Pi is a credit card-sized computer that plugs into your TV and a keyboard. It is a capable little computer which can be used in electronics projects, and for many of the things that your desktop PC does, like spreadsheets, word processing, browsing the internet, and playing games. It also plays high-definition video. This book takes you step-by-step through many fun and educational possibilities. Take advantage of several preloaded programming languages. Use the Raspberry Pi with Arduino. Create Internet-connected projects. Play with multimedia. With Raspberry Pi, you can do all of

this and more.

Search Based Software Engineering - Federica Sarro 2016-09-23

This book constitutes the refereed proceedings of the 8th International Symposium on Search-Based Software Engineering, SSBSE 2016, held in Raleigh, NC, USA, in October 2016.The 13 revised full papers and 4 short papers presented together with 7 challenge track and 4 graduate student track papers were carefully reviewed and selected from 48 submissions. Search Based Software Engineering (SBSE) studies the application of meta-heuristic optimization techniques to various software engineering problems, ranging from requirements engineering to software testing and maintenance.

Image Analysis and Recognition - Aurélio Campilho 2016-06-30

This book constitutes the thoroughly refereed proceedings of the 13th International Conference on Image Analysis and Recognition, ICIAR 2016, held in Póvoa de Varzim, Portugal, in July 2016. The 79 revised full papers and 10 short papers presented were carefully reviewed and selected from 167 submissions. The papers are organized in the following topical sections: Advances in Data Analytics and Pattern Recognition with Applications, Image Enhancement and Restoration, Image Quality Assessment, Image Segmentation, Pattern Analysis and Recognition, Feature Extraction, Detection and Recognition, Matching, Motion and Tracking, 3D Computer Vision, RGB-D Camera Applications, Visual Perception in Robotics, Biometrics, Biomedical Imaging, Brain Imaging, Cardiovascular Image Analysis, Image Analysis in Ophthalmology, Document Analysis, Applications, and Obituaries. The chapter 'Morphological Separation of Clustered Nuclei in Histological Images' is published open access under a CC BY 4.0 license at link.springer.com.

Proceedings of the Global AI Congress 2019 - Jyotsna Kumar Mandal 2020-04-02

This book gathers high-quality research papers presented at the Global AI Congress 2019, which was organized by the Institute of Engineering and Management, Kolkata, India, on 12–14 September 2019. Sharing contributions prepared by researchers, practitioners, developers and experts in the areas of artificial intelligence, the book covers the areas of AI for E-commerce and web applications, AI and sensors, augmented reality, big data, brain computing interfaces, computer vision, cognitive radio networks, data mining, deep learning, expert systems, fuzzy sets and systems, image processing, knowledge representation, nature-inspired computing, quantum machine learning, reasoning, robotics and autonomous systems, robotics and the IoT, social network analysis, speech processing, video processing, and virtual reality.

Mastering OpenCV 3 - Daniel Lelis 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.

New Approaches to Characterization and Recognition of Faces - Peter Corcoran 2011-08-01

As a baby, one of our earliest stimuli is that of human faces. We rapidly learn to identify, characterize and eventually distinguish those who are near and dear to us. We accept face recognition later as an everyday ability. We realize the complexity of the underlying problem only when we attempt to duplicate this skill in a computer vision system. This book is arranged

around a number of clustered themes covering different aspects of face recognition. The first section presents an architecture for face recognition based on Hidden Markov Models; it is followed by an article on coding methods. The next section is devoted to 3D methods of face recognition and is followed by a section covering various aspects and techniques in video. Next short section is devoted to the characterization and detection of features in faces. Finally, you can find an article on the human perception of faces and how different neurological or psychological disorders can affect this.

