实作-1
Lab 1

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声明
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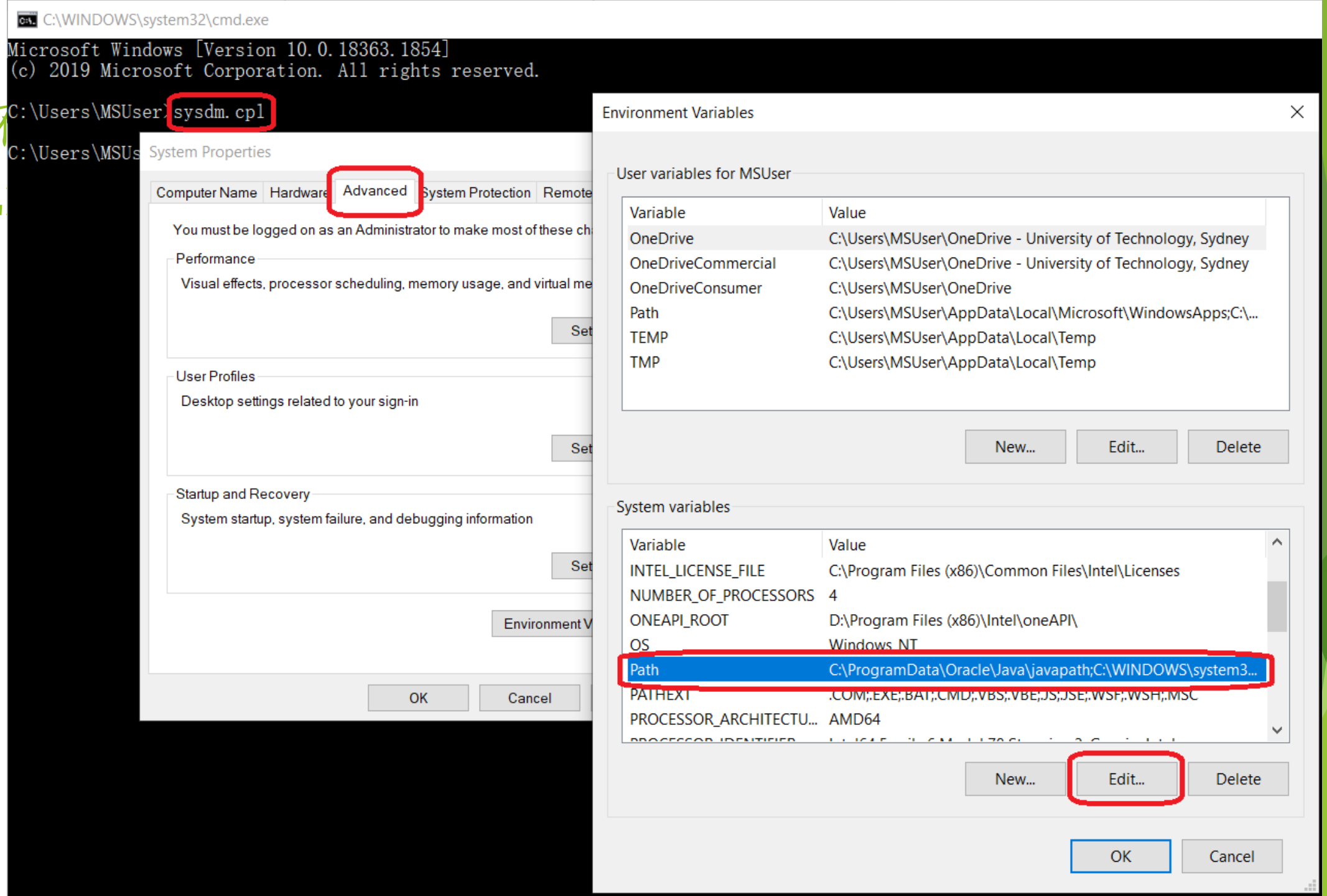
环境准备
Environment Preparation

