OpenCV for Secret Agents

Use OpenCV in six secret projects to augment your home, car, phone, eyesight, and any photo or drawing

Joseph Howse

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OpenCV for Secret Agents Joseph Howse,2015-01-28 This book is for programmers who want to expand their skills by building fun smart and useful systems with OpenCV The projects are ideal in helping you to think creatively about the uses of computer vision natural user interfaces and ubiquitous computers in your home car and hand **OpenCV 4 for Secret Agents** Joseph Howse,2019-04-30 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 **Python Game Programming By Example** Alejandro Rodas de Paz,Joseph Howse,2015-09-28 A pragmatic guide for developing your own games with Python About This Book Strengthen your fundamentals of game programming with Python language Seven hands on games to create 2D and 3D games rapidly from scratch Illustrative guide to explore the different GUI libraries for building your games Who This Book Is For If you have ever

wanted to create casual games in Python and you would like to explore various GUI technologies that this language offers this is the book for you This title is intended for beginners to Python with little or no knowledge of game development and it covers step by step how to build seven different games from the well known Space Invaders to a classical 3D platformer What You Will Learn Take advantage of Python s clean syntax to build games quickly Discover distinct frameworks for developing graphical applications Implement non player characters NPCs with autonomous and seemingly intelligent behaviors Design and code some popular games like Pong and tower defense Compose maps and levels for your sprite based games in an easy manner Modularize and apply object oriented principles during the design of your games Exploit libraries like Chimpunk2D cocos2d and Tkinter Create natural user interfaces NUIs using a camera and computer vision algorithms to interpret the player s real world actions In Detail With a growing interest in learning to program game development is an appealing topic for getting started with coding From geometry to basic Artificial Intelligence algorithms there are plenty of concepts that can be applied in almost every game Python is a widely used general purpose high level programming language It provides constructs intended to enable clear programs on both a small and large scale It is the third most popular language whose grammatical syntax is not predominantly based on C Python is also very easy to code and is also highly flexible which is exactly what is required for game development The user friendliness of this language allows beginners to code games without too much effort or training Python also works with very little code and in most cases uses the use cases approach reserving lengthy explicit coding for outliers and exceptions making game development an achievable feat Python Game Programming by Example enables readers to develop cool and popular games in Python without having in depth programming knowledge of Python The book includes seven hands on projects developed with several well known Python packages as well as a comprehensive explanation about the theory and design of each game It will teach readers about the techniques of game design and coding of some popular games like Pong and tower defense Thereafter it will allow readers to add levels of complexities to make the games more fun and realistic using 3D At the end of the book you will have added several GUI libraries like Chimpunk2D cocos2d and Tkinter in your tool belt as well as a handful of recipes and algorithms for developing games with Python Style and approach This book is an example based guide that will teach you to build games using Python This book follows a step by step approach as it is aimed at beginners who would like to get started with basic game development By the end of this book you will be competent game developers with good knowledge of programming in Python _Learning OpenCV 3 Computer Vision with Python_ Joe Minichino,Joseph Howse,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   OpenCV 4 for Secret Agents Joseph Howse,2019-04-30 Turn futuristic ideas about computer vision and machine learning into demonstrations that are both functional and entertaining Key FeaturesBuild OpenCV 4 apps with Python 2 and 3 on desktops and Raspberry Pi Java on Android and C in UnityDetect classify recognize and measure real world objects in real timeWork with images from diverse sources including the web research datasets and various camerasBook 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 learnDetect motion and recognize gestures to control a smartphone gameDetect car headlights and estimate their distanceDetect and recognize human and cat faces to trigger an alarmAmplify motion in a real time video to show heartbeats and breathsMake a physics simulation that detects shapes in a real world drawingBuild OpenCV 4 projects in Python 3 for desktops and Raspberry PiDevelop OpenCV 4 Android applications in Android Studio and UnityWho 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   **Learning OpenCV 4 Computer Vision with Python 3** Joseph Howse,Joe Minichino,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   <u>OpenCV By Example</u> Prateek Joshi,David Millan Escriva,Vinicius Godoy,2016-01-22 Enhance your understanding of Computer Vision and image processing by developing real world projects in OpenCV 3 About This Book Get to grips with the basics of Computer Vision and image processing This is a step by step guide to developing several real world Computer Vision projects using OpenCV 3 This book takes a special focus on working with Tesseract OCR a free open source library to recognize text in images Who This Book Is For If you are a software developer with a basic understanding of Computer Vision and image processing and want to develop interesting Computer Vision applications with Open CV this is the book for you Knowledge of C is required What You Will Learn Install OpenCV 3 on your operating system Create the required CMake scripts to compile the C application and manage its dependencies Get to grips with the Computer Vision workflows and understand the basic image matrix format and filters Understand the segmentation and feature extraction techniques Remove backgrounds from a static scene to identify moving objects for video surveillance Track different objects in a live video using various techniques Use the new OpenCV functions for text detection and recognition with Tesseract In Detail Open CV is a cross platform free for use library that is primarily used for real time Computer Vision and image processing It is considered to be one of the best open source libraries that helps developers focus on constructing complete projects on image processing motion detection and image segmentation Whether you are completely new to the concept of Computer Vision or have a basic understanding of it this book will be your guide to understanding the basic OpenCV concepts and algorithms through amazing real world examples and projects Starting from the installation of OpenCV on your system and understanding the basics of image processing we swiftly move on to creating optical flow video analysis or text recognition in complex scenes and will take you through the commonly used Computer Vision techniques to build your own Open CV projects from scratch By the end of this book you will be familiar with the basics of Open CV such as matrix operations filters and histograms as well as more advanced concepts such as segmentation machine learning complex video analysis and text recognition Style and approach This book is a practical guide with lots of tips and is closely focused on developing Computer vision applications with OpenCV Beginning with the fundamentals the complexity increases with each chapter Sample applications are developed throughout the book that you can execute and use in your own projects   **iOS Application Development with OpenCV 3** Joseph Howse,2016-06-30 Create four mobile apps and explore the world through photography and computer vision About 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 objects Who This Book Is For If 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 objects In Detail iOS 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 approach The 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 3 Blueprints** Joseph Howse,Steven Puttemans,Quan Hua,Utkarsh Sinha,2015-11-10 Expand your knowledge of computer vision by building amazing projects with OpenCV 3 About This Book Build computer vision projects to capture high quality image data detect and track objects process the actions of humans or animals and much more Discover practical and interesting innovations in computer vision while building atop a mature open source library OpenCV 3 Familiarize yourself with multiple approaches and theories wherever critical decisions need to be made Who This Book Is For This book is ideal for you if you aspire to build computer vision systems that are smarter faster more complex and more practical than the competition This is an advanced book intended for those who already have some experience in setting up an OpenCV development environment and building applications with OpenCV You should be comfortable with computer vision concepts object oriented programming graphics programming IDEs and the command line What You Will Learn Select and configure camera systems to see invisible light fast motion and distant objects Build a camera trap as used by nature photographers and process photos to create beautiful effects Develop a facial expression recognition system with various feature extraction techniques and machine learning methods Build a panorama Android application using the OpenCV stitching module in C with NDK support Optimize your object detection model make it rotation invariant and apply scene specific constraints to make it faster and more robust

