

# 暨南大学本科实验报告专用纸

课程名称：Python 程序设计实验

实验项目名称：环境与 IDE 搭建 指导教师：林聪

实验项目编号：实验 01 实验项目类型：验证性实验

实验地点：实 C302

学生姓名：陈旭天 学号：2021100733

学院：智能科学与工程学院 专业：人工智能

实验时间：2022 年 3 月 2 日下午--2022 年 3 月 2 日下午



## 1. 实验目的

为了建立与测试完整的 Python 开发环境，了解命令行操作与开发环境，熟练使用 IDE 和 Jupyter。

## 2. 实验原理

## 3. 实验结果

1. 安装 Anaconda 开发环境与 python 解释器

使用 git clone 命令从官网下载 conda 源码

(--recursive 参数可以下载源码的所有子模块)

然后使用 make 命令编译并且 make install

安装成功后用 conda --version 验证

然后使用命令行 conda create -n tensorflow\_env python=3.6 创建一个新的 Python 版本为 3.6 的虚拟环境

并使用 conda activate 激活该环境

```
(tensorflow_env) [chenxutian@mu01 ~]$ conda --version
conda 4.11.0
(tensorflow_env) [chenxutian@mu01 ~]$ python --version
Python 3.6.13 :: Anaconda, Inc.
```

```
##
# To activate this environment, use
#
#     $ conda activate python3.7
#
# To deactivate an active environment, use
#
#     $ conda deactivate
```

blinker-1.4	py39h06a4308_0	23 KB
c-ares-1.18.1	h7f8727e_0	114 KB
cachetools-4.2.2	pyhd3eb1b0_0	13 KB
certifi-2021.10.8	py39h06a4308_2	151 KB
cffi-1.15.0	py39hd667e15_1	225 KB
datatoolkit-10.1.243	h6bb024c_0	347.4 MB
cuda-7.6.5	cuda10.1_0	179.9 MB
cupi-10.1.168	0	1.4 MB
frozenlist-1.2.0	py39h7f8727e_0	79 KB
gast-0.4.0	pyhd3eb1b0_0	13 KB
google-auth-1.33.0	pyhd3eb1b0_0	80 KB
google-auth-oauthlib-0.4.4	pyhd3eb1b0_0	18 KB
google-pasta-0.2.0	pyhd3eb1b0_0	46 KB
grpcio-1.42.0	py39hce63b2e_0	2.1 MB
h5py-2.10.0	py39hec9cf62_0	946 KB
idna-3.3	pyhd3eb1b0_0	49 KB
importlib-metadata-4.8.2	py39h06a4308_0	39 KB
keras-preprocessing-1.1.2	pyhd3eb1b0_0	35 KB
libprotobuf-3.19.1	h4ff587b_0	2.1 MB
markdown-3.3.4	py39h06a4308_0	129 KB
multidict-5.2.0	py39h7f8727e_2	64 KB
numpy-1.21.2	py39h20f2e39_0	23 KB
numpy-base-1.21.2	py39h79a1101_0	4.9 MB
oauthlib-3.1.1	pyhd3eb1b0_0	90 KB
opt_einsum-3.3.0	pyhd3eb1b0_1	57 KB
protobuf-3.19.1	py39h295c915_0	309 KB
pyasn1-0.4.8	pyhd3eb1b0_0	54 KB
pyasn1-modules-0.2.8	py_0	72 KB
pycparser-2.21	pyhd3eb1b0_0	94 KB
python-flatbuffers-2.0	pyhd3eb1b0_0	34 KB

2. 使用 `conda env list` 列出已使用环境及其绝对路径

```
(base) [chenxutian@mu01 ~]$ conda env list
# conda environments:
#
base * /home/chenxutian/anaconda3
python3.6-for-gpu02 /home/chenxutian/anaconda3/envs/python3.6-for-gpu02
tensorflow_env /home/chenxutian/anaconda3/envs/tensorflow_env
tf-gpu /home/chenxutian/anaconda3/envs/tf-gpu
```

