Tobii Pro SDK开发基础指南(Python版本)

**一、环境配置**

（1）工具：Python2.7或Python3.6，Pycharm

（2）Windows环境下，保证pip和setuptools是最新版本。

（操作命令：python -m pip install -U pip setuptools）

1. 利用pip从PyPI获取并安装 Tobii Pro SDK

（操作命令：pip install tobii\_research）

1. 其他所需的软件包：

pip install opencv-python opencv-contrib-python

pip install numpy

pip install pillow

pip install python-xlib

pip install pym

pip install pymouse

pip install matplotlib

安装完后，用pip list 查看即可

（5）利用Tobii Pro Eye Tracker Manager软件查看tet-tcp地址

1. **SDK具体内容(详情网址: http://developer.tobiipro.com/python/python-sdk-reference-guide.html)**
2. 连接眼动仪并获取基础信息

import tobii\_research as tr

address = "tet-tcp://12.13.14.15" #可利用Tobii Pro Eye Tracker Manager软件得到

eyetracker = tr.EyeTracker(address)

eyetracker.set\_gaze\_output\_frequency(Hz) # 设置采样频率

print("Address: " + eyetracker.address)

print("Model: " + eyetracker.model)

print("Name (It's OK if this is empty): " + eyetracker.device\_name)

print("Serial number: " + eyetracker.serial\_number)

（2）定义函数获取眼动基础数据

def record\_data():

eyetracker.subscribe\_to(tr.EYETRACKER\_GAZE\_DATA, gaze\_data\_callback, as\_dictionary = True)

time.sleep(eye\_time)

eyetracker.unsubscribe\_from(tr.EYETRACKER\_GAZE\_DATA, gaze\_data\_callback)

def gaze\_data\_callback(gaze\_data):

print("Left eye: ({gaze\_left\_eye}) \t Right eye: ({gaze\_right\_eye})".format(gaze\_left\_eye = gaze\_data['left\_gaze\_point\_on\_display\_area'],

gaze\_right\_eye = gaze\_data['right\_gaze\_point\_on\_display\_area']))

point\_data\_left = gaze\_data['left\_gaze\_point\_on\_display\_area']

point\_data\_right = gaze\_data['right\_gaze\_point\_on\_display\_area']

以上函数可返回打印左/右眼对应的注视坐标，左眼(x1,y1)，右眼(x2,y2)

（3）获取眼动仪的具体模式

initial\_eye\_tracking\_mode = eyetracker.get\_eye\_tracking\_mode()

print("The eye tracker's initial eye tracking mode is {0}.".format(initial\_eye\_tracking\_mode))

try:

for eye\_tracking\_mode in eyetracker.get\_all\_eye\_tracking\_modes():

eyetracker.set\_eye\_tracking\_mode(eye\_tracking\_mode)

print("Eye tracking mode set to {0}.".format(eye\_tracking\_mode))

finally:

eyetracker.set\_eye\_tracking\_mode(initial\_eye\_tracking\_mode)

print("Eye tracking mode reset to {0}.".format(initial\_eye\_tracking\_mode))

（4）获取眼动仪的支持的输出频率

initial\_gaze\_output\_frequency = eyetracker.get\_gaze\_output\_frequency()

print("The eye tracker's initial gaze output frequency is {0} Hz.".format(initial\_gaze\_output\_frequency))

try:

for gaze\_output\_frequency in eyetracker.get\_all\_gaze\_output\_frequencies():

eyetracker.set\_gaze\_output\_frequency(gaze\_output\_frequency)

print("Gaze output frequency set to {0} Hz.".format(gaze\_output\_frequency))

finally:

eyetracker.set\_gaze\_output\_frequency(initial\_gaze\_output\_frequency)

print("Gaze output frequency reset to {0} Hz.".format(initial\_gaze\_output\_frequency))

1. 设置眼动仪的工作模式

initial\_eye\_tracking\_mode = eyetracker.get\_eye\_tracking\_mode()

print("The eye tracker's initial eye tracking mode is {0}.".format(initial\_eye\_tracking\_mode))

try:

for eye\_tracking\_mode in eyetracker.get\_all\_eye\_tracking\_modes():

eyetracker.set\_eye\_tracking\_mode(eye\_tracking\_mode)

print("Eye tracking mode set to {0}.".format(eye\_tracking\_mode))

finally:

eyetracker.set\_eye\_tracking\_mode(initial\_eye\_tracking\_mode)

print("Eye tracking mode reset to {0}.".format(initial\_eye\_tracking\_mode))

1. 获取眼动仪基础数据

可以从find\_all\_eyetrackers或者EyeTracker.\_\_init\_\_得知如何创建一个EyeTracker object.

subscribe的数据有：

EYETRACKER\_EXTERNAL\_SIGNAL,

EYETRACKER\_EYE\_IMAGES,

EYETRACKER\_HMD\_GAZE\_DATA,EYETRACKER\_GAZE\_DATA, EYETRACKER\_USER\_POSITION\_GUIDE,EYETRACKER\_NOTIFICATION\_CONNECTION\_LOST, EYETRACKER\_NOTIFICATION\_CONNECTION\_RESTORED, EYETRACKER\_NOTIFICATION\_CALIBRATION\_MODE\_ENTERED, EYETRACKER\_NOTIFICATION\_CALIBRATION\_MODE\_LEFT, EYETRACKER\_NOTIFICATION\_CALIBRATION\_CHANGED, EYETRACKER\_NOTIFICATION\_TRACK\_BOX\_CHANGED, EYETRACKER\_NOTIFICATION\_DISPLAY\_AREA\_CHANGED, EYETRACKER\_NOTIFICATION\_GAZE\_OUTPUT\_FREQUENCY\_CHANGED, EYETRACKER\_NOTIFICATION\_EYE\_TRACKING\_MODE\_CHANGED, EYETRACKER\_NOTIFICATION\_DEVICE\_FAULTS, EYETRACKER\_NOTIFICATION\_DEVICE\_WARNINGS, EYETRACKER\_TIME\_SYNCHRONIZATION\_DATA or EYETRACKER\_STREAM\_ERRORS.

eg.code如下：

import time

import tobii\_research as tr

global\_gaze\_data = None

def gaze\_data\_callback(gaze\_data):

global global\_gaze\_data

global\_gaze\_data = gaze\_data

def gaze\_data(eyetracker):

global global\_gaze\_data

print("Subscribing to gaze data for eye tracker with serial number {0}.".format(eyetracker.serial\_number))

eyetracker.subscribe\_to(tr.EYETRACKER\_GAZE\_DATA, gaze\_data\_callback, as\_dictionary=True)

# Wait while some gaze data is collected.

time.sleep(2)

eyetracker.unsubscribe\_from(tr.EYETRACKER\_GAZE\_DATA, gaze\_data\_callback)

print("Unsubscribed from gaze data.")

print("Last received gaze package:")

print(global\_gaze\_data)