New Trends in Computer Technologies and Applications - Chuan-Yu Chang 2019-07-10

The present book includes extended and revised versions of papers presented during the 2018 International Computer Symposium (ICS 2018), held in Yunlin, Republic of China (Taiwan), on December 20-22, 2018. The 86 papers presented were carefully reviewed and selected from 263 submissions from 11 countries. The variety of the topics include machine learning, sensor devices and platforms, sensor networks, robotics, embedded systems, networks, operating systems, software system structures, database design and models, multimedia and multimodal retrieval, object detection, image processing, image compression, mobile and wireless security.

Biometric Authentication - Virginio Cantoni 2014-11-29

This book constitutes the proceedings of the First International Workshop on Biometric Authentication, BIOMET 2014, which was held in Sofia, Bulgaria, in June 2014. The 16 full papers presented in this volume were carefully reviewed and selected from 21 submissions. Additionally, this volume also contains 5 invited papers. The papers cover a range of topics in the field gait and behaviour analysis; iris analysis; speech recognition; 3D ear recognition; face and facial attributes analysis; handwriting and signature recognition; and multimodal and soft

biometrics.

Intelligent Video Event Analysis and Understanding - Jianguo Zhang 2011-02-02

With the vast development of Internet capacity and speed, as well as wide adop- tion of media technologies in people's daily life, a large amount of videos have been surging, and need to be efficiently processed or organized based on interest. The human visual perception system could, without difficulty, interpret and r- ognize thousands of events in videos, despite high level of video object clutters, different types of scene context, variability of motion scales, appearance changes, occlusions and object interactions. For a computer vision system, it has been be very challenging to achieve automatic video event understanding for decades. Broadly speaking, those challenges include robust detection of events under - tion clutters, event interpretation under complex scenes, multi-level semantic event inference, putting events in context and multiple cameras, event inference from object interactions, etc. In recent years, steady progress has been made towards better models for video event categorisation and recognition, e. g. , from modelling events with bag of spatial temporal features to discovering event context, from detecting events using a single camera to inferring events through a distributed camera network, and from low-level event feature extraction and description to high-level semantic event classification and recognition. Nowadays, text based video retrieval is widely used by commercial search engines. However, it is still very difficult to retrieve or categorise a specific video segment based on their content in a real multimedia system or in surveillance applications.

More iPhone Cool Projects - Ben Smith 2010-07-30

Everyone is developing iPhone applications, and it's clear why. The iPhone is the coolest mobile device available, and the App Store makes it simple to get an application out into the

unstoppable iPhone app market. With hundreds of thousands of app developers entering the game, it's crucial to learn from those who have actually succeeded. This book shows you how some of the most innovative and creative iPhone application developers have developed cool, best-selling apps. Not only does every successful application have a story, but behind every great app is excellent code. In this book, you'll see the code and learn how to use it to make your own cool applications. You'll learn everything from importing 3D art assets into your iPhone game to using Cocos2d for iPhone and iPad. This book shares the secrets of the coolest iPhone apps being built today by the best iPhone developers—invaluable knowledge for anyone who wants to create the app that everyone is talking about.

Computer Vision Systems - Mario Fritz 2009-09-29

Understanding Research at Google Inc., overseeing research and development in computer vision aimed at extremely large-scale application.

Computer Vision Projects with OpenCV and Python 3 - Matthew Rever 2018-12-28

Gain a working knowledge of advanced machine learning and explore Python’s powerful tools for extracting data from images and videos Key FeaturesImplement image classification and object detection using machine learning and deep learningPerform image classification, object detection, image segmentation, and other Computer Vision tasksCrisp content with a practical approach to solving real-world problems in Computer VisionBook Description Python is the ideal programming language for rapidly prototyping and developing production-grade codes for image processing and Computer Vision with its robust syntax and wealth of powerful libraries. This book will help you design and develop production-grade Computer Vision projects tackling real-world problems. With the help of this book, you will learn how to

