Opencv Computer Vision Application Programming Cookbook 2nd Edition Raw

Qt 5 and OpenCV 4 Computer Vision Projects
Computer Vision Projects with OpenCV and Python 3
Opencv Computer Vision Application Programming Cookbook
OpenCV 3
Raspberry Pi Computer Vision Programming
OpenCV 3 Computer Vision with Python Cookbook
OpenCV Android Programming By Example
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Learning OpenCV 3
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Android Application Programming with OpenCV
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OpenCV 4 Computer Vision Application Programming Cookbook
OpenCV for Secret Agents
OpenCV Computer Vision Application Programming Cookbook Second Edition
A Practical Introduction to Computer Vision with OpenCV
OpenCV 3.0 Computer Vision with Java
OpenCV 3 Computer Vision Application Programming Cookbook - Third Edition
Mastering OpenCV Android Application Programming
Android Application Programming with Opencv 3
OpenCV Computer Vision with Python
OpenCV Computer Vision Application Programming Cookbook Second Edition
Learning OpenCV 3 Computer Vision with Python
Mastering OpenCV 3

OpenCV 4 for Secret Agents
OpenCV 2 Computer Vision Application Programming Cookbook
Mastering OpenCV 4
OpenCV 4 Computer Vision Application Programming Cookbook - Fourth Edition
Building Computer Vision Projects with OpenCV 4 and C++
OpenCV By Example
Learn Computer Vision Using OpenCV

KARLEE CASTILLO

Qt 5 and OpenCV 4 Computer Vision Projects Packt Publishing Ltd
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.

Computer Vision Projects with OpenCV and Python 3 Packt Publishing Ltd

OpenCV 3 Computer Vision Application Programming Cookbook is appropriate for novice C++ programmers who want to learn how to use the OpenCV library to build computer vision applications. It is also suitable for professional software developers wishing to be introduced to the concepts of computer vision programming. It can also be used as a companion book in a university-level computer vision courses. It constitutes an excellent reference for graduate students and researchers in image processing and computer vision.

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Learn to capture videos, manipulate images, and track objects with Python using the OpenCV Library Overview Set up OpenCV,

its Python bindings, and optional Kinect drivers on Windows, Mac or Ubuntu Create an application that tracks and manipulates faces Identify face regions using normal color images and depth images In Detail Computer Vision can reach consumers in various contexts via webcams, camera phones and gaming sensors like Kinect. OpenCV's Python bindings can help developers meet these consumer demands for applications that capture images, change their appearance and extract information from them, in a high-level language and in a standardized data format that is interoperable with scientific libraries such as NumPy and SciPy. "OpenCV Computer Vision with Python" is a practical, hands-on guide that covers the fundamental tasks of computer vision-capturing, filtering and analyzing images-with step-by-step instructions for writing both an application and reusable library classes. "OpenCV Computer Vision with Python" shows you how to use the Python bindings for OpenCV. By following clear and concise examples you will develop a computer vision application that tracks faces in live video and applies special effects to them. If you have always wanted to learn which version of these bindings to use, how to integrate with cross-platform Kinect drivers and and how to efficiently process image data with NumPy and SciPy then this book is for you. What you will learn from this book Install

OpenCV and related software such as Python, NumPy, SciPy, OpenNI, and SensorKinect-all on Windows, Mac or Ubuntu Capture, display, and save photos and real-time videos Handle window events and input events using OpenCV's HighGui module or Pygame Understand OpenCV's image format and how to perform efficient operations on OpenCV images with NumPy and SciPy Apply "curves" and other color transformations to simulate the look of old photos, movies or video games Apply an effect only to edges in an image Copy and resize segments of an image Apply an effect only to certain depths in an image by using data from a depth sensor such as Kinect Track faces, eyes, noses and mouths by using prebuilt datasets Track arbitrary objects by creating original datasets Approach A practical, project-based tutorial for Python developers and hobbyists who want to get started with computer vision with OpenCV and Python. Who this book is written for OpenCV Computer Vision with Python is written for Python developers who are new to computer vision and want a practical guide to teach them the essentials. Some understanding of image data (for example, pixels and color channels) would be beneficial. At a minimum you will need access to at least one webcam. Certain exercises require additional hardware like a second webcam, a Microsoft Kinect or an

