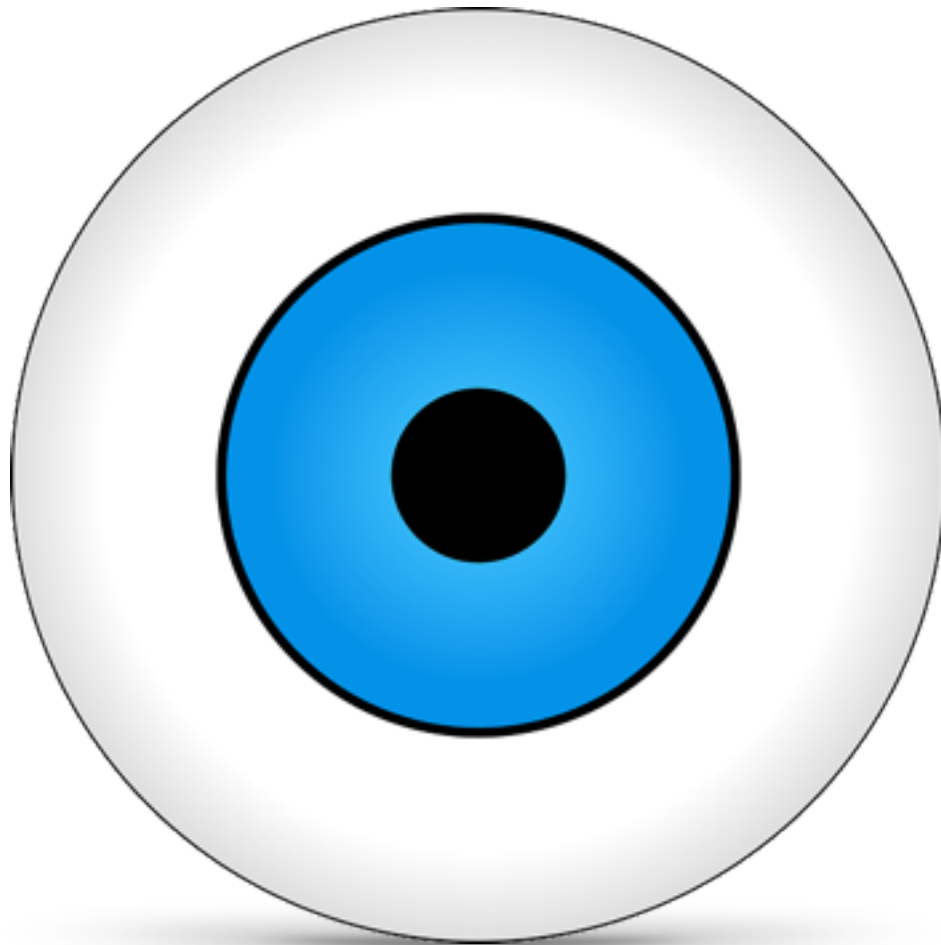# Computer Vision Resources

## Satya Mallick, Ph.D.

LearnOpenCV.com

Books

1. Computer Vision: Algorithms and Applications

Author : Richard Szeliski

Summary : This is by far the best book on computer vision I have used. This is a good basic reference book for a wide variety of computer vision topics — image formation, image processing, feature detection and matching, segmentation, image alignment, structure from motion, motion estimation, image stitching, computational photography, stereo correspondence, 3D reconstruction, image based rendering, and recognition.

Free version : http://szeliski.org/Book/

Buy at Amazon (Hardcover)
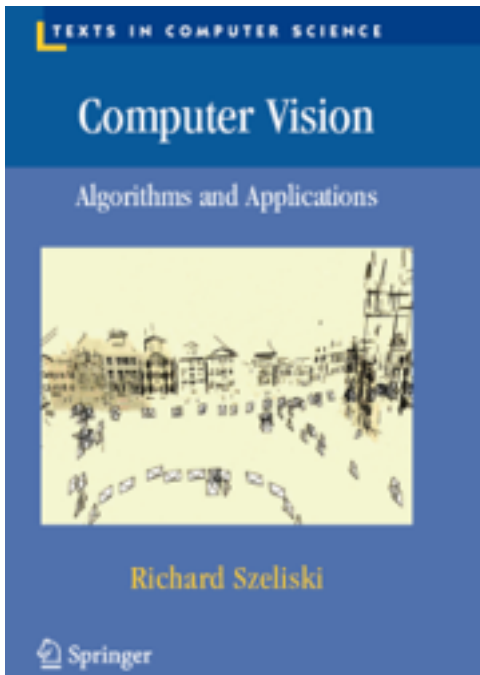
2. Digital Image Processing

Authors : Rafael C. Gonzalez and Richard E. Woods

Summary : This is a good introductory book in image processing. It may be challenging to understand Computer Vision literature without a basic understanding of image processing concepts. The book covers digital image fundamentals, image enhancement (spatial and frequency domains), image restoration, color image processing, wavelets and multi-resolution processing, image compression, morphological operations, segmentation, and a bit of object detection.