Create a person identification and registration system based on biometric properties of that person such as their fingerprint iris and face Fuse data from videos and gyroscopes to stabilize videos shot from your mobile phone and create hyperlapse style videos In Detail Computer vision is becoming accessible to a large audience of software developers who can leverage mature libraries such as OpenCV However as they move beyond their first experiments in computer vision developers may struggle to ensure that their solutions are sufficiently well optimized well trained robust and adaptive in real world conditions With sufficient knowledge of OpenCV these developers will have enough confidence to go about creating projects in the field of computer vision This book will help you tackle increasingly challenging computer vision problems that you may face in your careers It makes use of OpenCV 3 to work around some interesting projects Inside these pages you will find practical and innovative approaches that are battle tested in the authors industry experience and research Each chapter covers the theory and practice of multiple complementary approaches so that you will be able to choose wisely in your future projects You will also gain insights into the architecture and algorithms that underpin OpenCV s functionality We begin by taking a critical look at inputs in order to decide which kinds of light cameras lenses and image formats are best suited to a given purpose We proceed to consider the finer aspects of computational photography as we build an automated camera to assist nature photographers You will gain a deep understanding of some of the most widely applicable and reliable techniques in object detection feature selection tracking and even biometric recognition We will also build Android projects in which we explore the complexities of camera motion first in panoramic image stitching and then in video stabilization By the end of the book you will have a much richer understanding of imaging motion machine learning and the architecture of computer vision libraries and applications Style and approach This book covers a combination of theory and practice We examine blueprints for specific projects and discuss the principles behind these blueprints in detail **Mastering OpenCV 4 with Python** Alberto Fernández Villán,2019-03-29 Create advanced applications with Python and OpenCV exploring the potential of facial recognition machine learning deep learning web computing and augmented reality Key FeaturesDevelop your computer vision skills by mastering algorithms in Open Source Computer Vision 4 OpenCV 4 and PythonApply machine learning and deep learning techniques with TensorFlow and KerasDiscover the modern design patterns you should avoid when developing efficient computer vision applicationsBook Description OpenCV is considered to be one of the best open source computer vision and machine learning software libraries It helps developers build complete projects in relation to image processing motion detection or image segmentation among many others OpenCV for Python enables you to run computer vision algorithms smoothly in real time combining the best of the OpenCV C API and the Python language In this book you ll get started by setting up OpenCV and delving into the key concepts of computer vision You ll then proceed to study more advanced concepts and discover the full potential of OpenCV The book will also introduce you to the creation of advanced applications using Python and OpenCV enabling you to develop applications that include facial recognition target