OpenNI-compliant depth sensor such as the Asus Xtion PRO.
Opencv Computer Vision Application Programming Cookbook Packt Publishing Ltd
Discover interesting recipes to help you understand the concepts of object detection, image processing, and facial detection Key FeaturesExplore the latest features and APIs in OpenCV 4 and build computer vision algorithmsDevelop effective, robust, and fail-safe vision for your applicationsBuild computer vision algorithms with machine learning capabilitiesBook Description OpenCV is an image and video processing library used for all types of image and video analysis. Throughout the book, you'll work through recipes that implement a variety of tasks, such as facial recognition and detection. With 70 self-contained tutorials, this book examines common pain points and best practices for computer vision (CV) developers. Each recipe addresses a specific problem and offers a proven, best-practice solution with insights into how it works, so that you can copy the code and configuration files and modify them to suit your needs. This book begins by setting up OpenCV, and explains how to manipulate pixels. You'll understand how you can process images with classes and count pixels with histograms. You'll also learn detecting, describing, and matching interest points. As you advance through the

chapters, you'll get to grips with estimating projective relations in images, reconstructing 3D scenes, processing video sequences, and tracking visual motion. In the final chapters, you'll cover deep learning concepts such as face and object detection. By the end of the book, you'll be able to confidently implement a range to computer vision algorithms to meet the technical requirements of your complex CV projects What you will learnInstall and create a program using the OpenCV librarySegment images into homogenous regions and extract meaningful objectsApply image filters to enhance image contentExploit image geometry to relay different views of a pictured sceneCalibrate the camera from different image observationsDetect people and objects in images using machine learning techniquesReconstruct a 3D scene from imagesExplore face detection using deep learningWho this book is for If you’re a CV developer or professional who already uses or would like to use OpenCV for building computer vision software, this book is for you. You’ll also find this book useful if you’re a C++ programmer looking to extend your computer vision skillset by learning OpenCV.

OpenCV 3 "O'Reilly Media, Inc."

Develop vision-aware and intelligent Android applications with the robust OpenCV library About This Book This is the most up-to-date book on OpenCV Android

programming on the market at the moment. There is no direct competition for our title. Based on a technology that is increasing in popularity, proven by activity in forums related to this topic. This book uniquely covers applications such as the Panoramic viewer and Automatic Selfie, among others. Who This Book Is For If you are an Android developer and want to know how to implement vision-aware applications using OpenCV, then this book is definitely for you. It would be very helpful if you understand the basics of image processing and computer vision, but no prior experience is required What You Will Learn Identify and install all the elements needed to start building vision-aware Android applications Explore image representation, colored and gray scale Recognize and apply convolution operations and filtering to deal with noisy data Use different shape analysis techniques Extract and identify interest points in an image Understand and perform object detection Run native computer vision algorithms and gain performance boosts In Detail Starting from the basics of computer vision and OpenCV, we'll take you all the way to creating exciting applications. You will discover that, though computer vision is a challenging subject, the ideas and algorithms used are simple and intuitive, and you will appreciate the abstraction layer that OpenCV uses to do the heavy lifting for you.

Packed with many examples, the book will help you understand the main data structures used within OpenCV, and how you can use them to gain performance boosts. Next we will discuss and use several image processing algorithms such as histogram equalization, filters, and color space conversion. You then will learn about image gradients and how they are used in many shape analysis techniques such as edge detection, Hough Line Transform, and Hough Circle Transform. In addition to using shape analysis to find things in images, you will learn how to describe objects in images in a more robust way using different feature detectors and descriptors. By the end of this book, you will be able to make intelligent decisions using the famous Adaboost learning algorithm. Style and approach An easy-to-follow tutorial packed with hands-on examples. Each topic is explained and placed in context, and the book supplies full details of the concepts used for added proficiency.

