Real-Time Communication System Powered By AI For Specially Abled

Loading the Dataset &amp; Image Data Generation

from tensorflow.keras.preprocessing.image import ImageDataGenerator

# Training Datagen

train\_datagen =

ImageDataGenerator(rescale=1/255,zoom\_range=0.2,horizontal\_flip=True,vertical\_flip=False)

# Testing Datagen

test\_datagen = ImageDataGenerator(rescale=1/255)

# Training Dataset

x\_train=train\_datagen.flow\_from\_directory(r&#39;/content/drive/MyDrive/Dataset/training\_set&#39;,target\_size

=(64,64), class\_mode=&#39;categorical&#39;,batch\_size=900)

# Testing Dataset

x\_test=test\_datagen.flow\_from\_directory(r&#39;/content/drive/MyDrive/Dataset/test\_set&#39;,target\_size=(64,6

4), class\_mode=&#39;categorical&#39;,batch\_size=900)

Found 15760 images belonging to 9 classes.

Found 2250 images belonging to 9 classes.

print(&quot;Len x-train : &quot;, len(x\_train))

print(&quot;Len x-test : &quot;, len(x\_test))

Len x-train : 18

Len x-test : 3

# The Class Indices in Training Dataset

x\_train.class\_indices

{&#39;A&#39;: 0, &#39;B&#39;: 1, &#39;C&#39;: 2, &#39;D&#39;: 3, &#39;E&#39;: 4, &#39;F&#39;: 5, &#39;G&#39;: 6, &#39;H&#39;: 7, &#39;I&#39;: 8}

Model Creation

# Importing Libraries

from tensorflow.keras.models import Sequential

from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten,Dense

# Creating Model

model=Sequential()

# Adding Layers

model.add(Convolution2D(32,(3,3),activation=&#39;relu&#39;,input\_shape=(64,64,3)))

model.add(MaxPooling2D(pool\_size=(2,2)))

model.add(Flatten())

# Adding Dense Layers

model.add(Dense(300,activation=&#39;relu&#39;))

model.add(Dense(150,activation=&#39;relu&#39;))

model.add(Dense(9,activation=&#39;softmax&#39;))

# Compiling the Model

model.compile(loss=&#39;categorical\_crossentropy&#39;,optimizer=&#39;adam&#39;,metrics=[&#39;accuracy&#39;])

# Fitting the Model Generator

model.fit\_generator(x\_train,steps\_per\_epoch=len(x\_train),epochs=10,validation\_data=x\_test,validation

\_steps=len(x\_test))

/usr/local/lib/python3.7/dist-packages/ipykernel\_launcher.py:2: UserWarning: `Model.fit\_generator` is

deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.

Epoch 1/10

18/18 [==============================] - 92s 5s/step - loss: 0.0049 - accuracy: 0.9994 - val\_loss:

0.2635 - val\_accuracy: 0.9773

Epoch 2/10

18/18 [==============================] - 90s 5s/step - loss: 0.0040 - accuracy: 0.9995 - val\_loss:

0.2074 - val\_accuracy: 0.9773

Epoch 3/10

18/18 [==============================] - 87s 5s/step - loss: 0.0041 - accuracy: 0.9995 - val\_loss:

0.2460 - val\_accuracy: 0.9773

Epoch 4/10

18/18 [==============================] - 91s 5s/step - loss: 0.0041 - accuracy: 0.9992 - val\_loss:

0.2470 - val\_accuracy: 0.9782

Epoch 5/10

18/18 [==============================] - 88s 5s/step - loss: 0.0037 - accuracy: 0.9993 - val\_loss:

0.2439 - val\_accuracy: 0.9782

Epoch 6/10

18/18 [==============================] - 88s 5s/step - loss: 0.0024 - accuracy: 0.9997 - val\_loss:

0.2852 - val\_accuracy: 0.9782

Epoch 7/10

18/18 [==============================] - 91s 5s/step - loss: 0.0023 - accuracy: 0.9997 - val\_loss:

0.2589 - val\_accuracy: 0.9782

Epoch 8/10

18/18 [==============================] - 93s 5s/step - loss: 0.0014 - accuracy: 1.0000 - val\_loss:

0.2523 - val\_accuracy: 0.9782

Epoch 9/10

18/18 [==============================] - 92s 5s/step - loss: 0.0013 - accuracy: 0.9999 - val\_loss:

0.2269 - val\_accuracy: 0.9778

Epoch 10/10

18/18 [==============================] - 91s 5s/step - loss: 0.0012 - accuracy: 0.9999 - val\_loss:

0.2968 - val\_accuracy: 0.9782

Saving the Model

model.save(&#39;asl\_model\_84\_54.h5&#39