Robert Laganiere

OpenCV 3 Computer Vision Application Programming Cookbook

Third Edition

Recipes to help you build computer vision applications that make the most of the popular C++ library OpenCV 3

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OpenCV 3 Computer Vision Application Programming Cookbook - Third Edition

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.

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, and 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.

Things 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

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I wish to thank all my students at the VIVA lab; I learn so much from them.

About the Reviewer

Luca Del Tongo is a computer engineer with a strong passion for algorithms, computer vision, and image processing techniques. He's the coauthor of a free e-book called Data Structures and Algorithms (DSA) with over 100k downloads so far and has published several image processing tutorials on his YouTube channel using Emgu CV. During his master's thesis, he developed an image forensic algorithm published in a scientific paper called Copy Move forgery detection and localization by means of robust clustering with J-Linkage. Currently, Luca works as a software engineer in the ophthalmology field developing corneal topography, processing algorithms, IOL calculation, and computerized chart projector. He loves to play sport and follow MOOC courses in his spare time.

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