

The PyImageSearch Virtual Machine

[\(HTTPS://GURUS.PYIMAGESEARCH.COM/\)](https://gurus.pyimagesearch.com/)
> THE PYIMAGESEARCH VIRTUAL MACHINE

In order to run the code examples provided with each lesson in the PyImageSearch Gurus Course, we'll need to create our development environment. I have provided instructions on how to setup your own native development environment on both [OSX and Ubuntu \(https://gurus.pyimagesearch.com/setting-up-your-python-opencv-development-environment/\)](https://gurus.pyimagesearch.com/setting-up-your-python-opencv-development-environment/), but if you are looking to jumpstart your education, I definitely recommend using the PyImageSearch virtual machine:

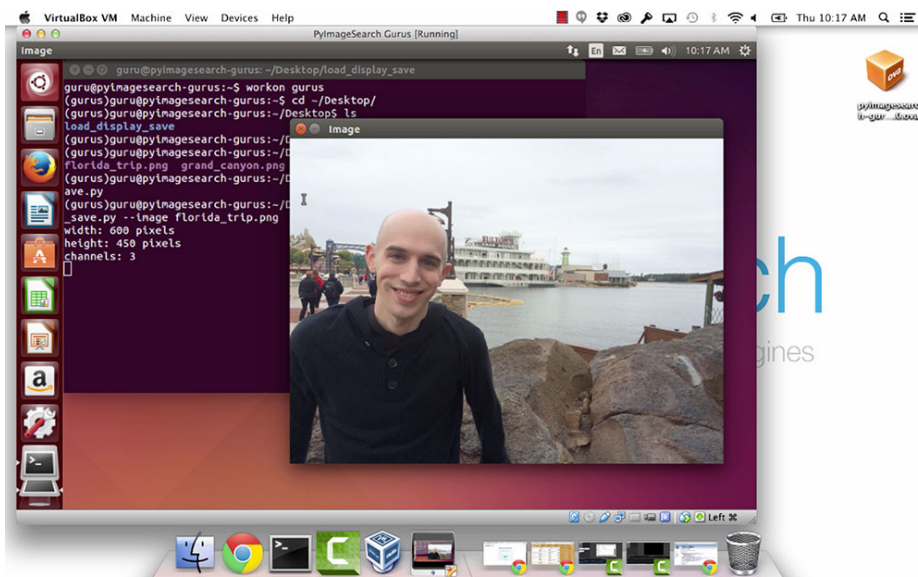
Ready to continue the course?

Click the button below to **continue your journey to computer vision guru.**

I'm ready,
let's go!
(./pyimagesearch-
gurus-
course/)

Resources & Links

- [PyImageSearch Gurus Community](https://community.pyimagesearch.com/)
(<https://community.pyimagesearch.com/>)
- [PyImageSearch Virtual Machine](https://gurus.pyimagesearch.com/virtual-machine/)
(<https://gurus.pyimagesearch.com/virtual-machine/>)



[.https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/vm_screenshot.jpg](https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/vm_screenshot.jpg).

The PyImageSearch virtual machine is a downloadable **Ubuntu VirtualBox virtual machine** that comes with all of our necessary computer vision and image processing libraries pre-configured and pre-installed.

All you need to do is download it, import into [VirtualBox](https://www.virtualbox.org/wiki/Downloads) (<https://www.virtualbox.org/wiki/Downloads>), and start learning — it's a dead simple setup. **You can download the most recent version of the virtual machine at the bottom of this page.**

While virtual machine is downloading, I definitely suggest watching this simple install video to help you get up and running:

- [Setting up your own Python + OpenCV environment](https://gurus.pyimagesearch.com/up-your-python-opencv-development-environment/) (<https://gurus.pyimagesearch.com/up-your-python-opencv-development-environment/>)
- [Course Syllabus & Content Release Schedule](https://gurus.pyimagesearch.com/syllabus-content-release-schedule/) (<https://gurus.pyimagesearch.com/syllabus-content-release-schedule/>)
- [Member Perks & Discounts](https://gurus.pyimagesearch.com/gurus-discounts-perks/) (<https://gurus.pyimagesearch.com/gurus-discounts-perks/>)
- [Your Achievements](https://gurus.pyimagesearch.com) (<https://gurus.pyimagesearch.com>)
- [Official OpenCV documentation](http://docs.opencv.org/index.htm) (<http://docs.opencv.org/index.htm>)