3. 利用 `conda list` 列出环境下已安装的包

```
(tensorflow_env) [chenxutian@mu01 ~]$ conda list
# packages in environment at /home/chenxutian/anaconda3/envs/tensorflow_env:
#
# Name                                Version                                Build                                Channel
_libgcc_mutex                         0.1                                    main
_openmp_mutex                         4.5                                    1_gnu
ca-certificates                       2021.10.26                            h06a4308_2
certifi                               2020.6.20                             pyhd3eb1b0_3
cmake                                 3.22.2                                pypi_0                                pypi
cudatoolkit                           10.1.243                              h6bb024c_0
deepmd-kit                             2.0.3                                pypi_0                                pypi
gast                                   0.4.0                                pypi_0                                pypi
h5py                                   3.1.0                                pypi_0                                pypi
horovod                               0.23.0                                pypi_0                                pypi
ld_impl_linux-64                     2.35.1                                h7274673_9
libffi                                 3.3                                    he6710b0_2
libgcc-ng                             9.3.0                                h5101ec6_17
libgomp                               9.3.0                                h5101ec6_17
libstdcxx-ng                         9.3.0                                hd4cf53a_17
mpi                                   1.0                                    mpich
mpi4py                                3.1.3                                pypi_0                                pypi
nccl                                  2.8.3.1                              hcaf9a05_0
ncurses                               6.3                                    h7f8727e_2
numpy                                 1.19.5                                pypi_0                                pypi
openssl                               1.1.1m                                h7f8727e_0
pip                                   21.2.2                              py36h06a4308_0
python                                3.6.13                              h12debd9_1
readline                              8.1.2                                h7f8727e_1
scipy                                  1.5.4                                pypi_0                                pypi
setuptools                             58.0.4                              py36h06a4308_0
six                                   1.15.0                                pypi_0                                pypi
sqlite                                 3.37.2                              hc218d9a_0
tensorflow                             2.6.2                                pypi_0                                pypi
tensorflow-estimator                  2.6.0                                pypi_0                                pypi
tk                                     8.6.11                              h1ccaba5_0
typing-extensions                     3.7.4.3                              pypi_0                                pypi
wheel                                 0.37.1                              pyhd3eb1b0_0
xz                                     5.2.5                                h7b6447c_0
zipp                                   3.6.0                                pypi_0                                pypi
```

#### 4. 退出虚拟环境

```
(tensorflow_env) [chenxutian@mu01 ~]$ conda deactivate
(base) [chenxutian@mu01 ~]$
```

#### 5. 使用 conda info 查看新环境下的 python 路径

```
(base) [chenxutian@mu01 ~]$ conda info

active environment : base
active env location : /home/chenxutian/anaconda3
shell level : 1
user config file : /home/chenxutian/.condarc
populated config files :
  conda version : 4.11.0
  conda-build version : 3.21.5
  python version : 3.9.7.final.0
  virtual packages : __linux=3.10.0=0
                    __glibc=2.17=0
                    __unix=0=0
                    __archspec=1=x86_64
  base environment : /home/chenxutian/anaconda3 (writable)
  conda av data dir : /home/chenxutian/anaconda3/etc/conda
  conda av metadata url : None
  channel URLs : https://repo.anaconda.com/pkg/main/linux-64
                https://repo.anaconda.com/pkg/main/noarch
                https://repo.anaconda.com/pkg/r/linux-64
                https://repo.anaconda.com/pkg/r/noarch
  package cache : /home/chenxutian/anaconda3/pkg
                 /home/chenxutian/.conda/pkg
  envs directories : /home/chenxutian/anaconda3/envs
                   /home/chenxutian/.conda/envs
  platform : linux-64
  user-agent : conda/4.11.0 requests/2.26.0 CPython/3.9.7 Linux/3.10.0-693.21.1.el7.x86_64 centos/7.4.1708 glibc/2.17
  UID:GID : 1059:1060
  netrc file : None
  offline mode : False
```

