

Test The Model

- Import The Packages And Load The Saved Model

```
In [56]: import numpy as np
         from tensorflow.keras.models import load_model
         from tensorflow.keras.preprocessing import image
         import cv2
```

```
In [14]: model=load_model('aslmodel.h5')
         img=image.load_img(r'C:\Users\Cliff\Desktop\Real-Time-Communication-Specially-Abled-main\Real-Time-Communication-Specially-Abled-
                             target_size=(32,32))
```

```
In [15]: img
```

- Load The Test Image, Pre-Process It And Predict

```
In [91]: index=['A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z']
         index.sort()
         print(index)
```

```
['A', 'B', 'C', 'D', 'Del', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'Nothing', 'O', 'P', 'Q', 'R', 'S', 'Space', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z']
```

```
In [94]: from skimage.transform import resize
         import tensorflow as tf
         def detect(frame):
             img =resize(frame,(32,32,3))
             img= np.expand_dims(img,axis=0)
             if(np.max(img)>1):
                 img= img/255.0
             prediction = model.predict(img)
             print(prediction)
             prediction = (model.predict(img) > 0.5).astype("int32")
             x=list(prediction[0])
             out=index[x.index(1)]
             print(out)
```

```
In [112]: Time-Communication-Specially-Abled-main\Real-Time-Communication-Specially-Abled-main\ProjectFiles\dataset\test_set\A\A_test.jpg")
```

```
1/1 [=====] - 0s 60ms/step
[[1.0000000e+00 2.9239769e-30 1.6500753e-21 2.6244095e-36 2.5984150e-32
  2.4400634e-13 2.9793859e-29 5.6544479e-27 0.0000000e+00 1.8932491e-22
  2.4638847e-26 7.2197926e-29 1.5093392e-20 9.4953346e-16 1.2551946e-16
  2.3163272e-19 3.5316704e-25 3.8320401e-26 2.0801281e-30 2.5110501e-28
  8.3804720e-11 2.2927127e-28 2.5660401e-11 4.8326328e-27 4.2622556e-30
  5.0127313e-29 7.0526197e-16 5.5705267e-18 2.6439029e-14]]
1/1 [=====] - 0s 60ms/step
A
```

```
In [97]: Time-Communication-Specially-Abled-main\Real-Time-Communication-Specially-Abled-main\ProjectFiles\dataset\test_set\X\X_test.jpg")
```

```
1/1 [=====] - 0s 32ms/step
[[3.6290068e-31 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
  0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00 0.0000000e+00
  0.0000000e+00 0.0000000e+00 7.3309086e-38 0.0000000e+00 1.4182615e-34
  2.1733042e-38 0.0000000e+00 0.0000000e+00 0.0000000e+00 5.0449454e-27
  1.2364381e-37 5.9871037e-38 4.3922523e-32 1.3571592e-29 9.6274873e-29
  0.0000000e+00 1.0000000e+00 0.0000000e+00 4.5335158e-37]]
1/1 [=====] - 0s 40ms/step
X
```

CNN Video Analysis

```
105]: import cv2
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
model=load_model('aslmodel.h5')
video=cv2.VideoCapture(0)

while 1:
    succes,frame=video.read()
    cv2.imwrite('image.jpg',frame)
    img=image.load_img('image.jpg',target_size=(32,32))
    x=image.img_to_array(img)
    x=np.expand_dims(x,axis=0)
    pred=np.argmax(model.predict(x),axis=1)
    y=pred[0]
    copy = frame.copy()
    cv2.rectangle(copy, (320, 100), (620,400), (255,0,0), 5)
    cv2.putText(frame,'The Predicted Alphabet is: '+str(index[y]),(100,100),cv2.FONT_HERSHEY_SIMPLEX,1,(0,0,0),4)
    cv2.imshow('image',frame)
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break
video.release()
cv2.destroyAllWindows()
```