Tutorial steps to run the LSTM tutorial

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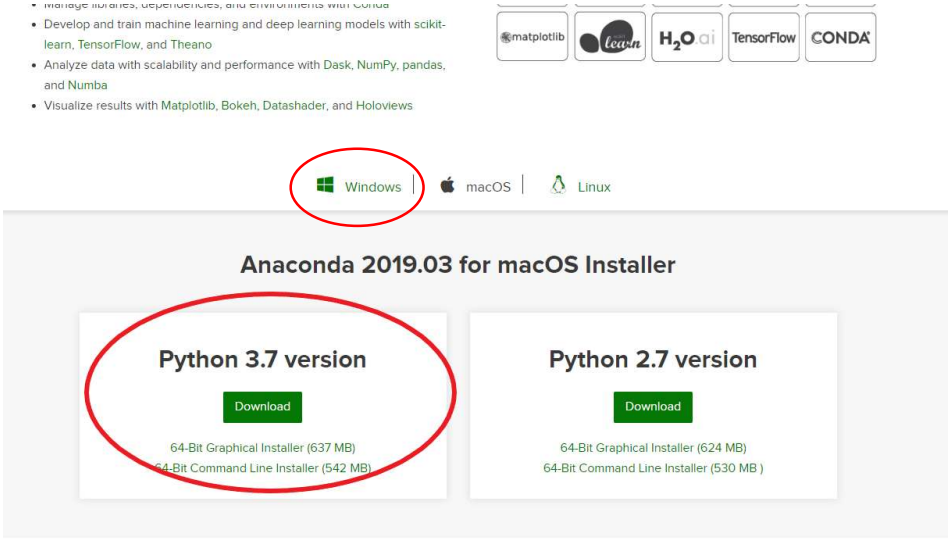
1. Install Anaconda

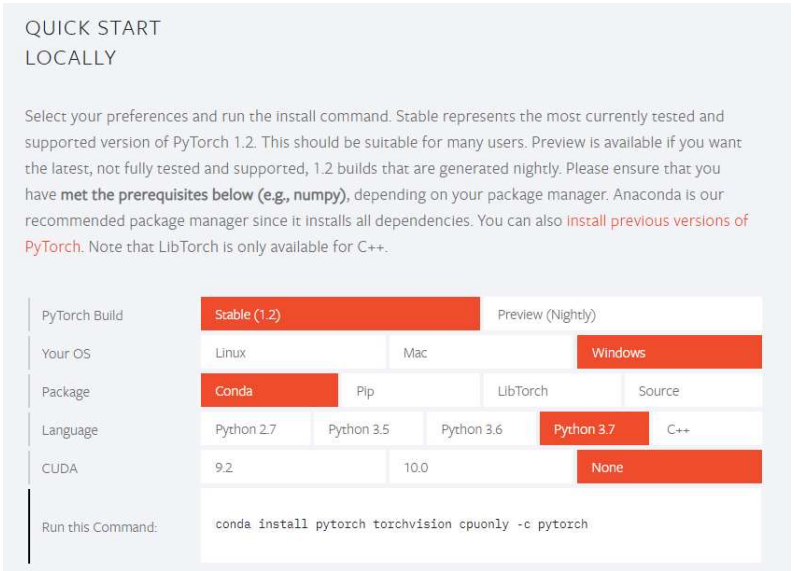
https://www.anaconda.com/distribution/

We use python 3.7 version. Your choice of OS may differ. PyTorch and our code supports all major OSs including Linux, Mac, and Windows.



2. Install pytorch

https://pytorch.org/. Select the correct OS.



There is a quick installation instruction on this website. Choose your option based on your OS and GPU. If you work with windows and don't have a GPU as this example suggests, simply run this in Anaconda Prompt or your shell:

conda install pytorch torchvision cpuonly -c pytorch

If you do have a GPU on the machine, it is absolutely beneficial to select the correct CUDA ver.

3. Install basemap package for visualization

Run this command in Anaconda Prompt or your shell:

conda install -c anaconda basemap

Notice: here the basemap package may have some problems working with conda environment. You need to change one line of our code before running and importing basemap package.

4. Get our repo

Install git: https://www.atlassian.com/git/tutorials/install-git

Fork and git clone our repo from this link:

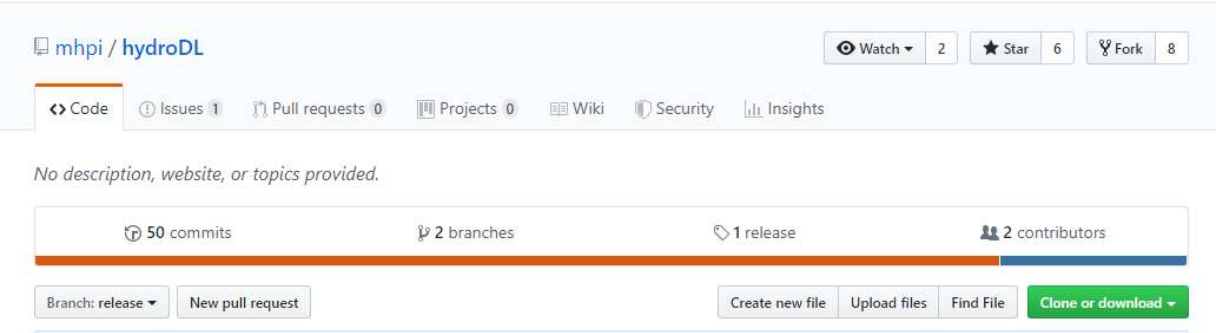
https://github.com/mhpi/hydroDL

This page instructs that you can either open command prompt, browse to where you want to save our code and do

