

IBM Project Name: Real-Time Communication System Powered by AI for Specially Abled

TEAM ID: PNT2022TMID19449

Model Building

Import The Required Model Building Libraries

In [1]:

```
#import imagedatagenerator  
from keras.preprocessing.image import ImageDataGenerator
```

In [2]:

```
#training datagen  
train_datagen=ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=  
0.2, horizontal_flip=True)
```

In [3]:

```
#testing datagen  
test_datagen=ImageDataGenerator(rescale=1./255)
```

IMPORTING tensorflow

In [4]:

```
import tensorflow as tf  
import os
```

Initialize The Model

In [13]:

```
#create model  
from keras.models import Sequential  
from keras.layers import Dense  
from keras.layers import Convolution2D  
from keras.layers import MaxPooling2D  
from keras.layers import Dropout  
from keras.layers import Flatten  
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

In [6]:

```
import numpy as np  
import matplotlib.pyplot as plt #to view graph in colab itself  
import IPython.display as display  
from PIL import Image  
import pathlib
```

Unzipping the dataset

In [7]:

```
!unzip '/content/conversation engine for deaf and dumb (1).zip'
```

Streaming output truncated to the last 5000 lines.

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inflating: Dataset/training_set/I/1479.png
inflating: Dataset/training_set/I/148.png
inflating: Dataset/training_set/I/1480.png
inflating: Dataset/training_set/I/1481.png
inflating: Dataset/training_set/I/1482.png
extracting: Dataset/training_set/I/1483.png
inflating: Dataset/training_set/I/1484.png
inflating: Dataset/training_set/I/1485.png
extracting: Dataset/training_set/I/1486.png
extracting: Dataset/training_set/I/1487.png
inflating: Dataset/training_set/I/1488.png
inflating: Dataset/training_set/I/1489.png
inflating: Dataset/training_set/I/149.png
inflating: Dataset/training_set/I/1490.png
extracting: Dataset/training_set/I/1491.png
extracting: Dataset/training_set/I/1492.png
extracting: Dataset/training_set/I/1493.png
extracting: Dataset/training_set/I/1494.png
extracting: Dataset/training_set/I/1495.png
inflating: Dataset/training_set/I/1496.png
extracting: Dataset/training_set/I/1497.png
extracting: Dataset/training_set/I/1498.png
extracting: Dataset/training_set/I/1499.png
inflating: Dataset/training_set/I/15.png
inflating: Dataset/training_set/I/150.png
inflating: Dataset/training_set/I/1500.png
extracting: Dataset/training_set/I/1501.png
extracting: Dataset/training_set/I/1502.png
inflating: Dataset/training_set/I/1503.png
inflating: Dataset/training_set/I/1504.png
extracting: Dataset/training_set/I/1505.png
extracting: Dataset/training_set/I/1506.png
inflating: Dataset/training_set/I/1507.png
inflating: Dataset/training_set/I/1508.png
inflating: Dataset/training_set/I/1509.png
inflating: Dataset/training_set/I/151.png

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inflating: Dataset/training_set/I/1564.png
inflating: Dataset/training_set/I/1565.png
extracting: Dataset/training_set/I/1566.png
extracting: Dataset/training_set/I/1567.png
inflating: Dataset/training_set/I/1568.png
extracting: Dataset/training_set/I/1569.png
inflating: Dataset/training_set/I/157.png
extracting: Dataset/training_set/I/1570.png
extracting: Dataset/training_set/I/1571.png
extracting: Dataset/training_set/I/1572.png
extracting: Dataset/training_set/I/1573.png
extracting: Dataset/training_set/I/1574.png
extracting: Dataset/training_set/I/1575.png
extracting: Dataset/training_set/I/1576.png
extracting: Dataset/training_set/I/1577.png
inflating: Dataset/training_set/I/1578.png
inflating: Dataset/training_set/I/1579.png
inflating: Dataset/training_set/I/158.png
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inflating: Dataset/training_set/I/161.png
inflating: Dataset/training_set/I/1610.png
extracting: Dataset/training_set/I/1611.png
inflating: Dataset/training_set/I/1612.png

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extracting: Dataset/training_set/I/1667.png
extracting: Dataset/training_set/I/1668.png
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inflating: Dataset/training_set/I/167.png
inflating: Dataset/training_set/I/1670.png
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extracting: Dataset/training_set/I/1672.png
extracting: Dataset/training_set/I/1673.png
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inflating: Dataset/training_set/I/168.png
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inflating: Dataset/training_set/I/190.png
inflating: Dataset/training_set/I/191.png

[illegible]

[illegible]

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[illegible]

inflating: Dataset/training_set/I/398.png
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extracting: Dataset/training_set/I/492.png
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extracting: Dataset/training_set/I/499.png
inflating: Dataset/training_set/I/5.png

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inflating: Dataset/training_set/I/601.png

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 inflating: Dataset/training_set/I/704.png

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extracting: Dataset/training_set/I/86.png
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inflating: Dataset/training_set/I/865.png
inflating: Dataset/training_set/I/866.png
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extracting: Dataset/training_set/I/868.png
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inflating: Dataset/training_set/I/884.png
inflating: Dataset/training_set/I/885.png
extracting: Dataset/training_set/I/886.png
extracting: Dataset/training_set/I/887.png
inflating: Dataset/training_set/I/888.png
inflating: Dataset/training_set/I/889.png
inflating: Dataset/training_set/I/89.png
inflating: Dataset/training_set/I/890.png
inflating: Dataset/training_set/I/891.png
inflating: Dataset/training_set/I/892.png
inflating: Dataset/training_set/I/893.png
inflating: Dataset/training_set/I/894.png
inflating: Dataset/training_set/I/895.png
inflating: Dataset/training_set/I/896.png
inflating: Dataset/training_set/I/897.png
inflating: Dataset/training_set/I/898.png
inflating: Dataset/training_set/I/899.png
inflating: Dataset/training_set/I/9.png
inflating: Dataset/training_set/I/90.png
inflating: Dataset/training_set/I/900.png
inflating: Dataset/training_set/I/901.png
inflating: Dataset/training_set/I/902.png
inflating: Dataset/training_set/I/903.png
inflating: Dataset/training_set/I/904.png
extracting: Dataset/training_set/I/905.png
inflating: Dataset/training_set/I/906.png
inflating: Dataset/training_set/I/907.png
inflating: Dataset/training_set/I/908.png
inflating: Dataset/training_set/I/909.png
inflating: Dataset/training_set/I/91.png

[illegible]


