
Mastering Opencv With Practical Computer Vision Projects

Eventually, you will totally discover a supplementary experience and deed by spending more cash. nevertheless when? get you give a positive response that you require to get those every needs behind having significantly cash? Why dont you attempt to acquire something basic in the beginning? Thats something that will lead you to comprehend even more with reference to the globe, experience, some places, behind history, amusement, and a lot more?

It is your enormously own period to appear in reviewing habit. in the course of guides you could enjoy now is **Mastering Opencv With Practical Computer Vision Projects** below.

AMAYA
Mastering
Opencv
With
Practical
Computer
Vision
Projects 2021-10-28

CAROLYN

Leverage the
power of
OpenCV 3 and

Python to
build
computer
vision
applications
Packt

Publishing Ltd
A practical,
project-based
tutorial for
Python
developers
and hobbyists
who want to
get started
with computer
vision with
OpenCV and
Python. OpenC
V 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.
*Implement
complex
computer
vision
algorithms
and explore
deep learning
and face
detection*

Packt
Publishing Ltd
A modern
treatment
focusing on
learning and
inference,
with minimal
prerequisites,
real-world
examples and
implementabl
e algorithms.
*OpenCV By
Example* 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. *Design and implement computer vision applications with Raspberry Pi, OpenCV, and Python 3, 2nd*

Edition Packt Publishing Ltd
Over 100 highly-effective recipes to help unleash your creativity with interactive art, graphics, computer vision, 3D, and more
Machine Learning for OpenCV 4
Packt Publishing Ltd
If you want a basic understanding of computer vision's underlying theory and algorithms, this hands-on introduction is the ideal place to start. You'll learn techniques for

object recognition, 3D reconstruction, stereo imaging, augmented reality, and other computer vision applications as you follow clear examples written in Python. Programming Computer Vision with Python explains computer vision in broad terms that won't bog you down in theory. You get complete code samples with explanations

on how to reproduce and build upon each example, along with exercises to help you apply what you've learned. This book is ideal for students, researchers, and enthusiasts with basic programming and standard mathematical skills. Learn techniques used in robot navigation, medical image analysis, and other computer vision applications. Work with image mappings and transforms,

such as texture warping and panorama creation. Compute 3D reconstruction s from several images of the same scene. Organize images based on similarity or content, using clustering methods. Build efficient image retrieval techniques to search for images based on visual content. Use algorithms to classify image content and recognize objects. Access the popular OpenCV

library through a Python interface Hands-On Image Processing with Python Packt Publishing Ltd Mastering OpenCV with Practical Computer Vision Projects Packt Publishing Ltd Computer Vision in C++ with the OpenCV Library Packt Publishing Ltd Explore the mathematical computations and algorithms for image processing using popular Python tools	and frameworks. Key Features Practical coverage of every image processing task with popular Python libraries Includes topics such as pseudo-coloring, noise smoothing, computing image descriptors Covers popular machine learning and deep learning techniques for complex image processing tasks Book Description Image processing	plays an important role in our daily lives with various applications such as in social media (face detection), medical imaging (X-ray, CT-scan), security (fingerprint recognition) to robotics & space. This book will touch the core of image processing, from concepts to code using Python. The book will start from the classical image processing techniques and explore
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the evolution of image processing algorithms up to the recent advances in image processing or computer vision with deep learning. We will learn how to use image processing libraries such as PIL, scikit-image, and scipy ndimage in Python. This book will enable us to write code snippets in Python 3 and quickly implement complex image processing algorithms such as image

enhancement, filtering, segmentation, object detection, and classification. We will be able to use machine learning models using the scikit-learn library and later explore deep CNN, such as VGG-19 with Keras, and we will also use an end-to-end deep learning model called YOLO for object detection. We will also cover a few advanced problems, such as image inpainting, gradient

blending, variational denoising, seam carving, quilting, and morphing. By the end of this book, we will have learned to implement various algorithms for efficient image processing. What you will learn Perform basic data pre-processing tasks such as image denoising and spatial filtering in Python Implement Fast Fourier Transform (FFT) and Frequency domain filters (e.g., Weiner)

in Python Do morphological image processing and segment images with different algorithms Learn techniques to extract features from images and match images Write Python code to implement supervised / unsupervised machine learning algorithms for image processing Use deep learning models for image classification, segmentation, object detection and

style transfer Who this book is for This book is for Computer Vision Engineers, and machine learning developers who are good with Python programming and want to explore details and complexities of image processing. No prior knowledge of the image processing techniques is expected. **Mastering OpenCV with Practical Computer Vision Projects** Packt

