
北京師範大學珠海校区
BEIJING NORMAL UNIVERSITY AT ZHUHAI
Tensorflow入门
github.com/MadelineMa/Recommender-System
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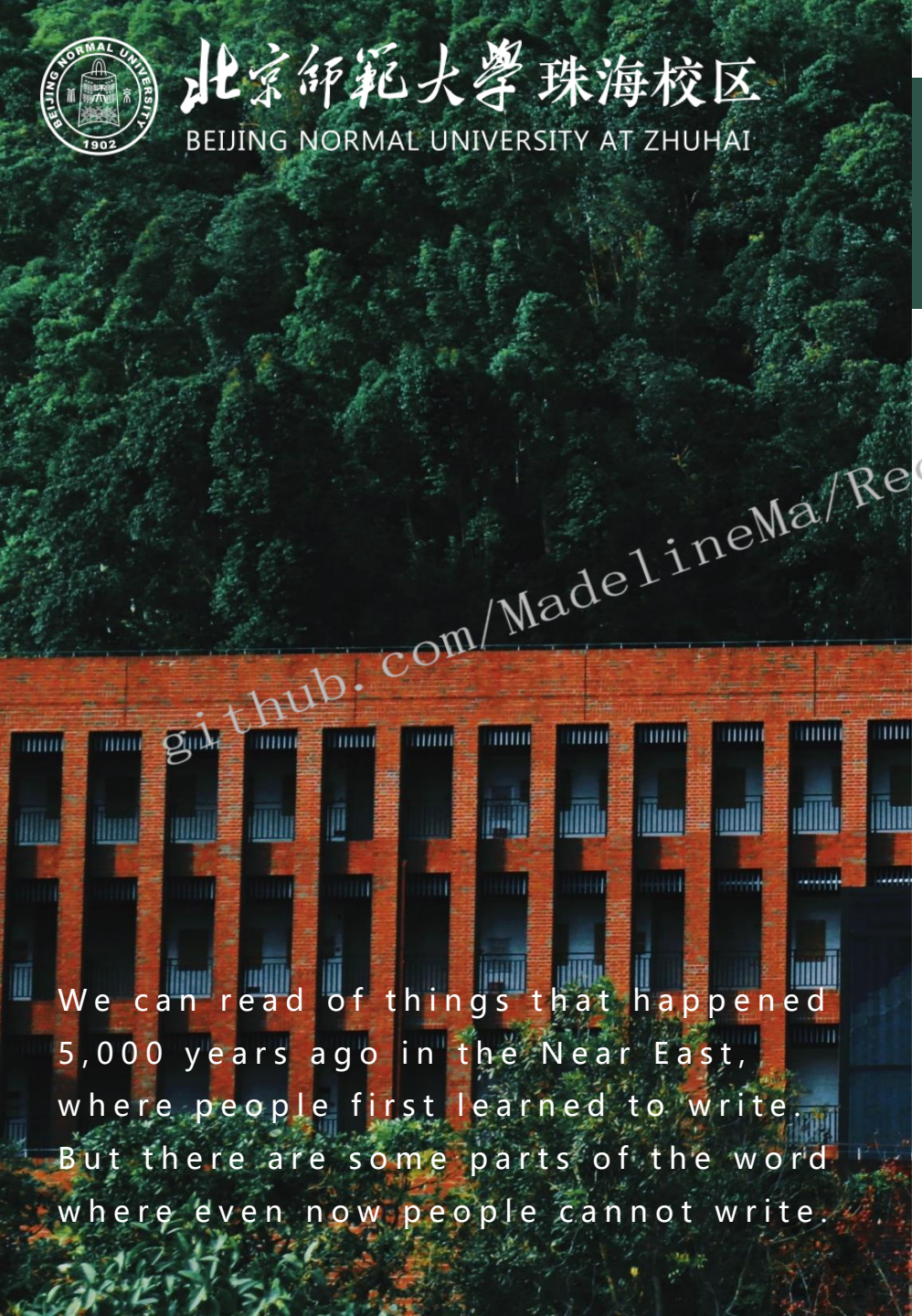
马静



CONTENT

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01tf.keras安装

tf安装

Python配置清华镜像源，加快下载速度:

1. 临时使用pip install -i https://pypi.tuna.tsinghua.edu.cn/simple some-package
2. 配置pip install pip -Upip config set global.index-url https://pypi.tuna.tsinghua.edu.cn/simple