## 6. 删除环境使用的命令行是 conda remove -n envname --all

```
(base) [chenxutian@mu01 ~]$ conda remove -n python3.6-for-gpu02 --all

Remove all packages in environment /home/chenxutian/anaconda3/envs/python3.6-for-gpu02:

## Package Plan ##

environment location: /home/chenxutian/anaconda3/envs/python3.6-for-gpu02

The following packages will be REMOVED:

  _libgcc_mutex-0.1-main
  _openmp_mutex-4.5-1_gnu
  ca-certificates-2021.10.26-h06a4308_2
  certifi-2020.6.20-pyhd3eb1b0_3
  ld_impl_linux-64-2.35.1-h7274673_9
  libffi-3.3-he6710b0_2
  libgcc-ng-9.3.0-h5101ec6_17
  libgomp-9.3.0-h5101ec6_17
  libstdc++-9.3.0-hd4cf53a_17
  ncurses-6.3-h7f8727e_2
  openssl-1.1.1m-h7f8727e_0
  pip-21.2.2-py36h06a4308_0
  python-3.6.13-h12debd9_1
  readline-8.1.2-h7f8727e_1
  setuptools-58.0.4-py36h06a4308_0
  sqlite-3.37.2-hc218d9a_0
  tk-8.6.11-h1ccaba5_0
  wheel-0.37.1-pyhd3eb1b0_0
  xz-5.2.5-h7b6447c_0
  zlib-1.2.11-h7f8727e_4

Proceed ([y]/n)? y
```

```
(base) [chenxutian@mu01 ~]$ conda env list
# conda environments:
#
base * /home/chenxutian/anaconda3
tensorflow_env /home/chenxutian/anaconda3/envs/tensorflow_env
tf-gpu /home/chenxutian/anaconda3/envs/tf-gpu
```

就没了

使用 pip install 和 conda install 分别安装一个包

```
(tf-gpu) [chenxutian@mu01 ~]$ pip install turtle
Looking in indexes: https://pypi.tuna.tsinghua.edu.cn/simple
Collecting turtle
  Downloading https://pypi.tuna.tsinghua.edu.cn/packages/ff/f0/21a42e9e424d24bdd0e509d5ed3c7dfb8f47d962d9c044dba903b0b4a26f/turtle-0.0.2.tar.gz (11 kB)
ERROR: Command errored out with exit status 1:
   command: /home/chenxutian/anaconda3/envs/tf-gpu/bin/python -c 'import io, os, sys, setuptools, tokenize; sys.argv[0] = '"'/tmp/pip-install-twn0_gx2/turtle_6320b07ca3fa409dbbcd85513834a517/setup.py'"'; __file__ = '"'/tmp/pip-install-twn0_gx2/turtle_6320b07ca3fa409dbbcd85513834a517/setup.py'"'; f = getattr(tokenize, 'open', open)(__file__) if os.path.exists(__file__) else io.StringIO('"'"'from setuptools import setup; setup()'"'"');code = f.read().replace('"'"'\r\n'"'"', '\n\n');f.close();exec(compile(code, __file__, 'exec'"'"'))' egg_info --egg-base /tmp/pip-pip-egg-info-9q4v94t9
       cwd: /tmp/pip-install-twn0_gx2/turtle_6320b07ca3fa409dbbcd85513834a517/
Complete output (6 lines):
Traceback (most recent call last):
  File "<string>", line 1, in <module>
  File "/tmp/pip-install-twn0_gx2/turtle_6320b07ca3fa409dbbcd85513834a517/setup.py", line 40
    except ValueError, ve:
          ^
SyntaxError: invalid syntax
WARNING: Discarding https://pypi.tuna.tsinghua.edu.cn/packages/ff/f0/21a42e9e424d24bdd0e509d5ed3c7dfb8f47d962d9c044dba903b0b4a26f/turtle-0.0.2.tar.gz#sha256=edff7868ddfeba60cb2dc3fb218f29fd042ab697dcac8723e3e16a330979dd (from https://pypi.tuna.tsinghua.edu.cn/simple/turtle/). Command errored out with exit status 1: python setup.py egg_info Check the logs for full command output.
  Downloading https://pypi.tuna.tsinghua.edu.cn/packages/02/bd/bb496396b18d42786b73357de99733370515dd0e69d24b500d1fec35e9d1/turtle-0.0.1.tar.gz (10 kB)
Requirement already satisfied: pyYAML>=3.08 in .anaconda3/envs/tf-gpu/lib/python3.9/site-packages (from turtle) (6.0)
Building wheels for collected packages: turtle
  Building wheel for turtle (setup.py) ... done
  Created wheel for turtle: filename=turtle-0.0.1-py3-none-any.whl size=22267 sha256=9f65708ecf1a4c2ef6ccafddb5789c3eb280ed0a116545c39cea02d5f8c4331
  Stored in directory: /home/chenxutian/.cache/pip/wheels/0e/80/81/c24dc3aa634d5c9e5f9be8709d52b9d381e3e14a8ce374d
Successfully built turtle
Installing collected packages: turtle
Successfully installed turtle-0.0.1
```

```
(tf-gpu) [chenxutian@mu01 ~]$ conda install keras
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Solving environment: failed with repodata from current_repodata.json, will retry with next repodata source.
Collecting package metadata (repodata.json): done
Solving environment: done
```

