

哭聲偵測及辨識操作說明

時間：2018 年 7 月 18 日

作業系統：Ubuntu0.16.04.3

音頻規格建議：

- 音頻格式為 wav，單聲道 128 kbps(16 位元)，8khz 採樣率
- 音頻時間：最短 5 秒，最長 12 秒
- 嬰兒適用年齡：六個月以下

辨識結果說明：

- Pain：需要安撫
- Sleepy：想睡覺
- Diaper：需要換尿布
- Hungry：肚子餓
- Error：被判定為非哭聲

資料夾說明：

- ✧ cry_detection-master 為準度較高之 python 哭聲偵測
- ✧ VAD_c-master 為 c 語言哭聲偵測
- ✧ NYUST_MIPL_Infant-master 為哭聲辨識

事先安裝 pip，指令為 **sudo apt-get install pip**

一、 哭聲偵測 Cry Detection(準度高之版本)

Python 版本：2.7

在 terminal 進入該 "cry_detection-master" 資料夾，並確認網路是否連線

輸入指令：**sh install.sh**

即可將相關的套件自動安裝完成，如圖 1 所示。

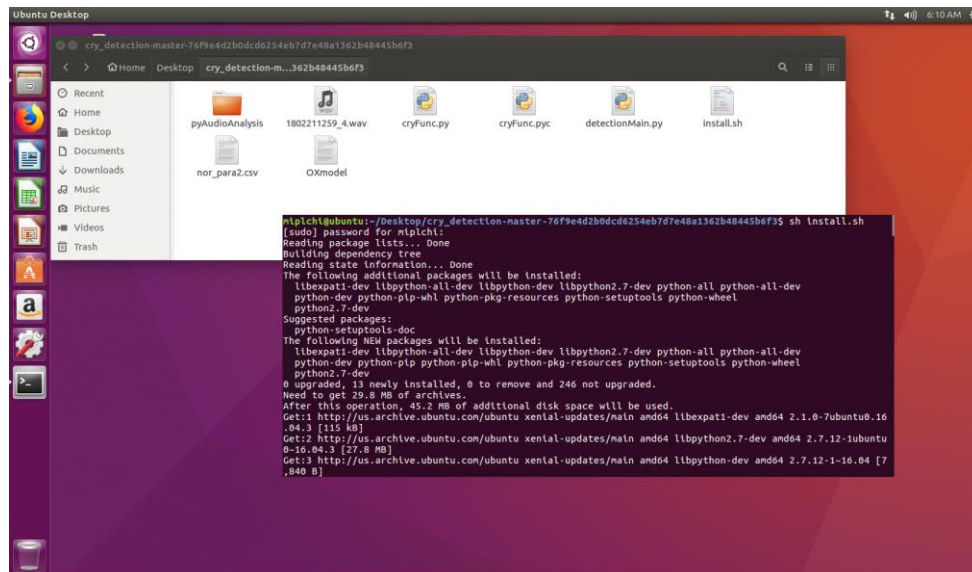


圖 1 安裝相關套件

若 install.sh 的腳本無法完全安裝所有套件，則分別輸入

pip install mply

pip install pycrypto

pip install instantmusic

相關套件安裝完成後，輸入：

python detectionMain.py 1802211259_4.wav

即可做哭聲偵測，如圖 2 所示，detectionMain.py 為哭聲偵測主程式，1802211259_4.wav 為音檔檔名，副檔名需為 wav 檔，圖中結果"non-cry"為非哭聲。

```
mip1chi@ubuntu: ~/Desktop/cry_detection-master-76f9e4d2b0dcd6254eb7d7e48a1362b48445b6f3
5)
Requirement already satisfied: subprocess32 in /usr/local/lib/python2.7/dist-packages (from matplotlib->mlpy) (3.5.2)
Requirement already satisfied: pytz in /usr/local/lib/python2.7/dist-packages (from matplotlib->mlpy) (2018.5)
Requirement already satisfied: python-dateutil>=2.1 in /usr/local/lib/python2.7/dist-packages (from matplotlib->mlpy) (2.7.3)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python2.7/dist-packages (from matplotlib->mlpy) (1.0.1)
Requirement already satisfied: cycloper>=0.10 in /usr/local/lib/python2.7/dist-packages (from matplotlib->mlpy) (0.10.0)
Requirement already satisfied: setuptools in /usr/lib/python2.7/dist-packages (from kiwisolver>=1.0.1->matplotlib->mlpy) (20.7.0)
Installing collected packages: scikit-learn, mlpy
Running setup.py install for mlpy ... done
Successfully installed mlpy-0.1.0 scikit-learn-0.19.2