git clone https://github.com/mhpi/hydroDL.git

Or, you can download a zip file from the URL above and unzip to where you want to work with the code.

The repo will be updated periodically as new papers approach acceptance.



5. address potential compatibility issue with the basemap visualization tool

In the past we have run into a compatibility issue with the basemap package. Since November 2019 it seems to have been addressed by 3rd party package updates. However, we detail the method (between === separators) to avoid this problem here in case it appears again in the future.

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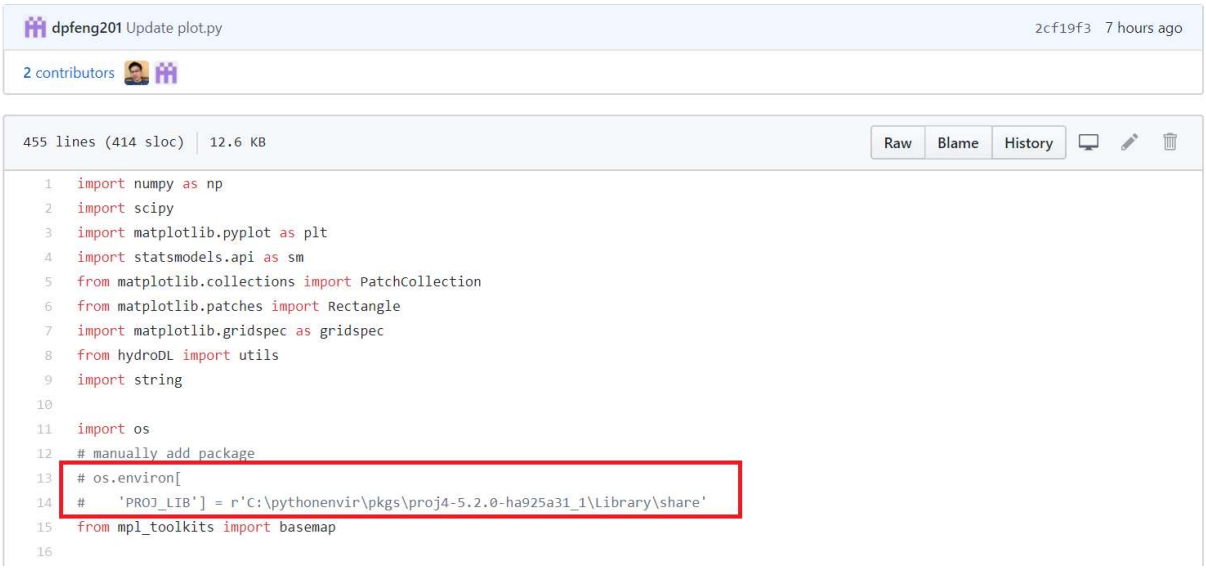
The file that potentially needs to be modified is here: {hydroDL}/hydroDL/post/plot.py



The code commented out on line 13 and 14 is for manually importing the basemap package. First check if you can successfully do "from mpl_toolkits import basemap" without any error in python. To test this, you can simply type command *python -c "from mpl_toolkits import basemap"* in your Anaconda Prompt or your shell. If no error emerges, you are all set. Nothing needs to be done. Go to the next steps.

Otherwise, if an error named " KeyError: 'PROJ_LIB' " happens, you need to uncomment line 13 and 14, and also do the following modification. For the line 14 please modify the path to the "share" folder on the right based on the "proj4" package location of your local computer. It should be: "your\path\to\Anaconda3\pkgs\proj4-xxxxxxx\Library\share" for Windows. Linux may be a little different but there should be a "share" folder under "proj4-xxx" package folder. Then you can try to run our example code in the following step.

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6. Run the example code

After setting up the environment, please open your Jupyter notebook. Jupyter notebook is installed with Anaconda already. The Jupyter Notebook App can be launched by clicking on the Jupyter Notebook icon installed by Anaconda in the start menu (Windows) or by typing in

Anaconda Prompt or cmd on Windows:
jupyter notebook
In Linux you will need to type in the terminal:
jupyter-notebook

In the notebook, you can open this file: {hydroDL}/example/demo-LSTM-Tutorial.ipynb. (Windows users: you may need to put {hydroDL} under C drive) You can click through the cells to let it run.
If you prefer not working with jupyter notebook, you can try to run this file to train the model: hydroDL/example/train-lstm.py, and after training please run this file to test the model: hydroDL/example/test-lstm.py