Publishing Ltd This is the definitive advanced tutorial for OpenCV, designed for those with basic C++ skills. The computer vision projects are divided into easily assimilated chapters with an emphasis on practical involvement for an easier learning curve. Cool, fun and advanced projects that cover the various aspects of OpenCV programming Strong emphasis on

programming techniques and methodology for the best approach to each project. Ten projects that are carefully designed to build on your skills at every step. In Detail OpenCV is a computer vision library that is extensively used in companies, research groups and governmental bodies for real-time capture, video file import, image manipulation, object detection and

much more. Its comprehensive set of computer vision and machine learning algorithms makes it the obvious choice for professionals to develop visual applications. With this book in hand, you would not need to plow through several pages of theory as this book will take you through the creation of many exciting projects that showcase the huge range of possibilities

that open up when OpenCV is exploited to its full potential. OpenCV: Computer Vision Projects with Python Packt Publishing Ltd Work on practical computer vision projects covering advanced object detector techniques and modern deep learning and machine learning algorithms. Key Features Learn about the new features that help unlock the full potential of

OpenCV 4 Build face detection applications with a cascade classifier using face landmarks Create an optical character recognition (OCR) model using deep learning and convolutional neural networks Book Description Mastering OpenCV, now in its third edition, targets computer vision engineers taking their first steps toward mastering	OpenCV. Keeping the mathematical formulations to a solid but bare minimum, the book delivers complete projects from ideation to running code, targeting current hot topics in computer vision such as face recognition, landmark detection and pose estimation, and number recognition with deep convolutional networks. You'll learn from experienced OpenCV	experts how to implement computer vision products and projects both in academia and industry in a comfortable package. You'll get acquainted with API functionality and gain insights into design choices in a complete computer vision project. You'll also go beyond the basics of computer vision to implement solutions for complex image processing projects. By
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the end of the book, you will have created various working prototypes with the help of projects in the book and be well versed with the new features of OpenCV4. What you will learn Build real-world computer vision problems with working OpenCV code samples Uncover best practices in engineering and maintaining OpenCV projects Explore algorithmic design

approaches for complex computer vision tasks Work with OpenCV's most updated API (v4.0.0) through projects Understand 3D scene reconstruction and Structure from Motion (SfM) Study camera calibration and overlay AR using the ArUco Module Who this book is for This book is for those who have a basic knowledge of OpenCV and are competent C++ programmers. You need to

have an understanding of some of the more theoretical/mathematical concepts, as we move quite quickly throughout the book.

Computer Vision with OpenCV 3 and Qt5

Packt Publishing Ltd 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-
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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. <i>Learn OpenCV</i>	<i>4 by Building Projects</i> Packt Publishing Ltd OpenCV is mainly used in Computer Vision and image processing and 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. This book will be your guide to understanding the basic	OpenCV concepts and algorithms. <i>OpenCV 2 Hotshot</i> Packt Publishing Ltd Learn how to model and train advanced neural networks to implement a variety of Computer Vision tasks Key Features Train different kinds of deep learning model from scratch to solve specific problems in Computer Vision Combine the power of Python, Keras, and TensorFlow to build deep
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learning models for object detection, image classification, similarity learning, image captioning, and more. Includes tips on optimizing and improving the performance of your models under various constraints.

Book Description

Deep learning has shown its power in several application areas of Artificial Intelligence, especially in Computer

Vision. Computer Vision is the science of understanding and manipulating images, and finds enormous applications in the areas of robotics, automation, and so on. This book will also show you, with practical examples, how to develop Computer Vision applications by leveraging the power of deep learning. In this book, you will learn different techniques related to

object classification, object detection, image segmentation, captioning, image generation, face analysis, and more. You will also explore their applications using popular Python libraries such as TensorFlow and Keras. This book will help you master state-of-the-art, deep learning algorithms and their implementation. What you will learn

Set up an environment for deep

learning with Python, TensorFlow, and Keras Define and train a model for image and video classification Use features from a pre-trained Convolutional Neural Network model for image retrieval Understand and implement object detection using the real-world Pedestrian Detection scenario Learn about various problems in image captioning

and how to overcome them by training images and text together Implement similarity matching and train a model for face recognition Understand the concept of generative models and use them for image generation Deploy your deep learning models and optimize them for high performance Who this book is for This book is targeted at data scientists and Computer Vision

practitioners who wish to apply the concepts of Deep Learning to overcome any problem related to Computer Vision. A basic knowledge of programming in Python—and some understanding of machine learning concepts—is required to get the best out of this book. Hands-On Algorithms for Computer Vision Apress 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 with Practical Computer Vision Projects** Packt Publishing Ltd Explains the theory behind basic computer vision and provides a bridge from the theory to practical implementation using the industry standard