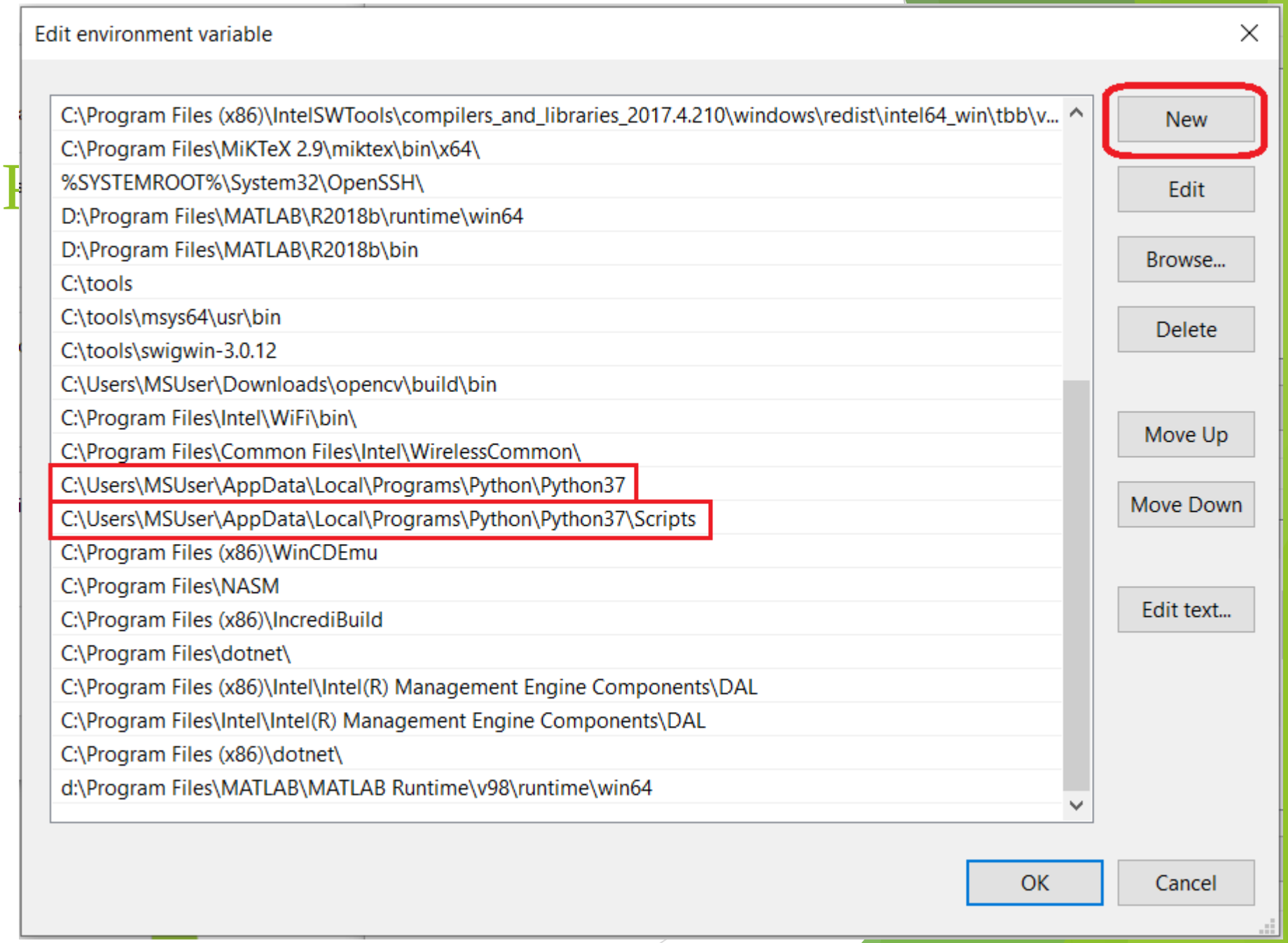
- 下载并安装Python开发环境（Download and install the Python environment）：
  - https://www.python.org/downloads/windows/
  - 请安装3.7版本（please install version 3.7）
  - 如果选择默认安装没有将python可执行文件路径加入环境变量，请手动将其加入环境变量，如下面幻灯片所示