```
inflating: Dataset/training_set/I/962.png
inflating: Dataset/training_set/I/963.png
inflating: Dataset/training_set/I/964.png
inflating: Dataset/training_set/I/965.png
inflating: Dataset/training_set/I/966.png
inflating: Dataset/training_set/I/967.png
inflating: Dataset/training_set/I/968.png
inflating: Dataset/training_set/I/969.png
inflating: Dataset/training_set/I/97.png
inflating: Dataset/training_set/I/970.png
inflating: Dataset/training_set/I/971.png
inflating: Dataset/training_set/I/972.png
extracting: Dataset/training_set/I/973.png
inflating: Dataset/training_set/I/974.png
  inflating: Dataset/training_set/I/975.png
inflating: Dataset/training_set/I/976.png
inflating: Dataset/training_set/I/977.png
inflating: Dataset/training_set/I/978.png
inflating: Dataset/training_set/I/979.png
inflating: Dataset/training_set/I/98.png
inflating: Dataset/training_set/I/980.png
inflating: Dataset/training_set/I/981.png
inflating: Dataset/training_set/I/982.png
extracting: Dataset/training_set/I/983.png
inflating: Dataset/training_set/I/984.png
inflating: Dataset/training_set/I/985.png
inflating: Dataset/training_set/I/986.png
inflating: Dataset/training_set/I/987.png
inflating: Dataset/training_set/I/988.png
inflating: Dataset/training_set/I/989.png
inflating: Dataset/training_set/I/99.png
inflating: Dataset/training_set/I/990.png
inflating: Dataset/training_set/I/991.png
inflating: Dataset/training_set/I/992.png
extracting: Dataset/training_set/I/993.png
inflating: Dataset/training_set/I/994.png
inflating: Dataset/training_set/I/995.png
extracting: Dataset/training_set/I/996.png
inflating: Dataset/training_set/I/997.png
inflating: Dataset/training_set/I/998.png
inflating: Dataset/training_set/I/999.png
```

Applying ImageDataGenerator to training set

In [8]:

```
x_train=train_datagen.flow_from_directory('/content/Dataset/training_set',target_size=(64,64),batch_size=200,
```

```
class_mode='categorical',color_mode="grayscale")
```

Found 15750 images belonging to 9 classes.

Applying ImageDataGenerator to test set

In [9]:

```
x_test=test_datagen.flow_from_directory('/content/Dataset/test_set',target_size=(64,64),batch_size=200,
```

```
class_mode='categorical',color_mode="grayscale")
```

Found 2250 images belonging to 9 classes.

```
In [10]:  
a=len(x_train)  
b=len(x_test)  
Length of training set
```

```
In [11]:  
print(a)  
79  
Length of test set
```

```
In [12]:  
print(b)  
12
```

Add Layers

```
In [15]:  
#create model  
model=Sequential()
```