hse-aml / **intro-to-dl**

Resources for "Introduction to Deep Learning" course. https://www.coursera.org/learn/intro-...

#deep-learning

162 commits | 2 branches | 6 releases | 8 contributors

Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

ZEMUSHKA add experimental tqdm — Latest commit 182db68 on Dec 11, 2018

week1	more clear instruction for week1	last year
week2	ill conditioning demo	last year
week3	more asserts in week 3	last year
week4	fix for pandas=0.23	last year
week5	better rnn task	last year
week6	added google drive checkpoints	10 months ago
.gitignore	v2	last year
README.md	shred moar	last year
download_resources.ipynb	faster download in colab	last year
download_utils.py	wipe tqdm from everywhere, fix GAN and NN Honor	last year
grading.py	week 3 init	2 years ago
keras_utils.py	makes more sense	last year
setup_google_colab.py	add experimental tqdm	10 months ago
tqdm_utils.py	add experimental tqdm	10 months ago

README.md

Introduction to Deep Learning course resources

https://www.coursera.org/learn/intro-to-deep-learning

Running on Google Colab (tested for all weeks)

Google has released its own flavour of Jupyter called Colab, which has free GPUs!

Here's how you can use it:

1. Open https://colab.research.google.com, click **Sign in** in the upper right corner, use your Google credentials to sign in.
2. Click **GITHUB** tab, paste https://github.com/hse-aml/intro-to-dl and press Enter
3. Choose the notebook you want to open, e.g. week2/v2/mnist_with_keras.ipynb
4. Click **File -> Save a copy in Drive...** to save your progress in Google Drive
5. Click **Runtime -> Change runtime type** and select **GPU** in Hardware accelerator box
6. **Execute** the following code in the first cell that downloads dependencies (change for your week number):

```
! shred -u setup_google_colab.py
! wget https://raw.githubusercontent.com/hse-aml/intro-to-dl/master/setup_google_colab.py -O setup_google_colab.py
import setup_google_colab
# please, uncomment the week you're working on
# setup_google_colab.setup_week1()
# setup_google_colab.setup_week2()
# setup_google_colab.setup_week3()
# setup_google_colab.setup_week4()
# setup_google_colab.setup_week5()
# setup_google_colab.setup_week6()

# If you're using the old version of the course (check a path of notebook on Coursera, you'll see v1 or v2),
# use setup_week2_old().
```

7. If you run many notebooks on Colab, they can continue to eat up memory, you can kill them with `! pkill -9 python3` and check with `! nvidia-smi` that GPU memory is freed.

Known issues:

- No support for `ipywidgets`, so we cannot use fancy `tqdm` progress bars. For now, we use a simplified version of a progress bar suitable for Colab.
- Blinking animation with `IPython.display.clear_output()`. It's usable, but still looking for a workaround.

Offline instructions

Coursera Jupyter Environment can be slow if many learners use it heavily. Our tasks are compute-heavy and we recommend to run them on your hardware for optimal performance.

You will need a computer with at least 4GB of RAM.

There're two options to setup the Jupyter Notebooks locally: Docker container and Anaconda.

Docker container option (best for Mac/Linux)

Follow the instructions on https://hub.docker.com/r/zimovnov/coursera-aml-docker/ to install Docker container with all necessary software installed.

After that you should see a Jupyter page in your browser.

Anaconda option (best for Windows)

We highly recommend to install docker environment, but if it's not an option, you can try to install the necessary python modules with Anaconda.

First, install Anaconda with **Python 3.5+** from here.

Download `conda_requirements.txt` from here.

Open terminal on Mac/Linux or "Anaconda Prompt" in Start Menu on Windows and run:

```
conda config --append channels conda-forge
conda config --append channels menpo
conda install --yes --file conda_requirements.txt
```

To start Jupyter Notebooks run `jupyter notebook` on Mac/Linux or "Jupyter Notebook" in Start Menu on Windows.

After that you should see a Jupyter page in your browser.

Prepare resources inside Jupyter Notebooks (for local setups only)

Click **New -> Terminal** and execute: `git clone https://github.com/hse-aml/intro-to-dl.git` On Windows you might want to install Git. You can also download all the resources as zip archive from GitHub page.

Close the terminal and refresh Jupyter page, you will see **intro-to-dl** folder, go there, all the necessary notebooks are waiting for you.

First you need to download necessary resources, to do that open `download_resources.ipynb` and run cells for Keras and your week.

Now you can open a notebook for the corresponding week and work there just like in Coursera Jupyter Environment.

Using GPU for offline setup (for advanced users)

- If you have a **Linux host** you can try these instructions for Docker: https://github.com/ZEMUSHKA/coursera-aml-docker#using-gpu-in-your-container-linux-hosts-only
- The easiest way is to go with Anaconda setup, that doesn't need virtualization and thus works with a GPU on all platforms (including Windows and Mac). You will still have to install NVIDIA GPU driver, CUDA toolkit and CuDNN (requires registration with NVIDIA) on your host machine in order for TensorFlow to work with your GPU: https://www.tensorflow.org/versions/r1.2/install/install_linux#nvidia_requirements_to_run_tensorflow_with_gpu_support It can be hard to follow, so you might choose to stick to a CPU version, which is also fine for the purpose of this course.