Your Account

- [Account Info](https://gurus.pyimagesearch.com) (<https://gurus.pyimagesearch.com>)
- [Support](https://gurus.pyimagesearch.com) (<https://gurus.pyimagesearch.com>)
- [Logout](https://gurus.pyimagesearch.com/login.php?action=logout&redirect_to=https%3F) ([https://gurus.pyimagesearch.com/login.php?action=logout&redirect_to=https%](https://gurus.pyimagesearch.com/login.php?action=logout&redirect_to=https%3F)

 Search

How to import and use your PyImageSearc...



Attention *Windows Users*: We recommend that you unzip the zip file (link below) using the free **7zip** (<https://www.7-zip.org/>) utility. We have had a couple Gurus users have corrupt extractions, but when they switch to 7zip, everything works.

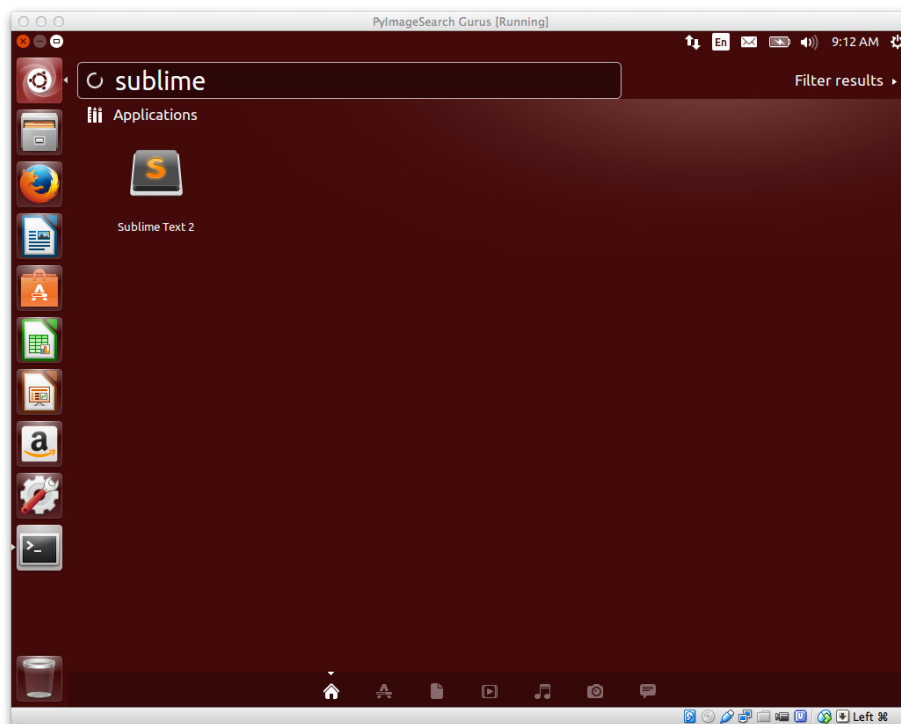
After you have the VM installed, you should head over to the (optional) Step 14 of [configuring your development](https://gurus.pyimagesearch.com/setting-up-your-python-opencv-development-environment/) (<https://gurus.pyimagesearch.com/setting-up-your-python-opencv-development-environment/>) environment and decide if you want install the VirtualBox Guest Additions.

Editing Code

Choosing a code editor is a very personal choice. You may prefer to work exclusively via the command line using [vim](http://www.vim.org/) (<http://www.vim.org/>) or [emacs](http://www.gnu.org/software/emacs/) (<http://www.gnu.org/software/emacs/>). Or you may prefer an IDE such as [Sublime Text](http://www.sublimetext.com/) (<http://www.sublimetext.com/>), [PyCharm](https://www.jetbrains.com/pycharm/) (<https://www.jetbrains.com/pycharm/>), or [Eclipse](https://eclipse.org/) (<https://eclipse.org/>).