set up Anaconda and Python for the major OSes with cutting-edge third-party libraries for Computer Vision. You'll learn state-of-the-art techniques for classifying images, finding and identifying human postures, and detecting faces within videos. You will use powerful machine learning tools such as OpenCV, Dlib, and TensorFlow to build exciting projects such as classifying handwritten digits, detecting facial features,and much more. The book also covers some advanced projects, such as reading text from license plates from real-world images using Google's Tesseract software, and tracking human body poses using DeeperCut within TensorFlow. By the end of this book, you will have the expertise required to build your own Computer Vision projects using Python and its associated libraries. What you will learnInstall and run major Computer Vision packages within PythonApply powerful support vector machines for simple digit classificationUnderstand deep learning with TensorFlowBuild a deep learning classifier for general imagesUse LSTMs for automated image captioningRead text from real-world imagesExtract human pose data from imagesWho this book is for Python programmers and machine learning developers who wish to build exciting Computer Vision projects using the power of machine learning and OpenCV will find this book useful. The only prerequisite for this book is that you should have a sound knowledge of Python programming.

Affective Computing and Intelligent Interaction - Sidney D´Mello 2011-10-18

The two-volume set LNCS 6974 and LNCS 6975 constitutes the refereed proceedings of the Fourth International Conference on Affective Computing and Intelligent Interaction, ACII 2011, held in Memphis,TN, USA, in October 2011. The 135 papers in this two volume set presented together with 3 invited talks were carefully reviewed and selected from 196 submissions. The papers are organized in topical sections on recognition and synthesis of human

affect, affect-sensitive applications, methodological issues in affective computing, affective and social robotics, affective and behavioral interfaces, relevant insights from psychology, affective databases, Evaluation and annotation tools.

Enabling Real-Time Mobile Cloud Computing through Emerging Technologies - Soyata, Tolga 2015-07-25

Today's smartphones utilize a rapidly developing range of sophisticated applications, pushing the limits of mobile processing power. The increased demand for cell phone applications has necessitated the rise of mobile cloud computing, a technological research arena which combines cloud computing, mobile computing, and wireless networks to maximize the computational and data storage capabilities of mobile devices. Enabling Real-Time Mobile Cloud Computing through Emerging Technologies is an authoritative and accessible resource that incorporates surveys, tutorials, and the latest scholarly research on cellular technologies to explore the latest developments in mobile and wireless computing technologies. With its exhaustive coverage of emerging techniques, protocols, and computational structures, this reference work is an ideal tool for students, instructors, and researchers in the field of telecommunications. This reference work features astute articles on a wide range of current research topics including, but not limited to, architectural communication components (cloudlets), infrastructural components, secure mobile cloud computing, medical cloud computing, network latency, and emerging open source structures that optimize and accelerate smartphones.

Smart Solutions in Today's Transport - Jerzy Mikulski 2017-09-08

This book constitutes the thoroughly refereed proceedings of the 17th International Conference on Transport Systems Telematics, TST 2017, held in Katowice-Ustrón, Poland, in

April 2017. The 40 full papers presented in this volume were carefully reviewed and selected from 128 submissions. They present and organize the knowledge from within the field of intelligent transportation systems, the specific solutions applied in it and their influence on improving efficiency of transport systems.

Advances in Intelligent Systems and Computing III - Natalia Shakhovska 2018-11-19

This book reports on new theories and applications in the field of intelligent systems and computing. It covers computational and artificial intelligence methods, as well as advances in computer vision, current issues in big data and cloud computing, computation linguistics, and cyber-physical systems. It also reports on data mining and knowledge extraction technologies, as well as central issues in intelligent information management. Written by active researchers, the respective chapters are based on papers presented at the International Conference on Computer Science and Information Technologies (CSIT 2018), held on September 11–14, 2018, in Lviv, Ukraine, and jointly organized by the Lviv Polytechnic National University, Ukraine, the Kharkiv National University of Radio Electronics, Ukraine, and the Technical University of Lodz, Poland, under patronage of Ministry of Education and Science of Ukraine. Given its breadth of coverage, the book provides academics and professionals with extensive information and a timely snapshot of the field of intelligent systems, and is sure to foster new discussions and collaborations among different groups.