tracking or augmented reality Next you ll learn machine learning techniques and concepts understand how to apply them in real world examples and also explore their benefits including real time data production and faster data processing You ll also discover how to translate the functionality provided by OpenCV into optimized application code projects using Python bindings Toward the concluding chapters you ll explore the application of artificial intelligence and deep learning techniques using the popular Python libraries TensorFlow and Keras By the end of this book you ll be able to develop advanced computer vision applications to meet your customers demands What you will learnHandle files and images and explore various image processing techniquesExplore image transformations including translation resizing and croppingGain insights into building histogramsBrush up on contour detection filtering and drawingWork with Augmented Reality to build marker based and markerless applicationsWork with the main machine learning algorithms in OpenCVExplore the deep learning Python libraries and OpenCV deep learning capabilitiesCreate computer vision and deep learning web applicationsWho this book is for This book is designed for computer vision developers engineers and researchers who want to develop modern computer vision applications Basic experience of OpenCV and Python programming is a must   Hands-On Computer Vision with TensorFlow 2 Benjamin Planche,Eliot Andres,2019-05-30 A practical guide to building high performance systems for object detection segmentation video processing smartphone applications and more Key FeaturesDiscover how to build train and serve your own deep neural networks with TensorFlow 2 and KerasApply modern solutions to a wide range of applications such as object detection and video analysisLearn how to run your models on mobile devices and web pages and improve their performanceBook Description Computer vision solutions are becoming increasingly common making their way into fields such as health automobile social media and robotics This book will help you explore TensorFlow 2 the brand new version of Google s open source framework for machine learning You will understand how to benefit from using convolutional neural networks CNNs for visual tasks Hands On Computer Vision with TensorFlow 2 starts with the fundamentals of computer vision and deep learning teaching you how to build a neural network from scratch You will discover the features that have made TensorFlow the most widely used AI library along with its intuitive Keras interface You ll then move on to building training and deploying CNNs efficiently Complete with concrete code examples the book demonstrates how to classify images with modern solutions such as Inception and ResNet and extract specific content using You Only Look Once YOLO Mask R CNN and U Net You will also build generative adversarial networks GANs and variational autoencoders VAEs to create and edit images and long short term memory networks LSTMs to analyze videos In the process you will acquire advanced insights into transfer learning data augmentation domain adaptation and mobile and web deployment among other key concepts By the end of the book you will have both the theoretical understanding and practical skills to solve advanced computer vision problems with TensorFlow 2 0 What you will learnCreate your own neural networks from scratchClassify images with modern architectures including Inception and ResNetDetect and segment objects in images with YOLO Mask R