新建Python虚拟环境：conda create -n tf2 python=3.7 → n means name

激活环境并进入： conda activate tf2

pip install tensorflow

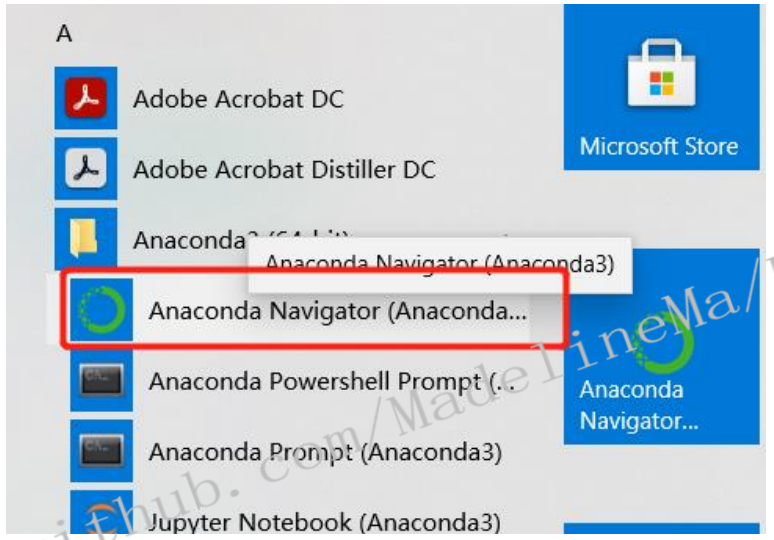
```
(base) PS C:\Users\lenovo> conda activate tf2
```

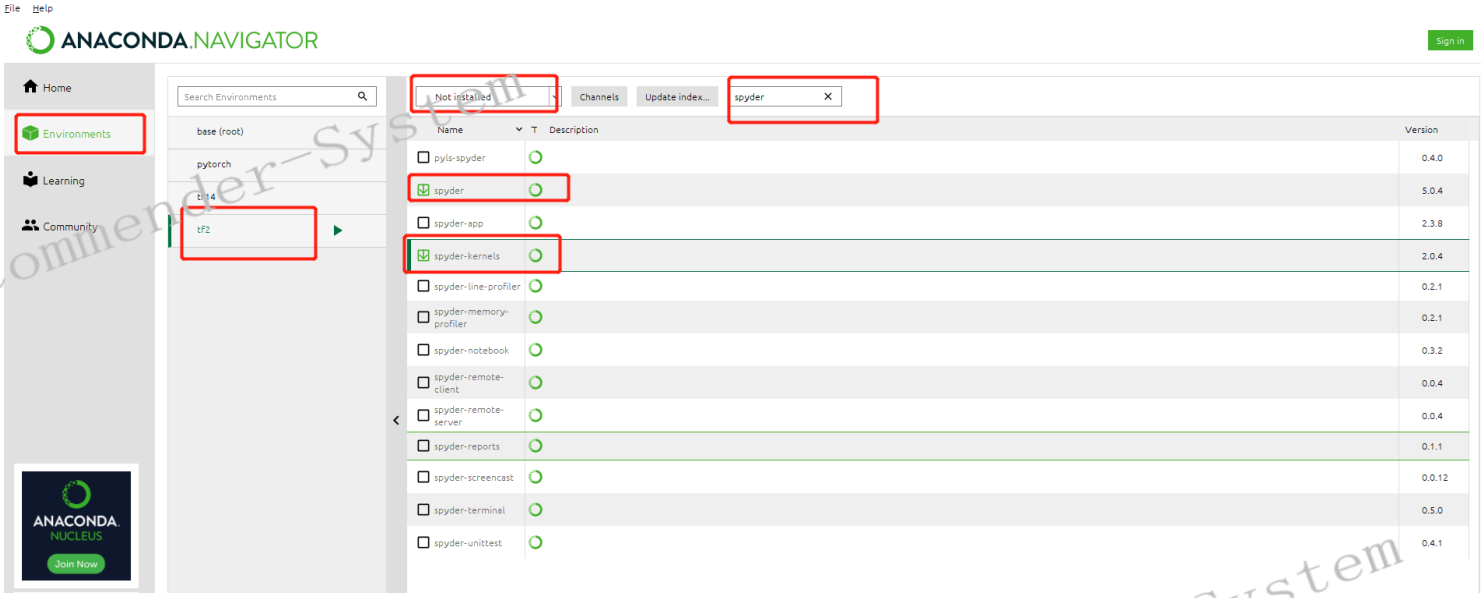
```
(tf2) PS C:\Users\lenovo> pip install tensorflow
Collecting tensorflow
  Downloading tensorflow-2.5.0-cp37-cp37m-win_amd64.whl (422.6 MB)
     |                                | 422.6 MB 34 kB/s
Collecting termcolor~=1.1.0
  Downloading termcolor-1.1.0.tar.gz (3.9 kB)
Collecting flatbuffers~=1.12.0
  Downloading flatbuffers-1.12-py2.py3-none-any.whl (15 kB)
Collecting astunparse~=1.6.3
```

