

NUS AI WORKSHOP DOC

NUS Intel oneAPI workshop

29th November 2021

Jupyter Notebook Basics(to read)

- a) This command at the top of a particular cell will create a bash script containing all the commands of that cell in the “filename.sh” file.

```
%%writefile filename.sh
```

- b) The Job(bash script file) is submitted to run on a CPU node using the following command

```
qsub filename.sh -l nodes=1:ppn=2 -d .
```

- c) To check the status of all the jobs `qstat` is used. It shows the running jobs.
- d) After the job is finished running, it creates one output and one error file with name `filename.sh.o.` & `filename.sh.e.` with some number as suffix.

File Edit View Run Kernel Tabs Settings Help

u53578@s001-n003: ~/Try X environment_setup.ipynb X benchmark_intelf.ipynb X benchmark_openvino.ipynb X benchmark_opentf.ipynb X

Python 3.7 (Intel® oneAPI)

Setup opensource Tensorflow environment. This is onetime job

```
[ ]: %writefile setupenv.sh
#remove any old environments
rm -rf ~/opentf
# create virtual environment for opensource TF
python -m venv ~/opentf
# activate it
source ~/opentf/bin/activate
# install tensorflow
pip install tensorflow==2.3.1
# install openvino dependencies
pip install networkx test-generator defusedxml
# check tensorflow version
python -c "import tensorflow; print('Tensorflow ',tensorflow.__version__, 'installed successfully')"
# deactivate the virtual environment
deactivate
```

To Change kernal, click here and select

check the content of setupenv.sh

```
[ ]: !cat setupenv.sh
```

Submit the job to the queue

1 4 Python 3.7 (Intel® oneAPI) | Idle Saving completed Mode: Command Ln 5, Col 26 environment_setup.ipynb

Figure: How To change the kernal

Exercise 1

Performance Boost with Intel® Optimization for PyTorch*

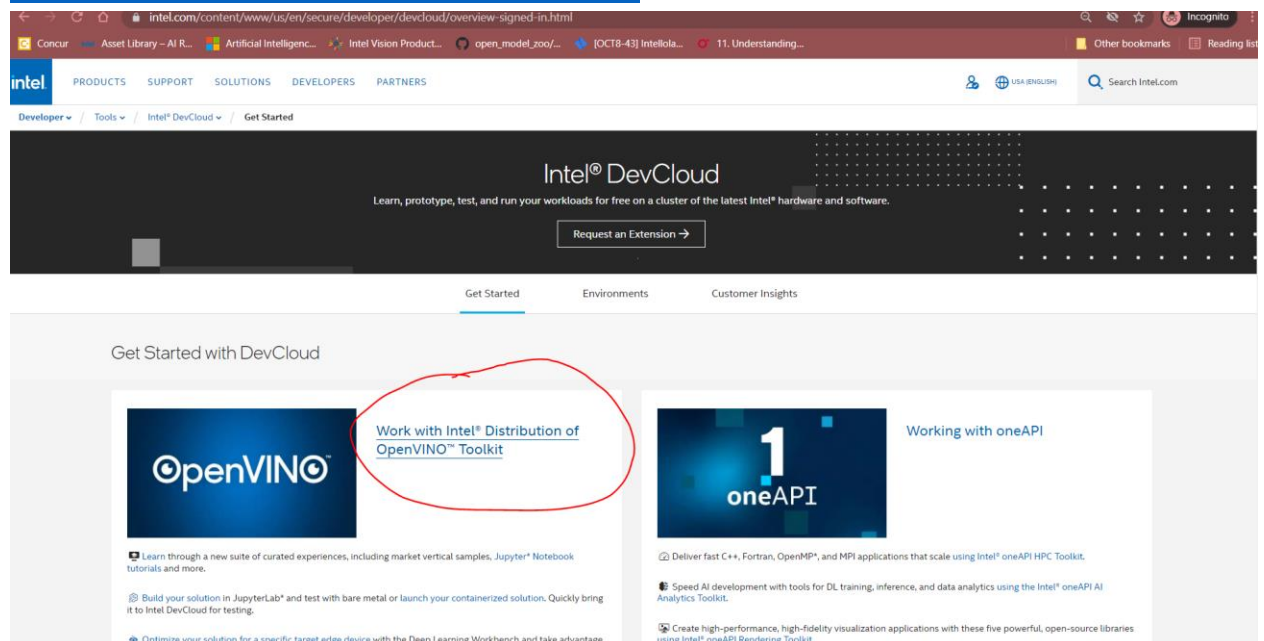
- a. Login to Jupyter Notebook env of DevCloud
- b. Make a new Terminal
- c. `conda create -n retinanet_py38 python=3.8`
- d. `conda activate retinanet_py38`
- e. `git clone https://github.com/jingxu10/retinanet_ipex.git`
- f. `python -m pip install torch==1.10.0+cpu
torchvision==0.11.1+cpu -f
https://download.pytorch.org/whl/cpu/torch_stable.html`
- g. `wget
https://github.com/jingxu10/retinanet_ipex/releases/download/v1.10/intel_extension_for_pytorch-1.10.0+cpu-cp38-cp38-linux_x86_64.whl`
- h. `python -m pip install intel_extension_for_pytorch-1.10.0+cpu-cp38-cp38-linux_x86_64.whl`
- i. `python -m pip install psutil mkl numpy`
- j. `python retinanet.py`
- k. `python retinanet.py --ipex`

Exercise 2

OpenVINO demo on DevCloud for edge

- a. Go to devcloud.intel.com and sign in if not done:
- b. Click on **Work with Intel Distribution of OpenVINO toolkit** or go to

<https://www.intel.com/content/www/us/en/develop/tools/devcloud/edge/overview.html>



- c. In the **Learn** section, open **Tutorials**. Or just go to <https://www.intel.com/content/www/us/en/developer/tools/devcloud/edge/learn/tutorials.html> And open the **classification** sample.
- d. A Classification sample Jupyter notebook will open up. Run through the cells one by one.
- e. There are many more advanced healthcare related samples with OpenVINO inference to try out later.

Documentation Links:

Intel DevCloud for oneAPI – Documentation:

<https://devcloud.intel.com>

Intel oneAPI AI Analytics toolkit – Documentation and Samples:

<https://software.intel.com/content/www/us/en/develop/tools/oneapi/ai-analytics-toolkit.html>

OpenVINO samples on DevCloud:

<https://www.intel.com/content/www/us/en/developer/tools/devcloud/edge/learn/tutorials.html>

<https://www.intel.com/content/www/us/en/developer/tools/devcloud/edge/build/sample-apps.html>

If you have any feedback on this document or ideas to improve it, please write an email to any of us at:

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