CNN and U NetTackle problems faced when developing self driving cars and facial emotion recognition systemsBoost your application s performance with transfer learning GANs and domain adaptationUse recurrent neural networks RNNs for video analysisOptimize and deploy your networks on mobile devices and in the browserWho this book is for If you re new to deep learning and have some background in Python programming and image processing like reading writing image files and editing pixels this book is for you Even if you re an expert curious about the new TensorFlow 2 features you ll find this book useful While some theoretical concepts require knowledge of algebra and calculus the book covers concrete examples focused on practical applications such as visual recognition for self driving cars and smartphone apps **Python for Secret Agents - Volume II** Steven Lott,2015-12-08 Gather analyze and decode data to reveal hidden facts using Python the perfect tool for all aspiring secret agents About This Book Discover the essential features of Python programming statements variables expressions and many of the built in data types Use Python s standard library to do more sophisticated data gathering and analysis Written by a Python programming expert with over 35 years experience as a consultant teacher author and software developer Who This Book Is For This book is for Secret Agents who have some exposure to Python Our focus is on the Field Agents who are ready to do more sophisticated and complex programming in Python We ll stick to simple statistics for the most part A steady hand with a soldering iron is not required but a skilled field agent should be able to assemble a working Arduino circuit to gather their own sensor data What You Will Learn Upgrade Python to the latest version and discover its latest and greatest tools Use Python libraries to extract data from log files that are designed more for people to read than for automated analysis Summarize log files and extract meaningful information Gather data from social networking sites and leverage your experience of analyzing log files to summarize the data you find Extract text and images from social networking sites Parse the complex and confusing data structures in a PDF file to extract meaningful text that we can analyze Connect small intelligent devices to our computer to use them as remote sensors Use Python to analyze measurements from sensors to calibrate them and use sensors efficiently In Detail Python is easy to learn and extensible programming language that allows any manner of secret agent to work with a variety of data Agents from beginners to seasoned veterans will benefit from Python s simplicity and sophistication The standard library provides numerous packages that move beyond simple beginner missions The Python ecosystem of related packages and libraries supports deep information processing This book will guide you through the process of upgrading your Python based toolset for intelligence gathering analysis and communication You ll explore the ways Python is used to analyze web logs to discover the trails of activities that can be found in web and database servers We ll also look at how we can use Python to discover details of the social network by looking at the data available from social networking websites Finally you ll see how to extract history from PDF files which opens up new sources of data and you ll learn about the ways you can gather data using an Arduino based sensor device Style and approach Each chapter will include a background briefing that covers an essential Python technology

After some in depth exploration of the features the chapter will conclude with a mission that is a concrete application of the Python tools and techniques covered   **OpenCV 3 Computer Vision with Python Cookbook** Aleksei Spizhevoi,Aleksandr Rybnikov,2018-03-23 OpenCV 3 is a native cross platform library for computer vision machine learning and image processing OpenCV s convenient high level APIs hide very powerful internals designed for computational efficiency that can take advantage of multicore and GPU processing This book will help you tackle increasingly challenging computer vision problems

    Android Application Programming with Opencv 3 Joseph Howse,2015-06-26 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   Learning OpenCV 3 Computer Vision with Python Joe Minichino,2015 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   **Learning OpenCV 4 Computer Vision with Python** Joseph Howse,Joe Minichino,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   *The Secret Agent ... Services Edition* Joseph Conrad,1948   *The Secret Agent* Joseph Conrad,1989   *The secret agent* Joseph Conrad,1925   *The secret agent* Joseph Conrad,1925

The book delves into Opencv For Secret Agents Howse Joseph. Opencv For Secret Agents Howse Joseph is an essential topic that must be grasped by everyone, ranging from students and scholars to the general public. The book will furnish comprehensive and in-depth insights into Opencv For Secret Agents Howse Joseph, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:

    - Chapter 1: Introduction to Opencv For Secret Agents Howse Joseph
    - Chapter 2: Essential Elements of Opencv For Secret Agents Howse Joseph
    - Chapter 3: Opencv For Secret Agents Howse Joseph in Everyday Life
    - Chapter 4: Opencv For Secret Agents Howse Joseph in Specific Contexts
    - Chapter 5: Conclusion

2. In chapter 1, this book will provide an overview of Opencv For Secret Agents Howse Joseph. This chapter will explore what Opencv For Secret Agents Howse Joseph is, why Opencv For Secret Agents Howse Joseph is vital, and how to effectively learn about Opencv For Secret Agents Howse Joseph.
3. In chapter 2, this book will delve into the foundational concepts of Opencv For Secret Agents Howse Joseph. This chapter will elucidate the essential principles that must be understood to grasp Opencv For Secret Agents Howse Joseph in its entirety.
4. In chapter 3, this book will examine the practical applications of Opencv For Secret Agents Howse Joseph in daily life. The third chapter will showcase real-world examples of how Opencv For Secret Agents Howse Joseph can be effectively utilized in everyday scenarios.
5. In chapter 4, the author will scrutinize the relevance of Opencv For Secret Agents Howse Joseph in specific contexts. This chapter will explore how Opencv For Secret Agents Howse Joseph is applied in specialized fields, such as education, business, and technology.
6. In chapter 5, this book will draw a conclusion about Opencv For Secret Agents Howse Joseph. This chapter will summarize the key points that have been discussed throughout the book.
   The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Opencv For Secret Agents Howse Joseph.

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Opencv For Secret Agents Howse Joseph Introduction

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