    The default installation option will not add the python executable into the environment variable PATH automatically, please do it manually as illustrated in the following slides


C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.18363.1854]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\MSUser>sysdm.cpl
C:\Users\MSUs
System Properties
Computer Name
Hardware
Advanced
System Protection
Remote
You must be logged on as an Administrator to make most of these ch
Performance
Visual effects, processor scheduling, memory usage, and virtual me
Set
User Profiles
Desktop settings related to your sign-in
Set
Startup and Recovery
System startup, system failure, and debugging information
Set
Environment V
OK
Cancel
Environment Variables
User variables for MSUser
Variable
Value
OneDrive
C:\Users\MSUser\OneDrive - University of Technology, Sydney
OneDriveCommercial
C:\Users\MSUser\OneDrive - University of Technology, Sydney
OneDriveConsumer
C:\Users\MSUser\OneDrive
Path
C:\Users\MSUser\AppData\Local\Microsoft\WindowsApps;C:\...
TEMP
C:\Users\MSUser\AppData\Local\Temp
TMP
C:\Users\MSUser\AppData\Local\Temp
New...
Edit...
Delete
System variables
Variable
Value
INTEL_LICENSE_FILE
C:\Program Files (x86)\Common Files\Intel\Licenses
NUMBER_OF_PROCESSORS
4
ONEAPI_ROOT
D:\Program Files (x86)\Intel\oneAPI\
OS
Windows_NT
Path
C:\ProgramData\Oracle\Java\javapath;C:\WINDOWS\system3...
PATHEXT
.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC
PROCESSOR_ARCHITECTU...
AMD64
New...
Edit...
Delete
OK
Cancel

环境准备 Environment P

- 下载并安装Python开发环境（Download and install the Python environment）：
  - 注意添加路径时，一定要选择本机安装时的路径（Please choose the correct path during the installation）



环境准备
Environment Preparation

- 安装TensorFlow 1.x库（Download and install the tensorflow library）
  - 打开命令行窗口（cmd.ext），键入如右命令：pip install tensorflow==1.15
  - 如果上述方式过慢，则请手动下载离线安装包，然后安装：
    - 打开网址：https://pypi.org/project/tensorflow/1.15.0/#files
    - 根据自己的操作系统与python版本搜索合适的安装包，如tensorflow-1.15.0-cp37-cp37m-win_amd64.whl

tensorflow-1.15.0-cp37-cp37m-manylinux2010_x86_64.whl (412.3 MB)	Wheel	cp37	Oct 17, 2019	View
tensorflow-1.15.0-cp37-cp37m-win_amd64.whl (295.1 MB)	Wheel	cp37	Oct 17, 2019	View

    - 进行离线安装，如执行：pip install tensorflow-1.15.0-cp37-cp37m-win_amd64.whl

环境准备
Environment Preparation

- 安装TensorFlow 1.x库（Download and install the tensorflow library）
  - 关于pip的使用技巧（Tips about pip）
    - 请尽可能保持pip最新版本，以保证其所访问的源的稳定性（upgrade pip as frequently as possible to maintain linking to stable repo）：pip install --upgrade pip
    - 安装模块（install modules）：pip install module_name
    - 安装特定版本模块（install modules of specific version）：pip install module_name==version
    - 查看已安装模块（inspect already installed modules）：pip list
    - 卸载模块（uninstall modules）：pip uninstall module_name

环境准备
Environment Preparation

- 安装sonnet库（Install the sonnet library）
  - pip install dm-sonnet==1.36

- 验证TensorFlow是否安装成功

  打开命令行窗口（cmd.ext），以交互方式执行python程序（键入python后按回车键）

  ```
  >>> import tensorflow as tf
  >>> hello = tf.constant(“Hello TensorFlow!")
  >>> sess = tf.Session()
  >>> print(sess.run(hello))
  ```

  如果安装成功，则会成功打印：b'Hello TensorFlow!'