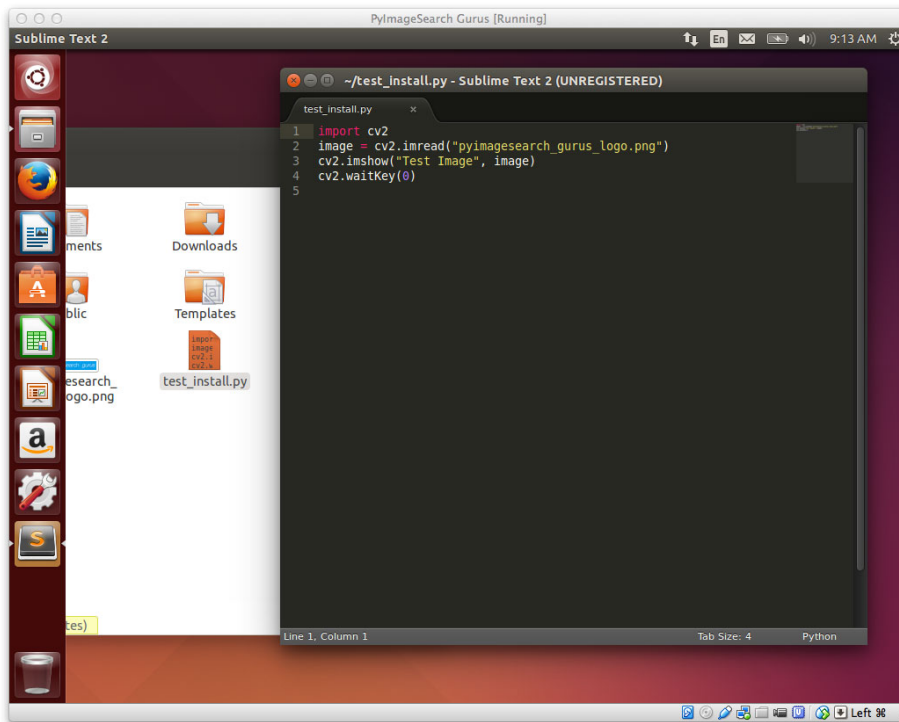
I personally prefer Sublime Text and PyCharm, but again, that decision is entirely up to you and the editor you feel most comfortable with.

That all said, I have gone ahead and installed the Sublime Text editor on the Ubuntu VirtualBox machine. You can find Sublime Text by searching for it via unity:



(https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/sublime_text_2_unity.jpg).

And in order to open a given file with Sublime Text, just right click on the source file and open it via Sublime Text:



(https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/sublime_text_2_running.jpg).

Again, this is by no means a requirement or an indication that you should use Sublime Text. *Use whatever editor you feel most comfortable with.* I simply wanted to provide a VM that came with a code editor pre-installed so you could start working with code instantly.

Downloads:

- **6 January 2019:** [pyimagesearch-gurus-2.4.ova](https://s3-us-west-2.amazonaws.com/static.pyimagesearch.com/gurus/pyimagesearch-gurus-2.4.ova.zip) (<https://s3-us-west-2.amazonaws.com/static.pyimagesearch.com/gurus/pyimagesearch-gurus-2.4.ova.zip>) **(2.4 release)**

The 2.4 release of the VM includes OpenCV 3.4.4 and OpenCV 4.0.0 support. The entire course is now compatible with OpenCV 4+ as well! Please note that this VM *requires* the [VirtualBox Extension Pack](#)

(<https://www.virtualbox.org/wiki/Downloads>) to be installed in addition to VirtualBox.

- **28 March 2018:** [pyimagesearch-gurus-2.3.1.ova](#)
(<https://s3-us-west-2.amazonaws.com/static.pyimagesearch.com/gurus/pyimagesearch-gurus-2.3.1.zip>) **(deprecated; 2.3.1 release)**

The 2.3.1 release of the VM includes finalized Python 3 and OpenCV 3 support for *all* modules in the course (including Hadoop and Deep Learning). Now that the course has been migrated from Python 2.7/OpenCV 2.4 to Python 3/OpenCV 3, we recommend you use the 2.3.1 release.

- **Known issue:** Please update scikit-learn in the gurus environment:

```
$ workon gurus && pip install --upgrade scikit-learn
```

- **Known issue:** The Keras environment needs Pillow:

```
$ workon keras && pip install --upgrade pillow
```

- **28 November 2017:** [pyimagesearch-gurus-2.3.ova](#)
(deprecated; BETA 2.3 release)

This VM is a beta 2.3 release that provides support for Python 3 and OpenCV 3. We recommend you use 2.3 release below for the course but have provided the beta release for readers who are interested in testing Python 3 + OpenCV 3 functionality inside the course.