Essentials of Pattern Recognition - Jianxin Wu 2020-11-19

An accessible undergraduate introduction to the concepts and methods in pattern recognition, machine learning and deep learning.

Think AI - Swapnali Joshi Naik 2022-06-28

Develop AI based real-world Applications KEY FEATURES ● Provides a practical

understanding of AI, including its concepts, tools and techniques. ● Includes step-by-by-step instructions for implementing machine learning and deep learning algorithms and features. ● Complex datasets and examples are used to expose mathematical illustrative and pseudo-coded examples. DESCRIPTION "Think AI" is a rapid-learning book that covers a wide range of Artificial Intelligence topics, including Machine Learning, Deep Learning, Computer Vision, and Natural Language Processing. Most popular Python libraries and toolkits are applied to develop intelligent and thoughtful applications. With a solid grasp of python programming and mathematics, you may use this book's statistical models and AI algorithms to meet AI needs and data insight issues. Each chapter in this book guides you swiftly through the core concepts and then directly to their implementation using Python toolkits. This book covers the techniques and skill sets required for data collection, pre-processing, installing libraries, preparing data models, training and deploying the models, and optimising model performance. The book guides you through the OpenCV toolkit for real-time picture recognition and detection, allowing you to work with computer vision. The book describes how to analyse linguistic data and conduct text mining using the NLTK toolbox and provides a brief overview of NLP ideas. Throughout the book, you will utilise major Python libraries and toolkits such as pandas, TensorFlow, scikit-learn, and matplotlib. WHAT YOU WILL LEARN ● Work with Jupyter and various Python libraries, including scikit-learn, NLTK, and TF. ● Build and implement ML models and neural networks using TensorFlow and Keras. ● Utilize OpenCV for real-time image processing, face detection, and face recognition. ● Know how to interact and process textual data using NLTK toolkit. ● Deep dive on Exploratory Data Analysis (EDA) with pandas, matplotlib and seaborn. WHO THIS BOOK IS FOR Whether you're a student, newbie or an existing AI

developer, this book will help you get up to speed with various domains of AI, including ML, Deep Learning and NLP. Knowing the basics of python and understanding mathematics will be beneficial. TABLE OF CONTENTS 1. Introducing Artificial Intelligence 2. Essentials of Python and Data Analysis 3. Data Preparation and Machine Learning 4. Computer Vision using OpenCV 5. Fundamentals of Neural Networks and Deep Learning 6. Natural Language Processing

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.

ROS Robotics Projects - Ramkumar Gandhinathan 2019-12-18

Build exciting robotics projects such as mobile manipulators, self-driving cars, and industrial robots powered by ROS, machine learning, and virtual reality Key FeaturesCreate and program cool robotic projects using powerful ROS librariesBuild industrial robots like mobile manipulators to handle complex tasksLearn how reinforcement learning and deep learning are used with ROSBook Description Nowadays, heavy industrial robots placed in workcells are being replaced by new age robots called cobots, which don't need workcells. They are used in manufacturing, retail, banks, energy, and healthcare, among other domains. One of the major reasons for this rapid growth in the robotics market is the introduction of an open source robotics framework called the Robot Operating System (ROS). This book covers projects in the latest ROS distribution, ROS Melodic Morenia with Ubuntu Bionic (18.04). Starting with the fundamentals, this updated

