1. Import Dependencies

In [1]:

```
!pip install opencv-python
```

```
Collecting opencv-python
  Using cached opencv_python-4.5.1.48-cp37-cp37m-macosx_10_13_x86_6
4.whl (40.3 MB)
Requirement already satisfied: numpy>=1.14.5 in ./tfod/lib/python3.
7/site-packages (from opencv-python) (1.19.5)
Installing collected packages: opencv-python
Successfully installed opencv-python-4.5.1.48
```

In [2]:

```
# Import opencv
import cv2

# Import uuid
import uuid

# Import Operating System
import os

# Import time
import time
```

2. Define Images to Collect

In [19]:

```
#labels = ['thumbsup', 'thumbsdown', 'heart', 'livelong']
labels = ['livelong']
number_imgs = 1
```

3. Setup Folders

In [4]:

```
IMAGES_PATH = os.path.join('Tensorflow', 'workspace', 'images', 'collectedimage
s')
```

In [5]:

```
IMAGES_PATH
```

Out[5]:

```
'Tensorflow/workspace/images/collectedimages'
```

In [6]:

```
#Check OS create folders for images
if not os.path.exists(IMAGES_PATH):
    if os.name == 'posix':
        !mkdir -p {IMAGES_PATH}
    if os.name == 'nt':
         !mkdir {IMAGES_PATH}
#Create folders for each classes
for label in labels:
    path = os.path.join(IMAGES_PATH, label)
    if not os.path.exists(path):
        !mkdir {path}
```

4. Capture Images

In [20]:

```
for label in labels:
    cap = cv2.VideoCapture(0) #Connects to webcam or capture device
    print('Collecting images for {}'.format(label))
    time.sleep(5) #break for 5 seconds
    for imgnum in range(number_imgs):
        print('Collecting image {}'.format(imgnum))
        ret, frame = cap.read()
        imgname = os.path.join(IMAGES_PATH,label,label+'.'+'{}.jpg'.format(str(u
uid.uuid1())))
        cv2.imwrite(imgname, frame)
        cv2.imshow('frame', frame)
        time.sleep(2)

        if cv2.waitKey(1) & 0xFF == ord('q'): #Exit the capture when pressing
 "q" key
            break
cap.release()
cv2.destroyAllWindows()
```

```
Collecting images for livelong
Collecting image 0
```

5. Image Labelling

In [11]:

```
#1:04:04
```

In [12]:

```
!pip install --upgrade pyqt5 lxml
```

```
Requirement already satisfied: pyqt5 in ./tfod/lib/python3.7/site-pa
ckages (5.15.4)
Requirement already satisfied: lxml in ./tfod/lib/python3.7/site-pac
kages (4.6.3)
Requirement already satisfied: PyQt5-sip<13,>=12.8 in ./tfod/lib/pyt
hon3.7/site-packages (from pyqt5) (12.9.0)
Requirement already satisfied: PyQt5-Qt5>=5.15 in ./tfod/lib/python
3.7/site-packages (from pyqt5) (5.15.2)
```

In [13]:

```
LABELIMG_PATH = os.path.join('Tensorflow', 'labelimg')
```

In [14]:

```
if not os.path.exists(LABELIMG_PATH):
    !mkdir {LABELIMG_PATH}
    !git clone https://github.com/tzutalin/labelImg {LABELIMG_PATH}
```

In [15]:

```
if os.name == 'posix':
    !make qt5py3
if os.name =='nt':
    !cd {LABELIMG_PATH} && pyrcc5 -o libs/resources.py resources.qrc
#!cd {LABELIMG_PATH} && pyrcc5 -o libs/resources.py resources.qrc
```

```
make: *** No rule to make target `qt5py3'.  Stop.
```

In [21]:

```
#Open the labelling application
!cd {LABELIMG_PATH} && python labelImg.py
```

```
objc[87077]: Class FIFinderSyncExtensionHost is implemented in both
/System/Library/PrivateFrameworks/FinderKit.framework/Versions/A/Fin
derKit (0x7fff8e0473d8) and /System/Library/PrivateFrameworks/FilePr
ovider.framework/OverrideBundles/FinderSyncCollaborationFileProvider
Override.bundle/Contents/MacOS/FinderSyncCollaborationFileProviderOv
erride (0x10cc86f50). One of the two will be used. Which one is unde
fined.
Image:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorflow/workspace/imag
es/collectedimages/livelong/livelong.0b03a970-cb97-11eb-9e1f-f45c89c
16c1b.jpg -> Annotation:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorf
low/workspace/images/collectedimages/livelong/livelong.0b03a970-cb97
-11eb-9e1f-f45c89c16c1b.xml
Image:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorflow/workspace/imag
es/collectedimages/livelong/livelong.ddb10260-cb96-11eb-9e1f-f45c89c
16c1b.jpg -> Annotation:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorf
low/workspace/images/collectedimages/livelong/livelong.ddb10260-cb96
-11eb-9e1f-f45c89c16c1b.xml
Image:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorflow/workspace/imag
es/collectedimages/livelong/livelong.fb10f018-cb96-11eb-9e1f-f45c89c
16c1b.jpg -> Annotation:/Users/AlanZhu/Desktop/OD/TFODCourse/Tensorf
low/workspace/images/collectedimages/livelong/livelong.fb10f018-cb96
-11eb-9e1f-f45c89c16c1b.xml
```

6. Move them into a Training and Testing Partition

OPTIONAL - 7. Compress them for Colab Training

In [ ]:

```
TRAIN_PATH = os.path.join('Tensorflow', 'workspace', 'images', 'train')
TEST_PATH = os.path.join('Tensorflow', 'workspace', 'images', 'test')
ARCHIVE_PATH = os.path.join('Tensorflow', 'workspace', 'images', 'archive.tar.g
z')
```

In [ ]:

```
!tar -czf {ARCHIVE_PATH} {TRAIN_PATH} {TEST_PATH}
```

In [ ]:

```

```