Buy at Amazon (Hardcover and Paperback)
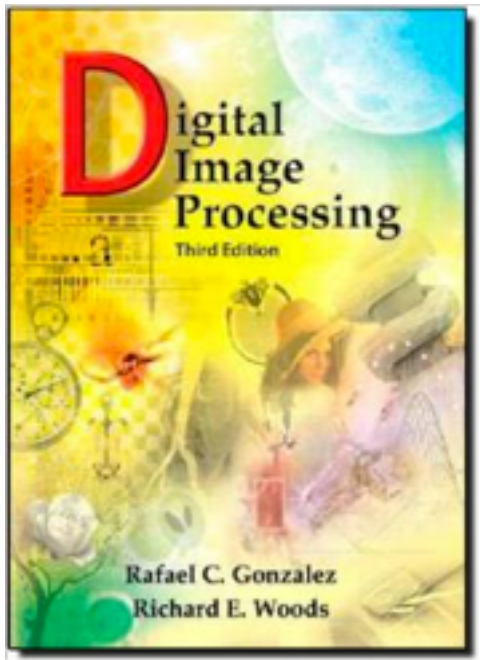
Software & Libraries

OpenCV (http://opencv.org/)

Summary

The biggest and the most extensive open source computer vision library. OpenCV has more than 47 thousand people of user community and estimated number of downloads exceeding 10 million.

Languages

C/C++ with interfaces to Python and Java.

Platforms

Windows, Linux, Mac OS, iOS, Android, Raspberry Pi, and NVIDIA Jetson TK1.

License (http://opencv.org/license.html *)*

BSD : It is free for both academic and commercial use.

Note : Not all parts of OpenCV are free.

VLFeat (http://www.vlfeat.org/)

Summary

Computer vision algorithms specializing in image understanding and local features extraction and matching.

Languages

C with interfaces in MATLAB

Platforms

Windows, Mac OS X, and Linux.

License

BSD : It is free for academic and commercial use.

SimpleCV (http://simplecv.org/)

Summary

SimpleCV is an open source wrapper around computer vision libraries such as OpenCV that hides some of its complexities.

Languages

Python

Platforms

Windows, Mac OS X, Linux, and Raspberry Pi.

4. **scikit-learn** (**http://scikit-learn.org/**) : As a computer vision programmer / engineer, you will inevitably need a good machine learning library and scikit-learn serves that purpose well. It uses numpy / scipy idioms and provides algorithms for preprocessing data, classification, regression, clustering, dimensionality reduction, and model selection.

Web APIs

1. **Alchemy API** (**http://www.alchemyapi.com/products/alchemyvision**) : A deep learning based API for auto tagging images based on the content of the image. If you upload an image of a cat, it will return "cat" as a tag. Deep learning based large scale recognition is a hot topic of research these days. If you have been following **ImageNet Large Scale Visual Recognition Challenge (ILSVRC)**, you probably know that even though IBM is first to market with its API, several other teams from Google, Facebook, Microsoft, Baidu, and several universities are doing much better in the competition. Hope they come up with an API too!

2. **CloudSight** (**http://cloudsightapi.com/**) : What is better than computer vision ? Well, human vision! CloudSight API does visual recognition using a combination of computer vision and human crowd sourcing. You can use their app called CamFind to see how well it works.

3. **Face++** (**http://www.faceplusplus.com/**) : An API for face detection, facial landmark detection, face search, and face recognition.

4. **TinEye** (**https://services.tineye.com/TinEyeAPI**) : Search the entire web for an image using TinEye's reverse image search.

5. **OCRSDK** (**http://ocrsdk.com**) : Upload an image containing text and get back the results as text. They provide sample code and it works well for standard scanned text.

6. **CloudCV** (**http://cloudcv.org**) : CloudCV describes itself as a Large-Scale Distributed Computer Vision as a Cloud Service. It is not a commercial product, but is being developed by Machine Learning and Perception Lab at Virginia Tech. They do image stitching and object detection / classification in the cloud.

My Contact Info

Website	http://www.learnopencv.com
Email	spmallick@learnopencv.com
LinkedIn	https://www.linkedin.com/in/satyamallick
Google+	https://plus.google.com/+SatyaMallick