edition of ROS Robotics Projects introduces you to ROS-2 and helps you understand how it is different from ROS-1. You'll be able to model and build an industrial mobile manipulator in ROS and simulate it in Gazebo 9. You'll then gain insights into handling complex robot applications using state machines and working with multiple robots at a time. This ROS book also introduces you to new and popular hardware such as Nvidia's Jetson Nano, Asus Tinker Board, and Beaglebone Black, and allows you to explore interfacing with ROS. You'll learn as you build interesting ROS projects such as self-driving cars, making use of deep learning, reinforcement learning, and other key AI concepts. By the end of the book, you'll have gained the confidence to build interesting and intricate projects with ROS. What you will learnGrasp the basics of ROS and understand ROS applicationsUncover how ROS-2 is different from ROS-1Handle complex robot tasks using state machinesCommunicate with multiple robots and collaborate to build apps with themExplore ROS capabilities with the latest embedded boards such as Tinker Board S and Jetson NanoDiscover how machine learning and deep learning techniques are used with ROSBuild a self-driving car powered by ROSTeleoperate your robot using Leap Motion and a VR headsetWho this book is for If you’re a student, hobbyist, professional, or anyone with a passion for learning robotics and interested in learning about algorithms, motion control, and perception capabilities from scratch, this book is for you. This book is also ideal for anyone who wants to build a new product and for researchers to make the most of what’s already available to create something new and innovative in the field of robotics.

ROS Robotics By Example - Carol Fairchild 2016-06-30

Bring life to your robot using ROS robotic applications About This Book This book will help you boost your knowledge of ROS and give you

advanced practical experience you can apply to your ROS robot platforms This is the only book that offers you step-by-step instructions to solidify your ROS understanding and gain experience using ROS tools From eminent authors, this book offers you a plethora of fun-filled examples to make your own quadcopter, turtlebot, and two-armed robots Who This Book Is For If you are a robotics developer, whether a hobbyist, researchers or professional, and are interested in learning about ROS through a hands-on approach, then this book is for you. You are encouraged to have a working knowledge of GNU/Linux systems and Python. What You Will Learn Get to know the fundamentals of ROS and apply its concepts to real robot examples Control a mobile robot to navigate autonomously in an environment Model your robot designs using URDF and Xacro, and operate them in a ROS Gazebo simulation Control a 7 degree-of-freedom robot arm for visual servoing Fly a quadcopter to autonomous waypoints Gain working knowledge of ROS tools such as Gazebo, rviz, rqt, and Move-It Control robots with mobile devices and controller boards In Detail The visionaries who created ROS developed a framework for robotics centered on the commonality of robotic systems and exploited this commonality in ROS to expedite the development of future robotic systems. From the fundamental concepts to advanced practical experience, this book will provide you with an incremental knowledge of the ROS framework, the backbone of the robotics evolution. ROS standardizes many layers of robotics functionality from low-level device drivers to process control to message passing to software package management. This book provides step-by-step examples of mobile, armed, and flying robots, describing the ROS implementation as the basic model for other robots of these types. By controlling these robots, whether in simulation or in reality, you will use ROS to drive, move, and fly robots using ROS control.

Style and approach This is an easy-to-follow guide with hands-on examples of ROS robots, both real and in simulation.

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.

13th International Conference on Theory and Application of Fuzzy Systems and Soft Computing — ICAFS-2018 - Rafik A. Aliev 2018-12-28

This book presents the proceedings of the 13th International Conference on Application of Fuzzy Systems and Soft Computing (ICAFS 2018), held in Warsaw, Poland on August 27–28, 2018. It includes contributions from diverse areas of soft computing such as uncertain computation, Z-information processing, neuro-fuzzy approaches, evolutionary computing and others. The topics of the papers include theory of uncertainty computation; theory and application of soft computing; decision theory with imperfect information; neuro-fuzzy technology; image processing with soft computing; intelligent

control; machine learning; fuzzy logic in data analytics and data mining; evolutionary computing; chaotic systems; soft computing in business, economics and finance; fuzzy logic and soft computing in the earth sciences; fuzzy logic and soft computing in engineering; soft computing in medicine, biomedical engineering and the pharmaceutical sciences; and probabilistic and statistical reasoning in the social and educational sciences. The book covers new ideas from theoretical and practical perspectives in economics, business, industry, education, medicine, the earth sciences and other fields. In addition to promoting the development and application of soft computing methods in various real-life fields, it offers a useful guide for academics, practitioners, and graduates in fuzzy logic and soft computing fields.

