Deep Learning I

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Tutorial 1: Getting start

基础安装配置

Anaconda或Miniconda

按官网文档下载安装[1]。

创建新的python沙盘

打开命令行终端Anaconda Powershell Prompt，并输入以下代码：

```
conda create -n dl01s tensorflow-gpu keras-gpu
# 如果是Windows系统，则需要指定一个python的早期版本，因为cudatoolkit cudnn可能不兼容：
# conda create -n dl01s python=3.6 tensorflow-gpu keras-gpu
# 如果在一台没有GPU的电脑上，输入：
# conda create -n dl01s tensorflow keras
conda activate dl01s
conda install -c conda-forge matplotlib opencv jupyterlab jupyter

python -c 'import keras; print(keras.__version__)'
python -c 'from tensorflow.python.client import device_lib;
        print(device_lib.list_local_devices())'
```

安装graphviz （可选）

从官网[2]下载graphviz并安装，安装时选择将程序添加到系统路径。

继续在Anaconda命令行输入如下代码：

```
conda install -c conda-forge pydot
```

安装其他可选包

在Anaconda命令行输入如下代码：

```
conda install -c conda-forge sklearn pandas seaborn
conda install -c conda-forge lightgbm mlxtend xgboost
```

验证安装是否成功

首先打开 JupyterLab：

```
cd code-data
jupyter lab
```

程序会自动跳转到默认浏览器。 新建一個命令行来测试是否成功：

```
``` in JupyterLab:
import keras
keras.__version__

from tensorflow.python.client import device_lib
print(device_lib.list_local_devices())
```

Prepare GPU

- First find if the GPU is compatible with Tensorflow GPU or not! From here[3].
- Download and Install Cuda Toolkit from here[4].
- Download cuDNN by signing up on Nvidia Developer Website[5].
- Install cuDNN by extracting the contents of cuDNN into the Toolkit path. See here[6].
- Then finally install `Anaconda` or `Miniconda`, and `tensorflow-gpu` in an Environment.

Google Colab

Install Google Colab into your Google Drive

In Google Drive interface: `New -> More -> Connect more apps`, then search colaboratory. Then create a new colab document: `New -> More -> Google Colaboratory`.

See some welcome introduction here[7].

Then you are ready to go:

```
!pip install tensorflow

import tensorflow as tf
print(tf.__version__)
```

If you want to use the GPU/TPU, click `Runtime -> Change runtime type`

```
!pip install tensorflow-gpu
```

Build a deep neural network

Try some examples from the official site here[8].

Or, the `TensorFlow Hub` lets you search and discover hundreds of trained, ready-to-deploy machine learning models in one place. See here[9].

Get more from Colab
```

Try Colab Pro for $9.99/month. Rich people trade money for efficiency.

Trouble shootings

```
OMP: Error #15: Initializing libiomp5.dylib, but found libiomp5.dylib already
        initialized
```

Solution:

```
conda install nomkl
```

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1. https://docs.anaconda.com/anaconda/install ↩
2. https://graphviz.org/download ↩
3. https://developer.nvidia.com/cuda-gpus ↩
4. https://developer.nvidia.com/cuda-downloads ↩
5. https://developer.nvidia.com/cudnn ↩
6. https://docs.nvidia.com/deeplearning/cudnn/install-guide/index.html#install-windows ↩
7. https://colab.research.google.com/notebooks/welcome.ipynb ↩
8. https://keras.io/examples ↩
9. https://tfhub.dev ↩