Learning OpenCV

By Samyak Datta

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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.

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Editorial Review

About the Author
Samyak Datta has a bachelor's and a master's degree in Computer Science from the Indian Institute of Technology, Roorkee. He is a computer vision and machine learning enthusiast. His first contact with OpenCV was in 2013 when he was working on his master's thesis, and since then, there has been no looking back. He has contributed to OpenCV's GitHub repository. Over the course of his undergraduate and master's degrees, Samyak has had the pportunity to engage with both the industry and research. He worked with Google India and Media.net (Directi) as a software engineering intern, where he was involved with projects ranging from machine learning and natural language processing to computer vision. As of 2016, he is working at the Center for Visual Information Technology (CVIT) at the Indian Institute of Information Technology, Hyderabad.

Users Review

From reader reviews:

Luke Palmieri:

The ability that you get from Learning OpenCV will be the more deep you digging the information that hide within the words the more you get thinking about reading it. It doesn't mean that this book is hard to comprehend but Learning OpenCV giving you thrill feeling of reading. The writer conveys their point in particular way that can be understood through anyone who read it because the author of this e-book is well-known enough. This kind of book also makes your vocabulary increase well. Therefore it is easy to understand then can go together with you, both in printed or e-book style are available. We propose you for having this particular Learning OpenCV instantly.

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