Hands-On Computer Vision with Julia - Dmitrijs Cudihins 2018-06-29

Explore the various packages in Julia that support image processing and build neural networks for video processing and object tracking. Key Features Build a full-fledged image processing application using JuliaImages Perform basic to advanced image and video stream processing with Julia's APIs Understand and optimize various features of OpenCV with easy examples Book Description Hands-On Computer Vision with Julia is a thorough guide for developers who want to get started with building computer vision applications using Julia. Julia is well suited to image processing because it’s easy to use and lets you write easy-to-compile and efficient machine code. . This book begins by introducing you to Julia's image processing libraries such as Images.jl and ImageCore.jl. You’ll get to grips with analyzing and transforming images using JuliaImages; some of the techniques discussed include enhancing and adjusting images. As you make your way through the chapters, you’ll learn how to classify images, cluster them, and apply

neural networks to solve computer vision problems. In the concluding chapters, you will explore OpenCV applications to perform real-time computer vision analysis, for example, face detection and object tracking. You will also understand Julia's interaction with Tesseract to perform optical character recognition and build an application that brings together all the techniques we introduced previously to consolidate the concepts learned. By end of the book, you will have understood how to utilize various Julia packages and a few open source libraries such as Tesseract and OpenCV to solve computer vision problems with ease. What you will learn Analyze image metadata and identify critical data using JuliaImages Apply filters and improve image quality and color schemes Extract 2D features for image comparison using JuliaFeatures Cluster and classify images with KNN/SVM machine learning algorithms Recognize text in an image using the Tesseract library Use OpenCV to recognize specific objects or faces in images and videos Build neural network and classify images with MXNet Who this book is for Hands-On Computer Vision with Julia is for Julia developers who are interested in learning how to perform image processing and want to explore the field of computer vision. Basic knowledge of Julia will help you understand the concepts more effectively.

Groupware: Design, Implementation, and Use - Robert O. Briggs 2009-03-27

This book constitutes the refereed post-conference proceedings of the 14th International Workshop on Groupware: Design, Implementation, and Use, held in Omaha, Nebraska, USA, during September 14-18, 2008. The 30 papers presented were carefully reviewed and selected from numerous submission. The topics covered are groupware solutions, co-located groups, groupware for health care, collaborative systems development, collaborative emergency response, groupware approaches, patterns of collaboration, thinklets-

based process design, mobile applications, knowledge and learning, groupware technologies, and collaborative modeling.

Multimedia Communications, Services and Security - Andrzej Dziech 2015-12-01

This volume constitutes the refereed proceedings of the 8th International Conference on Multimedia Communications, Services and Security, MCSS 2015, held in Krakow, Poland, in November 2015. The 16 full papers included in the volume were selected from 39 submissions. The papers cover ongoing research activities in the following topics: multimedia services; intelligent monitoring; audio-visual systems; biometric applications; experiments and deployments.

Techno-Societal 2020 - Prashant M. Pawar 2021-05-19

This book, divided in two volumes, originates from Techno-Societal 2020: the 3rd International Conference on Advanced Technologies for Societal Applications, Maharashtra, India, that brings together faculty members of various engineering colleges to solve Indian regional relevant problems under the guidance of eminent researchers from various reputed organizations. The focus of this volume is on technologies that help develop and improve society, in particular on issues such as sensor and ICT based technologies for the betterment of people, Technologies for agriculture and healthcare, micro and nano technological applications. This conference aims to help innovators to share their best practices or products developed to solve specific local problems which in turn may help the other researchers to take inspiration to solve problems in their region. On the other hand, technologies proposed by expert researchers may find applications in different regions. This offers a multidisciplinary platform for researchers from a broad range of disciplines of Science, Engineering and Technology for reporting innovations at different levels.