环境准备
Environment Preparation

- 验证TensorBoard及Sonnet是否安装成功
  1. 在C盘或D盘根目录下新建文件夹，重命名为tensorboard
  2. 桌面或任意目录新建txt文件，重命名为tb-test.py
  3. 键入以下内容：

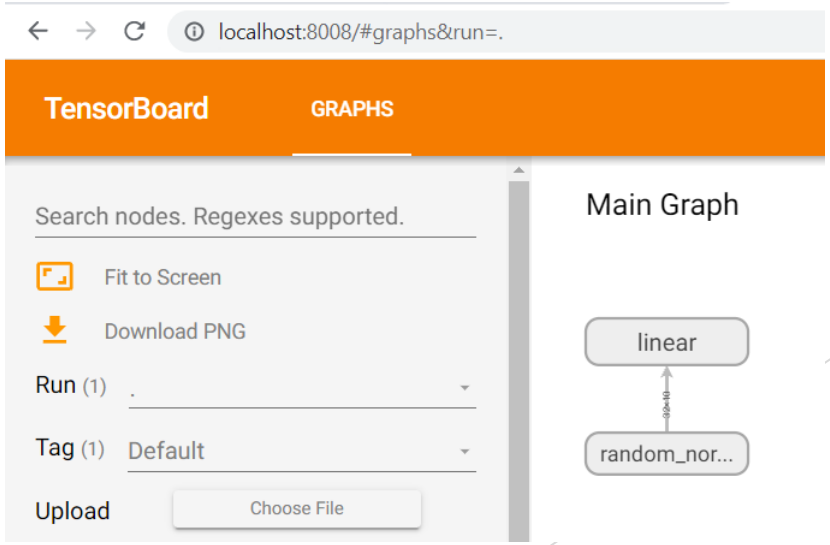
```
import tensorflow as tf
import sonnet as snt

x = tf.random.normal((32, 10))
net = snt.Linear(1)
y = net(x)

writer = tf.summary.FileWriter("D:/tensorboard",
    tf.get_default_graph())
with tf.Session() as sess:
    sess.run(tf.global_variables_initializer())
    print(sess.run(y))
writer.close()
```

环境准备
Environment Preparation

- 验证TensorBoard及Sonnet是否安装成功
  4. 执行tb-test.py，
```
C:\Users\MSUser>python C:\Users\MSUser\Desktop\tb-test.py
```
  5. 验证TensorBoard是否有输出：
     a. 执行命令，如
```
C:\Users\MSUser>tensorboard --logdir=D:\\tensorboard --port=8008
```
     b. 打开浏览器，如chrome，键入网址：http://localhost:8008/
     c. 如果安装成功，可以看到如下图所示：



环境准备
Environment Preparation

- 注意，在脚本中，会在特定目录生成输出（包含模型信息等），供TensorBoard读取。这个文件夹可以任意指定，但要保证执行命令时，这两个位置一致，不然可能出错：

```
import tensorflow as tf
import sonnet as snt

x = tf.random.normal((32, 10))
net = snt.Linear(1)
y = net(x)

writer = tf.summary.FileWriter("D:/tensorboard",
    tf.get_default_graph())
with tf.Session() as sess:
    sess.run(tf.global_variables_initializer())
    print(sess.run(y))
writer.close()
```

```
C:\Users\MSUser>tensorboard --logdir=D:\\tensorboard --port=8008
```

环境准备
Environment Preparation

- 安装tfmpl库（Install the sonnet library）
  - pip install tfmpl

- 验证tfmpl是否安装成功

  打开命令行窗口（cmd.ext），执行其所提供的文件： scatter.py：

  https://github.com/cheind/tf-matplotlib/blob/master/tfmpl/samples/scatter.py

  如果执行成功，应该通过TensorFlow可以看到类似的所下图示：

  注意相关信息被写入到当下目录下的log文件夹中，因此，启动TensorBoard时，给的文件夹名称要对，如下：

  tensorboard --logdir=log --port=8008

```
image_tensor = draw_scatter(scaled, ['r', 'g'])
image_summary = tf.summary.image('scatter', image_tensor)
all_summaries = tf.summary.merge_all()

writer = tf.summary.FileWriter('log', sess.graph)
summary = sess.run(all_summaries, feed_dict={scale: 2.})
writer.add_summary(summary, global_step=0)
```