The directory '/home/mip1chi/.cache/pip/http' or its parent directory is not owned by the current user and the cache has been disabled. Please check the permissions and owner of that directory. If executing pip with sudo, you may want sudo's -H flag.
The directory '/home/mip1chi/.cache/pip' or its parent directory is not owned by the current user and caching wheels has been disabled. check the permissions and owner of that directory. If executing pip with sudo, you may want sudo's -H flag.
Collecting pycrypto
  Downloading https://files.pythonhosted.org/packages/60/db/645aa9af249f059cc3a368b118de33889219e0362141e75d4eaf6f80f163/pycrypto-2.6.1.tar.gz (446kB)
    100% |#####| 450kB 10.2MB/s
Installing collected packages: pycrypto
Running setup.py install for pycrypto ... done
Successfully installed pycrypto-2.6.1
mip1chi@ubuntu:~/Desktop/cry_detection-master-76f9e4d2b0dcd6254eb7d7e48a1362b48445b6f3$ python detectionMain.py 1802211259_4.wav
/usr/local/lib/python2.7/dist-packages/sklearn/base.py:311: UserWarning: Trying to unpickle estimator SVC from version 0.18.1 when using version 0.19.2. This might lead to breaking code or invalid results. Use at your own risk.
  UserWarning)
non-cry
mip1chi@ubuntu:~/Desktop/cry_detection-master-76f9e4d2b0dcd6254eb7d7e48a1362b48445b6f3$
```

圖 2 哭聲偵測之執行說明

二、哭聲偵測 VAD(c 語言哭聲偵測版本_哭聲嚴謹度較低)

在 terminal 進入該 "VAD_c-master" 資料夾，後輸入指令：

`./run 1802211259_4.wav`

run 為執行檔，1802211259_4.wav 為音檔，如圖 3 所示，該音檔偵測結果為嬰兒哭聲。

```
mip1chi@ubuntu: ~/Desktop/VAD_c-master-55f13ebfa59a78e0f66e71ca379f3f6754d866c8
mip1chi@ubuntu:~/Desktop/VAD_c-master-55f13ebfa59a78e0f66e71ca379f3f6754d866c8$ ./run 1802211259_4.wav
start... 1802211259_4.wav
score = 0.110573
[Result] It is baby cry
end...mip1chi@ubuntu:~/Desktop/VAD_c-master-55f13ebfa59a78e0f66e71ca379f3f6754d866c8$
```