Learning OpenCV 3 Application Development - Samyak Datta 2016-12-19

Build, create, and deploy your own computer vision applications with the power of OpenCV About This Book This book provides hands-on examples that cover the major features that are part of any important Computer Vision application It explores important algorithms that allow you to recognize faces, identify objects, extract features from images, help your system make meaningful predictions from visual data, and much more All the code examples in the book are based on OpenCV 3.1 – the latest version Who This Book Is For This is the perfect book for anyone who wants to dive into the exciting world of image processing and computer vision. This book is aimed at programmers with a working knowledge of C++. Prior knowledge of OpenCV or Computer Vision/Machine Learning is not required. What You Will Learn Explore the steps involved in building a typical computer vision/machine learning application Understand the relevance of OpenCV at every stage of building an application Harness the vast amount of information that lies hidden in images into the apps you build Incorporate visual information in your apps to create more appealing software Get acquainted with how large-scale and popular image editing apps such as Instagram work behind the scenes by getting a glimpse of how the image filters in apps can be recreated using simple operations in OpenCV Appreciate how difficult it is for a computer program to perform tasks that are trivial for human beings Get to know how to develop applications that perform face detection, gender detection from facial images, and handwritten character (digit) recognition In Detail Computer vision and machine learning concepts are frequently used in practical computer vision based projects. If you're a novice, this book provides the steps to build and deploy an end-to-end application in the domain of computer vision using OpenCV/C++. At the

outset, we explain how to install OpenCV and demonstrate how to run some simple programs. You will start with images (the building blocks of image processing applications), and see how they are stored and processed by OpenCV. You'll get comfortable with OpenCV-specific jargon (Mat Point, Scalar, and more), and get to know how to traverse images and perform basic pixel-wise operations. Building upon this, we introduce slightly more advanced image processing concepts such as filtering, thresholding, and edge detection. In the latter parts, the book touches upon more complex and ubiquitous concepts such as face detection (using Haar cascade classifiers), interest point detection algorithms, and feature descriptors. You will now begin to appreciate the true power of the library in how it reduces mathematically non-trivial algorithms to a single line of code! The concluding sections touch upon OpenCV's Machine Learning module. You will witness not only how OpenCV helps you pre-process and extract features from images that are relevant to the problems you are trying to solve, but also how to use Machine Learning algorithms that work on these features to make intelligent predictions from visual data! Style and approach This book takes a very hands-on approach to developing an end-to-end application with OpenCV. To avoid being too theoretical, the description of concepts are accompanied simultaneously by the development of applications. Throughout the course of the book, the projects and practical, real-life examples are explained and developed step by step in sync with the theory.

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.

Python Data Analytics - Fabio Nelli 2018-09-27 Explore the latest Python tools and techniques to help you tackle the world of data acquisition and analysis. You'll review scientific computing with NumPy, visualization with matplotlib, and machine learning with scikit-learn. This revision is fully updated with new content on social media data analysis, image analysis with OpenCV, and deep learning libraries. Each chapter includes multiple examples demonstrating how to work with each library. At

its heart lies the coverage of pandas, for high-performance, easy-to-use data structures and tools for data manipulation Author Fabio Nelli expertly demonstrates using Python for data processing, management, and information retrieval. Later chapters apply what you've learned to handwriting recognition and extending graphical capabilities with the JavaScript D3 library. Whether you are dealing with sales data, investment data, medical data, web page usage, or other data sets, Python Data Analytics, Second Edition is an invaluable reference with its examples of storing, accessing, and analyzing data. What You'll LearnUnderstand the core concepts of data analysis and the Python ecosystem Go in depth with pandas for reading, writing, and processing data Use tools and techniques for data visualization and image analysis Examine popular deep learning libraries Keras, Theano,TensorFlow, and PyTorch Who This Book Is For Experienced Python developers who need to learn about Pythonic tools for data analysis