Using your Raspberry Pi to learn computer vision and OpenCV

Note: *This document is* only *for readers who want to use their Raspberry Pi to follow along with Practical Python and OpenCV + Case Studies. If you are not interested in using a Raspberry Pi, you can safely ignore this document.*

Interested in using your Raspberry Pi to learn computer vision, image processing, and OpenCV?

If so, then this document is your quick-start guide to getting OpenCV and the required packages installed and running on your Raspberry Pi.

Which Raspberry Pi model should I use?

You should definitely be using the Raspberry Pi 3 (or better) when following along with the code examples in these books. While the Pi Zero W can run all of the examples inside *Practical Python and OpenCV*, the limited processing power and small amount of RAM becomes an issue when we get to *Case Studies*.

If you have a Pi Zero W model, definitely use it when going through *Practical Python and OpenCV*. But once you get to the *Case Studies* book, I ***highly recommend*** that you upgrade to the Pi 3 or newer.

Where can I get a Raspberry Pi 3?

You can purchase the Raspberry Pi 3 from your favorite online electronics retailer.

Personally, I prefer to spend a little extra money and purchase from Canakit — their shipping is fast and reliable (fulfillment through Amazon.com), plus their complete ready-to-go bundles are really nice.

You should also pick up a Raspberry Pi camera module so you can take photos using your Pi and access the video stream. Examples in the Case Studies book, such as face detection and eye tracking in webcam video streams require a Raspberry Pi camera module.

I also picked up a camera housing to keep the camera safe, because why not?

How do I install OpenCV on my Raspberry Pi?

I have provide **detailed installation instructions** for the Raspberry Pi on this page:

https://www.pyimagesearch.com/opencv-tutorials-resources-guides/

Just pick your version of the Raspberry Pi and which version of OpenCV you would like to install and the instructions will have you up and running in no time!

How do I access the Raspberry Pi camera module using OpenCV?

No worries, I have you covered there as well:

http://www.pyimagesearch.com/2015/03/30/accessing-the-raspberry-pi-camera-with-opencv-and-python/

How do I run my first computer vision script on my Raspberry Pi?

Assuming that you have already installed OpenCV on your Raspberry Pi, simply open up a terminal and navigate to where this .PDF file lives. Then, change directory into the *Practical Python and OpenCV* source code directory:

```
$ cd Practical\ Python\ and\ OpenCV/
```

And then into the `code` and `chapter-03` directories:

```
$ cd code
$ cd chapter-03
```

Finally, execute the following command:

```
$ python load_display_save.py --image ../images/trex.png
```

This will load the `trex.png` image from disk, display it to your screen, and write it back to file.

Do all code examples run on the Raspberry Pi?

All examples inside *Practical Python and OpenCV* will run out of the box on the Raspberry Pi. **Take a look at the top of each file** where I have provided an **example usage of each script**, like this:

```
# USAGE
# python load_display_save.py --image ../images/trex.png
```

Simply copy-and-paste these commands into your terminal and you'll be able to run the examples.

Also, all examples inside *Case Studies* will run out of the box on the Raspberry Pi, with the exception of two: `webcam_face_detection` and `eye_tracking`.

Inside the `Case Studies/pi_code` directory you will find special versions of these Python programs that are designed to run on the Raspberry Pi using the `picamera` module.

For all other code examples in the Case Studies book, use the `Case Studies/code` directory.