Raspberry Pi Computer Vision Programming Packt Publishing Ltd

This is a cookbook that shows results obtained on real images with detailed explanations and the relevant screenshots. The recipes contain code accompanied with suitable explanations that will facilitate your learning. If you are a novice C++ programmer who wants to learn how to use the OpenCV library to build computer vision applications, then this cookbook is appropriate

for you. It is also suitable for professional software developers wishing to be introduced to the concepts of computer vision programming. It can be used as a companion book in university-level computer vision courses. It constitutes an excellent reference for graduate students and researchers in image processing and computer vision. The book provides a good combination of basic to advanced recipes. Basic knowledge of C++ is required.

OpenCV 3 Computer Vision with Python Cookbook Apress Explains the theory behind basic computer vision and providesa bridge from the theory to practical implementation using theindustry standard OpenCV libraries Computer Vision is a rapidly expanding area and it is becomingprogressively easier for developers to make use of this field dueto the ready availability of high quality libraries (such as OpenCV2). This text is intended to facilitate the practical use ofcomputer vision with the goal being to bridge the gap between thetheory and the practical implementation of computer vision. Thebook will explain how to use the relevant OpenCV library routinesand will be accompanied by a full working program including thecode snippets from the text. This textbook is a heavilyillustrated, practical introduction to an exciting field, theapplications of which

are becoming almost ubiquitous. We arenow surrounded by cameras, for example cameras on computers &tablets/ cameras built into our mobile phones/ camerasin games consoles; cameras imaging difficult modalities (such asultrasound, X-ray, MRI) in hospitals, and surveillance cameras.This book is concerned with helping the next generation of computerdevelopers to make use of all these images in order to developsystems which are more intuitive and interact with us in moreintelligent ways. Explains the theory behind basic computer vision and provides abridge from the theory to practical implementation using theindustry standard OpenCV libraries Offers an introduction to computer vision, with enough theoryto make clear how the various algorithms work but with an emphasison practical programming issues Provides enough material for a one semester course in computervision at senior undergraduate and Masters levels Includes the basics of cameras and images and image processingto remove noise, before moving on to topics such as imagehistogramming; binary imaging; video processing to detect and modelmoving objects; geometric operations & camera models; edgedetection; features detection; recognition in images Contains a large number of vision application problems toprovide students with the opportunity to solve

real problems.Images or videos for these problems are provided in the resourcesassociated with this book which include an enhanced eBook

OpenCV Android Programming By Example

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Turn futuristic ideas about computer vision and machine learning into demonstrations that are both functional and entertaining Key Features Build OpenCV 4 apps with Python 2 and 3 on desktops and Raspberry Pi, Java on Android, and C# in Unity Detect, classify, recognize, and measure real-world objects in real-time Work with images from diverse sources, including the web, research datasets, and various cameras Book Description OpenCV 4 is a collection of image processing functions and computer vision algorithms. It is open source, supports many programming languages and platforms, and is fast enough for many real-time applications. With this handy library, you'll be able to build a variety of impressive gadgets. OpenCV 4 for Secret Agents features a broad selection of projects based on computer vision, machine learning, and several application frameworks. To enable you to build apps for diverse desktop systems and Raspberry Pi, the book supports multiple Python versions, from 2.7 to 3.7. For Android app development, the book also supports Java in Android Studio, and C# in the Unity game engine. Taking inspiration from the world of James Bond, this book will add a touch

of adventure and computer vision to your daily routine. You'll be able to protect your home and car with intelligent camera systems that analyze obstacles, people, and even cats. In addition to this, you'll also learn how to train a search engine to praise or criticize the images that it finds, and build a mobile app that speaks to you and responds to your body language. By the end of this book, you will be equipped with the knowledge you need to advance your skills as an app developer and a computer vision specialist. What you will learn Detect motion and recognize gestures to control a smartphone game Detect car headlights and estimate their distance Detect and recognize human and cat faces to trigger an alarm Amplify motion in a real-time video to show heartbeats and breaths Make a physics simulation that detects shapes in a real-world drawing Build OpenCV 4 projects in Python 3 for desktops and Raspberry Pi Develop OpenCV 4 Android applications in Android Studio and Unity Who this book is for If you are an experienced software developer who is new to computer vision or machine learning, and wants to study these topics through creative projects, then this book is for you. The book will also help existing OpenCV users who want upgrade their projects to OpenCV 4 and new versions of other libraries, languages, tools, and operating systems. General familiarity with object-oriented

programming, application development, and usage of operating systems (OS), developer tools, and the command line is required.

