



OpenCV with Python By Example

By Prateek Joshi

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OpenCV with Python By Example By Prateek Joshi

Build real-world computer vision applications and develop cool demos using OpenCV for Python

About This Book

- Learn how to apply complex visual effects to images using geometric transformations and image filters
- Extract features from an image and use them to develop advanced applications
- Build algorithms to help you understand the image content and perform visual searches

Who This Book Is For

This book is intended for Python developers who are new to OpenCV and want to develop computer vision applications with OpenCV-Python. This book is also useful for generic software developers who want to deploy computer vision applications on the cloud. It would be helpful to have some familiarity with basic mathematical concepts such as vectors, matrices, and so on.

What You Will Learn

- Apply geometric transformations to images, perform image filtering, and convert an image into a cartoon-like image
- Detect and track various body parts such as the face, nose, eyes, ears, and mouth
- Stitch multiple images of a scene together to create a panoramic image
- Make an object disappear from an image
- Identify different shapes, segment an image, and track an object in a live video
- Recognize an object in an image and build a visual search engine
- Reconstruct a 3D map from images
- Build an augmented reality application

In Detail

Computer vision is found everywhere in modern technology. OpenCV for Python enables us to run computer vision algorithms in real time. With the advent of powerful machines, we are getting more processing power to work with. Using this technology, we can seamlessly integrate our computer vision applications into the cloud. Web developers can develop complex applications without having to reinvent the wheel.

This book will walk you through all the building blocks needed to build amazing computer vision applications with ease. We start off with applying geometric transformations to images. We then discuss affine and projective transformations and see how we can use them to apply cool geometric effects to photos. We will then cover techniques used for object recognition, 3D reconstruction, stereo imaging, and other computer vision applications.

This book will also provide clear examples written in Python to build OpenCV applications. The book starts off with simple beginner's level tasks such as basic processing and handling images, image mapping, and detecting images. It also covers popular OpenCV libraries with the help of examples.

The book is a practical tutorial that covers various examples at different levels, teaching you about the different functions of OpenCV and their actual implementation.

Style and approach

This is a conversational-style book filled with hands-on examples that are really easy to understand. Each topic is explained very clearly and is followed by a programmatic implementation so that the concept is solidified. Each topic contributes to something bigger in the following chapters, which helps you understand how to piece things together to build something big and complex.

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Editorial Review

About the Author

Prateek Joshi

Prateek Joshi is a computer vision researcher with a primary focus on content-based analysis. He is particularly interested in intelligent algorithms that can understand images to produce scene descriptions in terms of constituent objects. He has a master's degree from the University of Southern California, specializing in computer vision. He was elected to become a member of the Honor Society for academic excellence and an ambassador for the School of Engineering. Over the course of his career, he has worked for companies such as Nvidia, Microsoft Research, Qualcomm, and a couple of early stage start-ups in Silicon Valley. His work in this field has resulted in multiple patents, tech demos, and research papers at major IEEE conferences. He has won many hackathons using a wide variety of technologies related to image recognition. He enjoys blogging about topics such as artificial intelligence, abstract mathematics, and cryptography. His blog has been visited by users in more than 200 countries, and he has been featured as a guest author in prominent tech magazines.

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