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Model Building

Importing The Required Model Building Libraries

In []:

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

In []:

```
from keras.models import Sequential, load_model from  
keras.layers.core import Dense, Dropout, Activation from  
keras.utils import np_utils
```

In []:

```
# 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)
```

In []:

```
# Training Dataset  
x_train=train_datagen.flow_from_directory(r'/content/drive/MyDrive/Dataset/training_set', target_size=(64,64), class_mode='categorical', batch_size=900)  
# Testing Dataset  
x_test=test_datagen.flow_from_directory(r'/content/drive/MyDrive/Dataset/test_set', target_size=(64,64), class_mode='categorical', batch_size=900)
```

Found 15760 images belonging to 9 classes.

Found 2250 images belonging to 9 classes.

In []:

```
print("Len x-train : ", len(x_train)) print("Len  
x-test : ", len(x_test))
```

Len x-train : 18 Len

x-test : 3

In []:

```
# The Class Indices in Training Dataset x_train.class_indices
```

Out []:

```
{ 'A': 0, 'B': 1, 'C': 2, 'D': 3, 'E': 4, 'F': 5, 'G': 6, 'H': 7, 'I': 8 }
```

Model Creation

In []:

```
# Importing Libraries from  
tensorflow.keras.models import Sequential  
from tensorflow.keras.layers import Convolution2D, MaxPooling2D, Flatten, Dense
```

In []:

```
dataset = pd.read_csv('E:\Datasets
```