Computer Vision with OpenCV 3 and Qt5

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Recipes to help you build computer vision applications that make the most of the popular C++ library OpenCV 3 About This Book Written to the latest, gold-standard specification of OpenCV 3 Master OpenCV, the open source library of the computer vision community Master fundamental concepts in computer vision and image processing Learn about the important classes and functions of OpenCV with complete working examples applied to real images Who This Book Is For OpenCV 3 Computer Vision Application Programming Cookbook Third Edition is appropriate for novice C++ programmers who want to learn how to use the OpenCV library to build computer vision applications. It is also suitable for professional software developers who wish to be introduced to the concepts of computer vision programming. It can also be used as a companion book for university-level computer vision courses. It constitutes an excellent reference for graduate students and researchers in image processing and computer vision. What You Will Learn Install and create a program using the OpenCV library Process an image by manipulating its pixels Analyze an image using histograms Segment

images into homogenous regions and extract meaningful objects Apply image filters to enhance image content Exploit the image geometry in order to relay different views of a pictured scene Calibrate the camera from different image observations Detect people and objects in images using machine learning techniques Reconstruct a 3D scene from images In Detail Making your applications see has never been easier with OpenCV. With it, you can teach your robot how to follow your cat, write a program to correctly identify the members of One Direction, or even help you find the right colors for your redecoration. OpenCV 3 Computer Vision Application Programming Cookbook Third Edition provides a complete introduction to the OpenCV library and explains how to build your first computer vision program. You will be presented with a variety of computer vision algorithms and exposed to important concepts in image and video analysis that will enable you to build your own computer vision applications. This book helps you to get started with the library, and shows you how to install and deploy the OpenCV library to write effective computer vision applications following good programming practices. You will learn how to read and write images and manipulate their pixels. Different techniques for image enhancement and shape analysis will be presented. You will learn how to detect specific image

features such as lines, circles or corners. You will be introduced to the concepts of mathematical morphology and image filtering. The most recent methods for image matching and object recognition are described, and you'll discover how to process video from files or cameras, as well as how to detect and track moving objects. Techniques to achieve camera calibration and perform multiple-view analysis will also be explained. Finally, you'll also get acquainted with recent approaches in machine learning and object classification. Style and approach This book will arm you with the basics you need to start writing world-aware applications right from a pixel level all the way through to processing video sequences.

Learning OpenCV 3 Packt Pub Limited

Unleash the power of computer vision with Python using OpenCVAbout 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 guideWho This Book Is ForIntended 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 applicationIn DetailOpenCV 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 approachThis book is a comprehensive guide to the brand new OpenCV 3 with Python to develop real-life computer vision applications.

OpenCV 3 Blueprints Packt Publishing Ltd

If you are a Java developer who is new to computer vision and would like to learn through application development, then this book is for you. You are expected to have a mobile device running Android 2.2 (Froyo) or greater, including a camera. Experience in Java is a must.

