In [1]:

```
!pip install pycaw
```

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Requirement already satisfied: pycaw in c:\users\abc\anaconda3\lib\site-pack
ages (20220416)
Requirement already satisfied: comtypes in c:\users\abc\anaconda3\lib\site-p
ackages (from pycaw) (1.1.7)
Requirement already satisfied: psutil in c:\users\abc\anaconda3\lib\site-pac
kages (from pycaw) (5.7.0)

WARNING: There was an error checking the latest version of pip.
```

In [2]:

```
import cv2
import mediapipe as mp
from mediapipe.python.solutions.drawing_utils import draw_landmarks
import math
from ctypes import cast, POINTER
from comtypes import CLSCTX_ALL
from pycaw.pycaw import AudioUtilities, IAudioEndpointVolume
import numpy
```

In [*]:

```
devices = AudioUtilities.GetSpeakers()
interface = devices.Activate(
    IAudioEndpointVolume._iid_, CLSCTX_ALL, None)
volume = cast(interface, POINTER(IAudioEndpointVolume))
cap = cv2.VideoCapture(0)
mpHands = mp.solutions.hands
hands = mpHands.Hands()
mpDraw = mp.solutions.drawing_utils

while True:
    success , img =cap.read()
    imgRGB = cv2.cvtColor(img , cv2.COLOR_BGR2RGB)
    results = hands.process(imgRGB)
    if results.multi_hand_landmarks:
        for handLms in results.multi_hand_landmarks:
            lmList = []
            for id ,lm in enumerate(handLms.landmark):
                h ,w , c = img.shape
                cx ,cy = int(lm.x*w) , int(lm.y*h)
                lmList.append([id ,cx, cy])
                mpDraw.draw_landmarks(img , handLms ,mpHands.HAND_CONNECTIONS)
        if lmList:
            x1 ,y1  = lmList[4][1] , lmList[4][2]
            x2, y2  = lmList[8][1], lmList[8][2]
            cv2.circle(img , (x1, y1) , 15 ,(255,0,0) , cv2.FILLED )
            cv2.circle(img , (x2, y2) , 15 ,(255,0,0) , cv2.FILLED )
            cv2.line(img , (x1 , y1) , (x2 , y2) ,(255 , 0 , 255) , 3)
            z1 , z2 = (x1+x2)//2 , (y1+y2)//2
            length = math.hypot(x2- x1 , y2- y1)
            if length<50 :
                cv2.circle(img , (z1 ,z2) ,15 , (255 , 255 , 255) ,cv2.FILLED)
        volRange  = volume.GetVolumeRange()
        minVol = volRange[0]
        maxVol = volRange[1]
        vol = numpy.interp(length , [50 ,300] , [minVol ,maxVol])
        volBar = numpy.interp(length , [50 ,300] , [400 ,150])
        volPer = numpy.interp(length , [50 ,300] , [0 ,100])
        volume.SetMasterVolumeLevel(vol, None)
        cv2.rectangle(img , (50 ,150) , (85 , 400) ,(123,213,122) ,3)
        cv2.rectangle(img , (50 , int(volBar)) , (85 ,400) ,(0, 231,23) ,cv2.FILLED)
        cv2.putText(img , str(int(volPer)) , (40, 450) ,cv2.FONT_HERSHEY_PLAIN ,4 , (24,34,
    cv2.imshow("Image" ,img)
    cv2.waitKey(1)
```

In [ ]:

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