OpenCV libraries Computer Vision is a rapidly expanding area and it is becoming progressively easier for developers to make use of this field due to the ready availability of high quality libraries (such as OpenCV2). This text is intended to facilitate the practical use of computer vision with the goal being to bridge the gap between the theory and the practical implementation of computer

vision. The book will explain how to use the relevant OpenCV library routines and will be accompanied by a full working program including the code snippets from the text. This textbook is a heavily illustrated, practical introduction to an exciting field, the applications of which are becoming almost ubiquitous. We are now surrounded by cameras, for example cameras on computers & tablets/ cameras built into our mobile phones/ cameras in games consoles; cameras imaging difficult modalities (such as ultrasound, X-ray, MRI) in hospitals, and surveillance cameras. This book is concerned with helping the next generation of computer developers to make use of all these images in order to develop systems which are more intuitive and interact with us in more intelligent ways. Explains the theory behind basic computer vision and provides an abridge from the theory to practical implementation using the industry standard OpenCV libraries. Offers an introduction to computer vision, with enough theory to 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 undergraduat e and Masters levels Includes the basics of cameras and images and image processingto remove noise, before moving on to topics such as imagehistogra mming; 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.Ima ges or videos for these problems are provided in the resourcesasso ciated with this book which include an enhanced eBook <i>Raspberry Pi Computer Vision</i>	<i>Programming Packt Publishing Ltd 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</i>
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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. *A practical guide covering topics from image processing,*

augmented reality to deep learning with OpenCV 4 and Python 3.7
 Packt Publishing Ltd
 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.
Build advanced computer vision applications using machine learning and deep learning techniques
 Packt Publishing Ltd
 Annotation
 Computer Vision is fast becoming an important technology and is used in Mars robots, national security systems, automated factories, driver-less

cars, and medical image analysis to new forms of human-computer interaction.
 OpenCV is the most common library for computer vision, providing hundreds of complex and fast algorithms. But it has a steep learning curve and limited in-depth tutorials. Mastering OpenCV with Practical Computer Vision Projects is the perfect book for developers with just basic

OpenCV skills who want to try practical computer vision projects, as well as the seasoned OpenCV experts who want to add more Computer Vision topics to their skill set or gain more experience with OpenCVs new C++ interface before migrating from the C API to the C++ API. Each chapter is a separate project including the necessary background

knowledge, so try them all one-by-one or jump straight to the projects youre most interested in. Create working prototypes from this book including real-time mobile apps, Augmented Reality, 3D shape from video, or track faces & eyes, fluid wall using Kinect, number plate recognition and so on. Mastering OpenCV with Practical Computer Vision Projects gives you rapid training in nine

computer vision areas with useful projects. **Intelligent algorithms for building image processing apps using OpenCV 4, Python, and scikit-learn, 2nd Edition** Packt Publishing Ltd A practical guide to understanding the core machine learning and deep learning algorithms, and implementing them to create intelligent image processing systems using

OpenCV 4 Key Features Gain insights into machine learning algorithms, and implement them using OpenCV 4 and scikit-learn Get up to speed with Intel OpenVINO and its integration with OpenCV 4 Implement high-performance machine learning models with helpful tips and best practices Book Description OpenCV is an open-source library for building computer vision apps. The latest release, OpenCV 4, offers a plethora of features and platform improvements that are covered comprehensively in this up-to-date second edition. You'll start by understanding the new features and setting up OpenCV 4 to build your computer vision applications. You will explore the fundamentals of machine learning and even learn to design different algorithms that can be used for image processing. Gradually, the book will take you through supervised and unsupervised machine learning. You will gain hands-on experience using scikit-learn in Python for a variety of machine learning applications. Later chapters will focus on different machine learning algorithms, such as a

decision tree, support vector machines (SVM), and Bayesian learning, and how they can be used for object detection computer vision operations. You will then delve into deep learning and ensemble learning, and discover their real-world applications, such as handwritten digit classification and gesture recognition. Finally, you'll get to grips with the latest Intel OpenVINO for

building an image processing system. By the end of this book, you will have developed the skills you need to use machine learning for building intelligent computer vision applications with OpenCV 4. What you will learn Understand the core machine learning concepts for image processing Explore the theory behind machine learning and deep learning

algorithm design Discover effective techniques to train your deep learning models Evaluate machine learning models to improve the performance of your models Integrate algorithms such as support vector machines and Bayes classifier in your computer vision applications Use OpenVINO with OpenCV 4 to speed up model inference Who this book is for

This book is for Computer Vision professionals, machine learning developers, or anyone who wants to learn machine learning algorithms and implement them using OpenCV 4. If you want to build real-world Computer Vision and image processing applications powered by machine learning, then this book is for you. Working knowledge of Python programming

is required to get the most out of this book. [Building Computer Vision Projects with OpenCV 4 and C++](#) 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. *Build complex computer*

vision applications with OpenCV and C++, 4th Edition Packt Publishing Ltd 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.