圖 3 c 語言之哭聲偵測說明

三、哭聲辨識

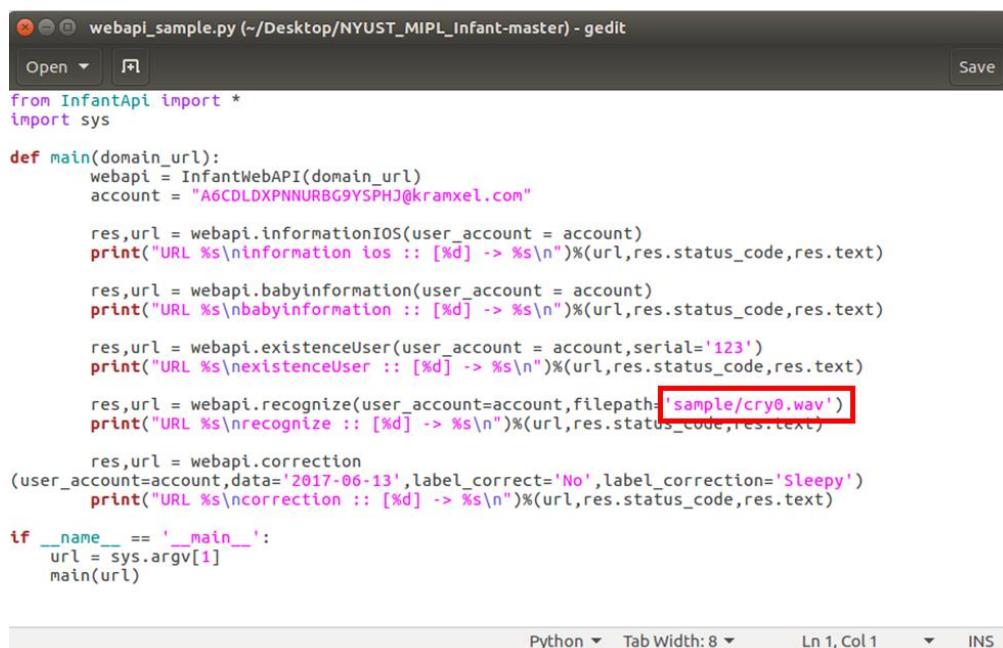
資料夾為"NYUST_MIPL_Infant-master"

若無 requests 套件，需輸入指令：`sudo pip install requests`，如圖 4 所示。

```
mip1chi@ubuntu: ~/Desktop/NYUST_MIPL_Infant-master
mip1chi@ubuntu:~/Desktop/NYUST_MIPL_Infant-master$ sudo pip install requests
The directory '/home/mip1chi/.cache/pip/http' or its parent directory is not owned by the current user and the cache has been disabled. Please check the permissions and owner of that directory. If executing pip with sudo, you may want sudo's -H flag.
The directory '/home/mip1chi/.cache/pip' or its parent directory is not owned by the current user and caching wheels has been disabled. check the permissions and owner of that directory. If executing pip with sudo, you may want sudo's -H flag.
Collecting requests
  Downloading https://files.pythonhosted.org/packages/65/47/7e02164a2a3db50ed6d8a6ab1d6d60b69c4c3fdf57a284257925dfc12bda/requests-2.19.1-py2.py3-none-any.whl (91kB)
    100% |#####| 92kB 1.1MB/s
Collecting certifi>=2017.4.17 (from requests)
  Downloading https://files.pythonhosted.org/packages/7c/e6/92ad559b7192d846975fc916b65f667c7b8c3a32bea7372340bfe9a15fa5/certifi-2018.4.16-py2.py3-none-any.whl (150kB)
    100% |#####| 153kB 1.6MB/s
Collecting chardet<3.1.0,>=3.0.2 (from requests)
  Downloading https://files.pythonhosted.org/packages/bc/a9/01ffebfb562e4274b6487b4bb1ddcc7ca55ec7510b22e4c51f14098443b8/chardet-3.0.4-py2.py3-none-any.whl (133kB)
    100% |#####| 143kB 2.3MB/s
```

