



CNN for Product Quality Inspection

Pre-Workshop Guide
February 2022

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Introduction

This guide is a resource for students at Algoritma to use in setting up their laptop or

environment prior to the scheduled workshops. In this guide, students can find a list of prerequisites that will be consistently used throughout the entire course. These prerequisites are required to be **completed before** the start of the workshop.

For new students, we will run through the installation process to ensure that the necessary programming languages and tools - such as Python - are installed. The next section will then talk about methods on how to verify whether the installs were completed successfully.

For recurring students, we recommend repeating the System Verification section once more to confirm past completed installations.

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Installing Python using *Anaconda*

For our Python installation, we will be using and installing a package manager named **Anaconda**. With *Anaconda*, users will not only have Python installed but also will have the necessary packages (i.e. numpy, pandas) utilized in our workshops. Also, *Anaconda* would have included the installation of **Jupyter** - an open-source web application that allows you to create and share Python code. For alternative, you can also install **Miniconda**, the minimal Anaconda installer version that includes only conda, Python, the packages they depend on. Once opening the link below, **please choose Python version 3 for installation**.

Use this link: <https://www.anaconda.com/download>, or <https://docs.conda.io/en/latest/miniconda.html> for Miniconda

More info on *Anaconda*:

<https://docs.continuum.io/anaconda/#anaconda-navigator-or-conda>

Warning: For Windows operating systems, if you can't find the conda command from your Command Prompt please add the **C:\User\Anaconda3** and the **C:\User\Anaconda3\Scripts** to the environment variable as shown here:

<https://superuser.com/questions/949560/how-do-i-set-system-environment-variables-in-windows-10>

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System Verification

- For Mac OS X and Linux-based OS: Open “*Terminal*”
- For Windows: Open “*Command Prompt*”

Verify Python Installation:

1. Type the command `python`
2. If the installation was completed successfully, there should be a response which includes information on which Python version was installed as shown below. In this case, it appears the user installed Python version 2.7.13. **But make sure yours is 3.8 or above.**
3. To exit, enter the command `quit()` or use Ctrl-D

```
Matthews-MacBook-Pro:~ matthewmandani$ python
Python 2.7.13 [Anaconda 4.4.0 (x86_64)] (default, Dec 20 2016, 23:05:08)
[GCC 4.2.1 Compatible Apple LLVM 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
Anaconda is brought to you by Continuum Analytics.
Please check out: http://continuum.io/thanks and https://anaconda.org
>>>
```

Figure 1: python Response on Mac OS X Terminal

```
(base) C:\Users\dyahn>python
Python 3.8.3 (default, Jul 2 2020, 17:30:36) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Figure 2: python Response on Windows Command Prompt

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Verify Anaconda Installation

1. Type the command `conda list` in your “Terminal” or “Command Prompt”. 2. If the installation was completed successfully, your terminal will give a response of list of packages like the example below. In this case, the environment has Python version 3.8 pre-installed.
3. If your terminal do not give any response, please check the **Warning** in the installation section, if the problem still persist please contact mentor@algorit.ma via email for further help.

Figure 3: conda list Response on Mac OS X Terminal

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**Figure 4: conda list Response on
Windows Command Prompt**

Verify Jupyter Installation:

1. For Mac OS X or Linux-based OS: Type the command `jupyter notebook` in your “*Terminal*”. For windows OS find your jupyter notebook in the windows search or use `Anaconda Prompt` and type in `jupyter notebook`.
2. If the installation was completed successfully, Jupyter would have started a server connection and automatically opened a new window in your browser.
3. If it does not open automatically, the *Terminal* or *Command Prompt* would have provided a URL link for you to open in your browser manually.
4. If neither of these options occurred, repeat the *Anaconda* installation process.
5. To shutdown the server and exit, use Ctrl-C then type `y` to confirm or `n` to cancel



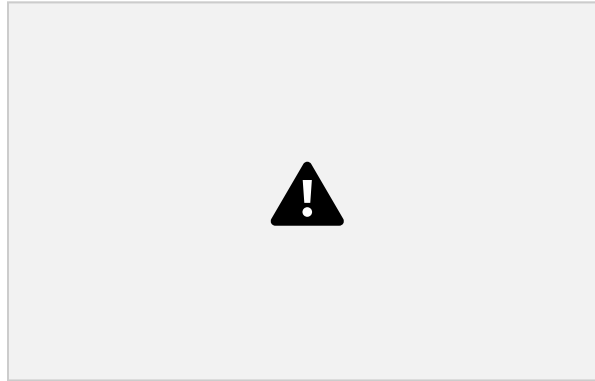
Figure 5: jupyter notebook Response on Mac OS X Terminal



Figure 6: jupyter notebook Response on Windows Command Prompt

Virtual Environment and Package Preparation *

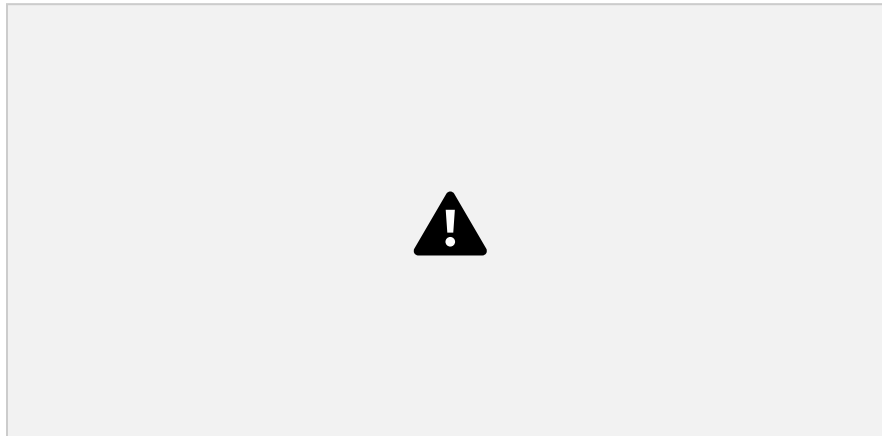
1. Search and open **Anaconda Prompt (anaconda3)** application for windows, or **Terminal** for Mac



2. Create a new virtual environment named **dss-cnn** using Python version **3.9**

```
conda create -n dss-cnn python=3.9
```

3. Proceed the installation by typing **y**



4. Activate the newly created virtual environment, namely **dss-cnn**

```
conda activate dss-cnn
```

5. Change your terminal directory to the path where the **requirements.txt** is located.

For example, if your txt file is in the Desktop directory, use: `cd Desktop`

6. For standardization packages and libraries installation, please install using the **requirements.txt** shared to you.

```
pip install -r requirements.txt
```

Wait until the installation is complete.

7. Install **kernel** to connect the virtual environment to the Jupyter Notebook.

```
python -m ipykernel install --user --name=dss-cnn
```

8. You are good to go. You can now open up your **Jupyter Notebook** by typing

```
jupyter notebook
```

 on your Anaconda Prompt.

Notes: If you choose not to install the package via the shared requirements.txt, make sure you have the following package version for standardization:

- 1.tensorflow = 2.7.0
- 2.pandas = 1.4.0
- 3.numpy = 1.22.1
- 4.matplotlib = 3.5.1
- 5.seaborn = 0.11.2
- 6.scikit-learn = 1.0.2

* will be demonstrated later in pre class session