OpenCV 3 Computer Vision Application Programming Cookbook Packt Publishing Ltd

Get to grips with traditional computer vision algorithms and deep learning approaches, and build real-world applications with OpenCV and other machine learning frameworks Key FeaturesUnderstand how to capture high-quality

image data, detect and track objects, and process the actions of animals or humansImplement your learning in different areas of computer visionExplore advanced concepts in OpenCV such as machine learning, artificial neural network, and augmented realityBook Description OpenCV is a native cross-platform C++ library for computer vision, machine learning, and image processing. It is increasingly being adopted in Python for development. This book will get you hands-on with a wide range of intermediate to advanced projects using the latest version of the framework and language, OpenCV 4 and Python 3.8, instead of only covering the core concepts of OpenCV in theoretical lessons. This updated second edition will guide you through working on independent hands-on projects that focus on essential OpenCV concepts such as image processing, object detection, image manipulation, object tracking, and 3D scene reconstruction, in addition to statistical learning and neural networks. You'll begin with concepts such as image filters, Kinect depth sensor, and feature matching. As you advance, you'll not only get hands-on with reconstructing and visualizing a scene in 3D but also learn to track visually salient objects. The book will help you further build on your skills by demonstrating how to recognize traffic signs and emotions on faces. Later, you'll understand how to align images, and detect and track objects using

neural networks. By the end of this OpenCV Python book, you'll have gained hands-on experience and become proficient at developing advanced computer vision apps according to specific business needs. What you will learnGenerate real-time visual effects using filters and image manipulation techniques such as dodging and burningRecognize hand gestures in real-time and perform hand-shape analysis based on the output of a Microsoft Kinect sensorLearn feature extraction and feature matching to track arbitrary objects of interestReconstruct a 3D real-world scene using 2D camera motion and camera reprojection techniquesDetect faces using a cascade classifier and identify emotions in human faces using multilayer perceptronsClassify, localize, and detect objects with deep neural networksWho this book is for This book is for intermediate-level OpenCV users who are looking to enhance their skills by developing advanced applications. Familiarity with OpenCV concepts and Python libraries, and basic knowledge of the Python programming language are assumed.

OpenCV 4 with Python Blueprints Packt Publishing Ltd

Build practical applications of computer vision using the OpenCV library with Python. This book discusses different facets of computer vision such as image and object detection, tracking and motion analysis and their

applications with examples. The author starts with an introduction to computer vision followed by setting up OpenCV from scratch using Python. The next section discusses specialized image processing and segmentation and how images are stored and processed by a computer. This involves pattern recognition and image tagging using the OpenCV library. Next, you'll work with object detection, video storage and interpretation, and human detection using OpenCV. Tracking and motion is also discussed in detail. The book also discusses creating complex deep learning models with CNN and RNN. The author finally concludes with recent applications and trends in computer vision. After reading this book, you will be able to understand and implement computer vision and its applications with OpenCV using Python. You will also be able to create deep learning models with CNN and RNN and understand how these cutting-edge deep learning architectures work. What You Will LearnUnderstand what computer vision is, and its overall application in intelligent automation systems Discover the deep learning techniques required to build computer vision applications Build complex computer vision applications using the latest techniques in OpenCV, Python, and NumPy Create practical applications and implementations such as face detection and

recognition, handwriting recognition, object detection, and tracking and motion analysis Who This Book Is ForThose who have a basic understanding of machine learning and Python and are looking to learn computer vision and its applications.
Android Application Programming with OpenCV CreateSpace Over 50 recipes to help you build computer vision applications in C++ using the OpenCV library In Detail OpenCV Computer Vision Application Programming Cookbook Second Edition is your guide to the development of computer vision applications. The book shows you how to install and deploy the OpenCV library to write an effective computer vision application. Different techniques for image enhancement, pixel manipulation, and shape analysis will be presented. You will also learn how to process video from files or cameras and detect and track moving objects. You will also be introduced to recent approaches in machine learning and object classification. This book is a comprehensive reference guide that exposes you to practical and fundamental computer vision concepts, illustrated by extensive examples. What You Will Learn Install and create a program using the OpenCV library Process an image by manipulating its pixels Analyze an image using histograms Segment images into homogenous regions and extract meaningful objects Apply image filters to enhance image content