- **21 August 2016:** [pyimagesearch-gurus-2.2.ova](#)
(deprecated; 2.2 release)

Updated VM to include the latest versions `keras` .

- **27 March 2016:** [pyimagesearch-gurus-2.1.ova](#)
(deprecated; 2.1 release)

Updated VM to include the latest versions of `scikit-learn` , `scikit-image` , and `keras` .

- **9 March 2016:** [pyimagesearch-gurus-2.0.ova](#) **(deprecated; beta 2.0 release)**

Major updates to the VM, including adding in Hadoop, Redis, and numerous deep learning libraries, such as Caffe,

`sklearn-theano` , and `keras` . Use the `lsvirtualenv`

command to list out all available Python virtual environments.

- **31 August 2015:** pyimagesearch-gurus-1.1.ova **(deprecated)**

Minor updates to the VM, including version 0.2.4 of

`imutils` ; matplotlib built-in to the `gurus` Python virtual environment; and the `dlib` library pre-configured and pre-installed.

- **4 June 2015:** pyimagesearch-gurus-1.0.ova **(deprecated)**
(<https://gurus.pyimagesearch.com/protected/vm/pyimagesearch-gurus-1.0.ova>)Original release of the PyImageSearch Gurus virtual machine.

FAQ & Troubleshooting

This section details some of the common questions when using the PyImageSearch Virtual machine.

What software do I need to run the virtual machine?

You need to download and install VirtualBox
(<https://www.virtualbox.org/wiki/Downloads>).

What is the username and password for the VM

The username is **guru** and the password is **pyimagesearch**.

If the password does not work, please check your VirtualBox keyboard language/region settings.

How do I run code examples from the PyImageSearch Gurus course on the VM?

Please watch the video above where I demonstrate how to run code examples on the VM.

Which environments are on the VM?

There are two main environments on the VM version 2.4 ready to go with all packages necessary for the course:

- `gurus` (Python 3.6 and OpenCV 3.4.4)
- `gurus_cv4` (Python 3.6 and OpenCV **4.0.0**)

Additionally the following environments are included and ready to go:

- `keras` (Python 3.6 and OpenCV 3.4.4)
- `caffe` (Python 3.6 and OpenCV 3.4.4)
- `nolearn` (Python 2.7, NumPy 1.10.4, and nolearn) *This version of Python and NumPy are required, so do not update them.*

To activate any of the five environments, use the `workon` command followed by the name of the environment. Here's an example:

Activating an environment on the VM	Shell
1 \$ <code>workon gurus_cv4</code>	
2 (gurus_cv4) \$	

Notice the active environment name before the bash prompt once it is active.

Can I use this VM with VMWare or other virtualization engine?

The VM was created and exported with VirtualBox, and that is the only virtualization engine we support. If you try VMWare or an alternative, you're on your own!

Where can I look for VirtualBox help online?

Most Google searches for VirtualBox problems will take you to the Virtual Box Forums (<http://forums.virtualbox.org>). There are a lot of threads, so be sure to use the search box. The admins on the forum will usually reply to you within 24 hours if you need

help with your system. If you provide logs, screenshots, error messages, etc. it will prevent some back and forth and solve the problem more quickly.

We have assembled a list of some common problems (see below). *We're happy to help with your issue as well*, but all computer hardware/OS combinations are different and sometimes we might direct you to ask the *experts* on the Virtual Box forums.

My VM is slow. What are your VirtualBox VM virtual hardware recommendations?

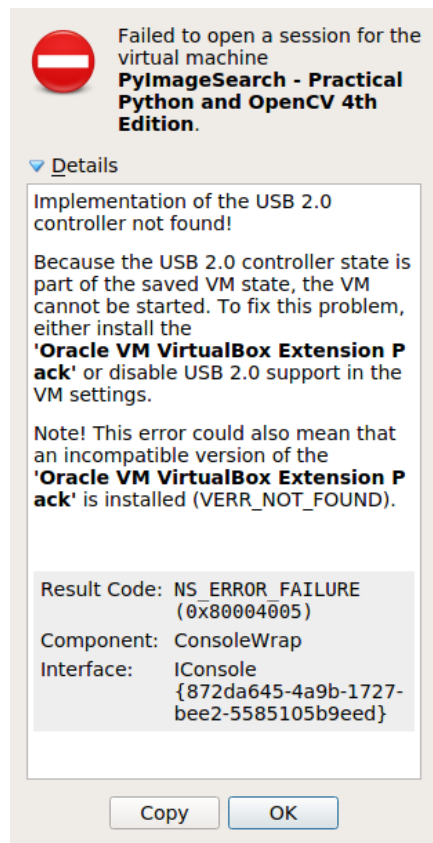
If your *physical* hardware can handle it, I recommend the following *virtual* hardware:

- 2048MB RAM (*or greater*)
- 2 virtual CPUs
- 64MB video memory (*less will make the VM GUI slow and potentially cause the VM not to start*)
- 2 network adapters
 - NAT
 - Host Only on `vboxnet0` (*this is not enabled when you unzip your VM as it tends to cause some users issues with powering up their VM for the first time*)

All of these VirtualBox VM settings can be changed when the VM is shut down and powered off.

I see a USB error message when trying to boot. What do I do?

Does the following error message look familiar?



(https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/error_message_usb.png).

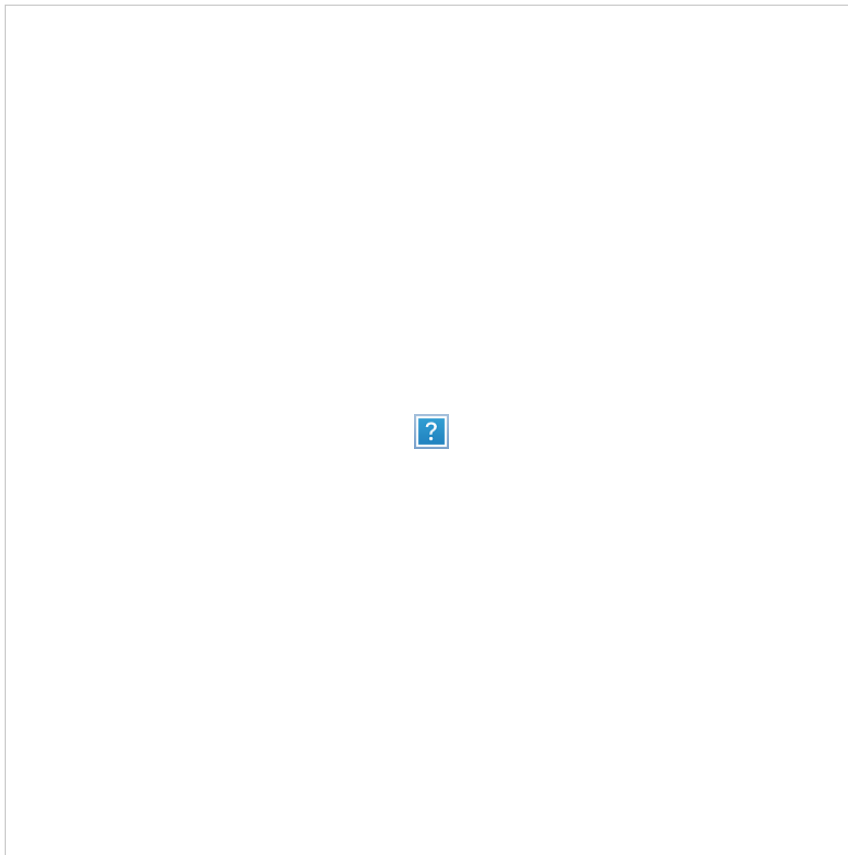
As instructed in the error message, you need to install the **VirtualBox Extension Pack** (<https://www.virtualbox.org/wiki/Downloads>) for your system.

I am on macOS and “The installation failed” for VirtualBox.

Does the following error message look familiar?

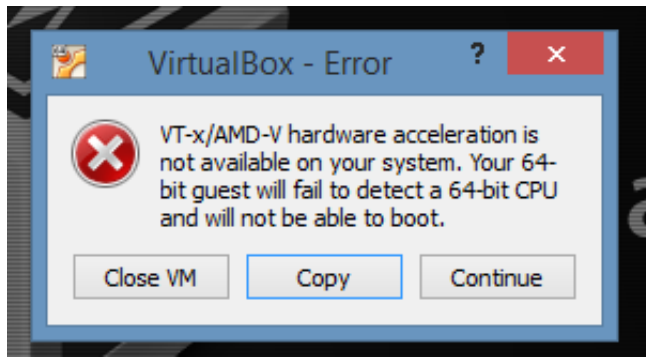


(https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/error_message_mac.png).