## Package Plan ##

```
environment location: /home/chenxutian/anaconda3/envs/tf-gpu

added / updated specs:
- keras
```

The following packages will be downloaded:

package	build	
ca-certificates-2022.2.1	h06a4308_0	122 KB
keras-2.4.3	hd3eb1b0_0	6 KB
keras-base-2.4.3	pyhd3eb1b0_0	30 KB
yaml-0.2.5	h7b6447c_0	75 KB
Total:		233 KB

The following NEW packages will be INSTALLED:

keras	pkgs/main/noarch::keras-2.4.3-hd3eb1b0_0
keras-base	pkgs/main/noarch::keras-base-2.4.3-pyhd3eb1b0_0
pyyaml	pkgs/main/linux-64::pyyaml-6.0-py39h7f8727e_1
yaml	pkgs/main/linux-64::yaml-0.2.5-h7b6447c_0

The following packages will be UPDATED:

ca-certificates	2021.10.26-h06a4308_2 --> 2022.2.1-h06a4308_0
-----------------	---

Proceed ([v]/n)? █

```
Downloading and Extracting Packages
keras-base-2.4.3 | 30 KB | ##### | 100%
ca-certificates-2022 | 122 KB | ##### | 100%
keras-2.4.3 | 6 KB | ##### | 100%
yaml-0.2.5 | 75 KB | ##### | 100%
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
```

```
(tensorflow_env) [chenxutian@mu01 ~]$ conda list --explicit>env.txt
(tensorflow_env) [chenxutian@mu01 ~]$ conda env create --file bio-env.txt

EnvironmentFileNotFound: '/home/chenxutian/bio-env.txt' file not found

(tensorflow_env) [chenxutian@mu01 ~]$ █
```

7. 恢复环境会报错，目前不知道什么原因。

```
(tensorflow_env) [chenxutian@mu01 ~]$ conda env create --file env.txt

SpecNotFound: Environment with requirements.txt file needs a name

(tensorflow_env) [chenxutian@mu01 ~]$ █
```

## 4. 实验总结

完成了虚拟环境的创建和删除，并在虚拟环境中安装了一定的包，了解到虚拟环境可以使用外部环境的软件依赖，但是外部环境无法使用虚拟环境内的软件依赖，这一点类似于全局变量和局部变量。熟悉了命令行操作模式的使用。