圖 4 哭聲辨識套件安裝

在 webapi_sample.py 的檔案中，將音訊檔案輸入紅框中，如圖 5 所示，其餘相關文件請勿隨意修改或更動，如需更改，請與接口聯繫。



```
webapi_sample.py (~/Desktop/NYUST_MIPL_Infant-master) - gedit
Open Save
from InfantApi import *
import sys

def main(domain_url):
    webapi = InfantWebAPI(domain_url)
    account = "A6CDLXPNNURBG9YSPHJ@kramxel.com"

    res,url = webapi.informationIOS(user_account = account)
    print("URL %s\ninformation ios :: [%d] -> %s\n"%(url,res.status_code,res.text))

    res,url = webapi.babyinformation(user_account = account)
    print("URL %s\nbabyinformation :: [%d] -> %s\n"%(url,res.status_code,res.text))

    res,url = webapi.existenceUser(user_account = account,serial='123')
    print("URL %s\nexistenceUser :: [%d] -> %s\n"%(url,res.status_code,res.text))

    res,url = webapi.recognize(user_account=account,filepath='sample/cry0.wav')
    print("URL %s\nrecognize :: [%d] -> %s\n"%(url,res.status_code,res.text))

    res,url = webapi.correction
    (user_account=account,data='2017-06-13',label_correct='No',label_correction='Sleepy')
    print("URL %s\ncorrection :: [%d] -> %s\n"%(url,res.status_code,res.text))

if __name__ == '__main__':
    url = sys.argv[1]
    main(url)

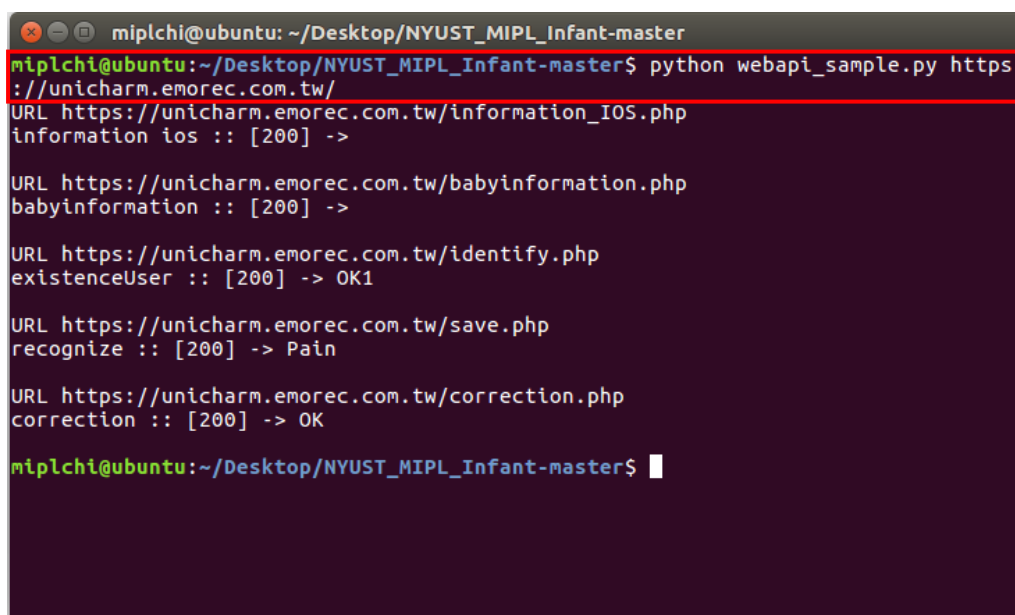
Python Tab Width: 8 Ln 1, Col 1 INS
```

圖 5 音訊檔輸入

在 terminal 進入該 "NYUST_MIPL_Infant-master" 資料夾，輸入指令

`python webapi_sample.py https://testcry.emorec.com.tw/`

圖 6 為輸出結果，紅框中為辨識結果，相關文件請勿隨意修改或更動。



```
mip1chi@ubuntu: ~/Desktop/NYUST_MIPL_Infant-master
mip1chi@ubuntu:~/Desktop/NYUST_MIPL_Infant-master$ python webapi_sample.py https://unicharm.emorec.com.tw/
URL https://unicharm.emorec.com.tw/information_IOS.php
information ios :: [200] ->

URL https://unicharm.emorec.com.tw/babyinformation.php
babyinformation :: [200] ->

URL https://unicharm.emorec.com.tw/identify.php
existenceUser :: [200] -> OK1

URL https://unicharm.emorec.com.tw/save.php
recognize :: [200] -> Pain

URL https://unicharm.emorec.com.tw/correction.php
correction :: [200] -> OK
mip1chi@ubuntu:~/Desktop/NYUST_MIPL_Infant-master$
```

圖 6 哭聲辨識輸出結果