You need to change a security setting. Go to “*System preferences*” > “*Security and Privacy*”. Click the Lock button in the bottom left to make changes. Then click “*Allow*” next to “*System software from developer “Oracle America, Inc.” was blocked from loading*” and enter your system password. Re-run the VirtualBox installer and you should be good to go.

When I try to import my VM, I get the following error message:



(https://gurus.pyimagesearch.com/wp-content/uploads/2015/03/error_message.png)

If are are getting this error message either you need to (1) disable Hyper-V mode in Windows and/or (2) enable virtualization in your BIOS setting. Please see below for more information on fixing this error message:

1. The first is to disable Hyper-V mode from the Windows control panel. Take a look at the answers to [this question](http://superuser.com/questions/597121/vt-x-amd-v-hardware-acceleration-is-not-available-on-your-system) (<http://superuser.com/questions/597121/vt-x-amd-v-hardware-acceleration-is-not-available-on-your-system>), which is the same problem you are having. Disabling Hyper-V is different on different Windows versions, but following the answer to the question above you should be able to find your solution. That said, also make sure you do step 2 below as well.
2. The second is to check your BIOS. The next time you boot your system, go into the BIOS and ensure that Virtualization is enabled (normally it's under some sort of "advanced setting"). If virtualization is not enabled, then the VM will not be able to boot.

How can I copy/paste text between my computer (host) and the VM (guest)?

Launch your VM. In the VirtualBox VM menubar, go to “Devices” > “Insert Guest Additions”. Then from within the VM itself, follow the prompts. It is then best to shutdown the VM. From there go to VM “Settings” > “General” > “Shared Clipboard” and select “Bidirectional”. Alternatively, you can also launch the VM and in the VirtualBox VM menubar go to “Devices” > “Shared Clipboard” > “Bidirectional”.

How do I transfer files from my computer to the VM?

There are a number of ways with Option 3 being best.

1. If you use Dropbox or a similar app, you can generate a private link and then retrieve it from the VM in a browser or with `wget`. We don't recommend installing Dropbox on the VM.
2. You can install Guest Additions and share folders between your host OS and your guest VM. Sometimes stability can be an issue.
3. My favorite way is SCP (Secure Copy). Add a 2nd “Host Only” network adapter while the VM is shutdown and off. Then, start your VM again and open a terminal and type `ifconfig` to figure out your IP Address (it will likely be 192.168.56.XXX). From there you can SCP files from your host to your VM. On your host terminal type: `scp /path/to/file.zip pyimagesearch@192.168.56.101:~/`. In a few seconds, the files will be in your home folder on the VM!

How do I make my webcam work with the VM?

It's possible, but it isn't always straightforward and it may not work at all. Basically you'll need Guest Additions installed (it is available in the *Devices* menu of the VM menubar in VirtualBox). Once installed and rebooted, you can then click the *Devices* menu again and if you're lucky, your webcam will be listed under USB devices. Try to enable it and see if Ubuntu picks it up. Some users may find that they need to enable USB 3.0 on their VM

settings. You might search the Virtual Box Forums as well. The alternative is to install OpenCV natively with one of my PyImageSearch OpenCV Install Guides.

I've run out of space on the VM. What are my options?

You have a few options:

- Delete unused files. Back them up to your host machine if you need them.
- Expand the current virtual disk. This procedure is painstakingly difficult and may ruin your VM and/or files. I wouldn't recommend it.
- Add another Virtual Hard drive for this VM. *This is the ideal method.* Here's a [decent link that explains how to do it](https://www.techrepublic.com/article/how-to-add-new-drives-to-a-virtualbox-virtual-machine/) (<https://www.techrepublic.com/article/how-to-add-new-drives-to-a-virtualbox-virtual-machine/>).

Have another question?

If your question wasn't answered in this FAQ or the [Virtual Box Forums](http://forums.virtualbox.org) (<http://forums.virtualbox.org>), be sure to head over to the PyImageSearch Gurus community and [create a thread](https://community.pyimagesearch.com/) (<https://community.pyimagesearch.com/>).