Exploit image geometry in order to relate different views of a pictured scene Calibrate the camera from different image observations Detect faces and people in images using machine learning techniques Downloading the example code for this book. You can download the example code files for all Packt books you have purchased from your account at http://www.PacktPub.com. If you purchased this book elsewhere, you can visit http://www.PacktPub.com/support and register to have the files e-mailed directly to you. *OpenCV with Python Blueprints* Packt Publishing Ltd Blend the power of Qt with OpenCV to build cross-platform computer vision applications Key Features ● Start creating robust applications with the power of OpenCV and Qt combined ● Learn from scratch how to develop cross-platform computer vision applications ● Accentuate your OpenCV applications by developing them with Qt Book Description Developers have been using OpenCV library to develop computer vision applications for a long time. However, they now need a more effective tool to get the job done and in a much better and modern way. Qt is one of the major frameworks available for this task at the moment. This book will teach you to develop applications with the combination of OpenCV 3 and Qt5, and how to create cross-platform computer vision applications. We'll begin by introducing Qt, its IDE,

and its SDK. Next you'll learn how to use the OpenCV API to integrate both tools, and see how to configure Qt to use OpenCV. You'll go on to build a full-fledged computer vision application throughout the book. Later, you'll create a stunning UI application using the Qt widgets technology, where you'll display the images after they are processed in an efficient way. At the end of the book, you'll learn how to convert OpenCV Mat to Qt QImage. You'll also see how to efficiently process images to filter them, transform them, detect or track objects as well as analyze video. You'll become better at developing OpenCV applications. What you will learn ● Get an introduction to Qt IDE and SDK ● Be introduced to OpenCV and see how to communicate between OpenCV and Qt ● Understand how to create UI using Qt Widgets ● Learn to develop cross-platform applications using OpenCV 3 and Qt 5 ● Explore the multithreaded application development features of Qt5 ● Improve OpenCV 3 application development using Qt5 ● Build, test, and deploy Qt and OpenCV apps, either dynamically or statically ● See Computer Vision technologies such as filtering and transformation of images, detecting and matching objects, template matching, object tracking, video and motion analysis, and much more ● Be introduced to QML and Qt Quick for iOS and Android application

development Who this book is for This book is for readers interested in building computer vision applications. Intermediate knowledge of C++ programming is expected. Even though no knowledge of Qt5 and OpenCV 3 is assumed, if you’re familiar with these frameworks, you’ll benefit.

Learning OpenCV 4 Computer Vision with Python 3 John Wiley & Sons

Create four mobile apps and explore the world through photography and computer visionAbout This Book- Efficiently harness iOS and OpenCV to capture and process high-quality images at high speed- Develop photographic apps and augmented reality apps quickly and easily- Detect, recognize, and morph faces and objectsWho This Book Is ForIf you want to do computational photography and computer vision on Apple's mobile devices, then this book is for you. No previous experience with app development or OpenCV is required. However, basic knowledge of C++ or Objective-C is recommended.What You Will Learn- Use Xcode and Interface Builder to develop iOS apps- Obtain OpenCV's standard modules and build extra modules from source- Control all the parameters of the iOS device's camera- Capture, save, and share photos and videos- Analyze colors, shapes, and textures in ordinary and specialized photographs- Blend and compare images to create special photographic

effects and augmented reality tools- Detect faces and morph facial features- Classify coins and other objectsIn DetailiOS Application Development with OpenCV 3 enables you to turn your smartphone camera into an advanced tool for photography and computer vision. Using the highly optimized OpenCV library, you will process high-resolution images in real time. You will locate and classify objects, and create models of their geometry. As you develop photo and augmented reality apps, you will gain a general understanding of iOS frameworks and developer tools, plus a deeper understanding of the camera and image APIs.After completing the book's four projects, you will be a well-rounded iOS developer with valuable experience in OpenCV.Style and approachThe book is practical, creative, and precise. It shows you the steps to create and customize five projects that solve important problems for beginners in mobile app development and computer vision. Complete source code and numerous visual aids are included in each chapter. Experimentation is an important part of the book. You will use computer vision to explore the real world, and then you will refine the projects based on your findings.

OpenCV: Computer Vision Projects with Python Packt Publishing 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.
Learning OpenCV 3 Application Development
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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.

Practical OpenCV Packt Publishing Ltd

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.

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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.

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