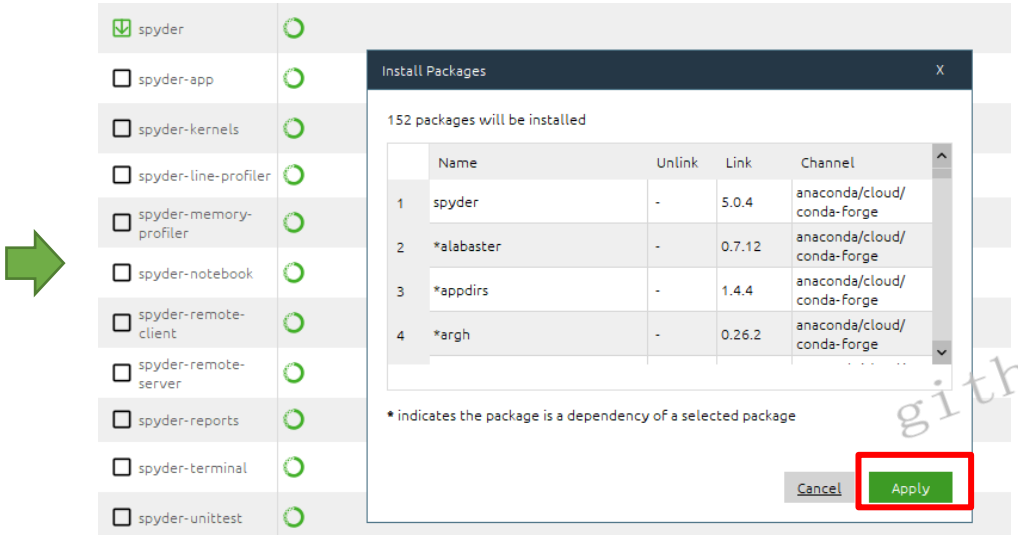
测试安装成功

```
(tf2) PS C:\Users\lenovo> python
Python 3.7.10 | packaged by conda-forge | (default, Feb 19 2021, 15:37:01) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import tensorflow
2021-06-22 19:06:25.499043: I tensorflow/stream_executor/platform/default/dso_loader.cc:53] Successfully opened dynamic
library cudart64_110.dll
>>> tensorflow.__version__
'2.5.0'
>>> import tensorflow as tf
>>> tf.__version__
'2.5.0'
>>>
```

新环境的spyder界面







新环境的常用包安装

pip install pandas

pip install scikit-learn

pip install fsspec

github.com/MadelineMa/Recommender-System

02

tf.keras使用

tf.keras使用

[对结构化数据进行分类 | TensorFlow Core (google.cn)]

重点掌握

1. 不同类型的数据处理方式;
2. 理解流水线的数据处理思想;
3. keras.Sequential 的使用方法;
4. 完成demo的编译;
   - 几个小bug的解决
   - 代码：git/exercises/tf_keras_squential.py
5. 写一个基于keras的蘑菇分类程序.

Bug1: 数据集的下载

Index of /ml/machine-learning-databases/heart-disease

- Parent Directory
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- WARNING
- ask-detrano
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- costs/
- heart-disease.names
- hungarian.data
- long-beach-va.data
- new.data
- processed.cleveland.data
- processed.hungarian.data
- processed.switzerland.data
- processed.va.data
- reprocessed.hungarian.data
- switzerland.data

Bug2: 数据的读取与个别特征的处理

```
data = pd.read_csv(path,sep=',',
                   names=['Age','Sex','CP','Trestbpd','Chol','FBS','RestECG','Thalach','Exang
data.head()
data['CA'] = data['CA'].apply(lambda x: -1.0 if x == '?' else x)
data['CA'] = data['CA'].astype('float')#.astype('int')
```

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03 tf.estimator介绍

We can read of things that happened 5,000 years ago in the Near East, where people first learned to write.

tf.estimator介绍

Demo:预创建的 Estimators | TensorFlow Core (google.cn)

重点掌握：

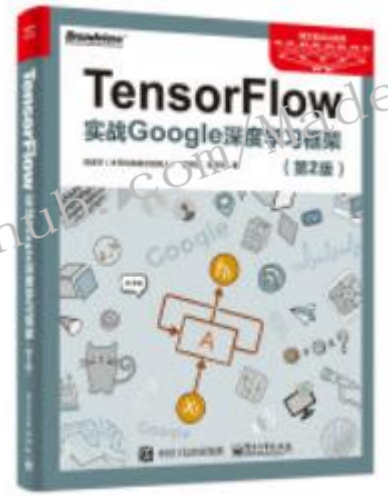
- Tf.estimator 流程，tf模型的高级表示，学会入门例子，可后续进行自己设计的模型灵活搭建；
- Estimator自带DNN的使用；

代码：git/exercise/tf_estimator_dnn.py

*自己设计的estimator demo: tf_lr_mashroom.py 利用estimator完成lr模型的搭建，但是适用于tesorflow1.4版本，感兴趣同学可尝试写一版本tensorflow2的lr模型搭建.

本周作业

参考书籍



写一个基于keras的蘑菇分类程序.

Tensorflow2利用estimator进行lr模型搭建.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THANKS
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