Project Development phase
Sprint 2
Model Building

Date	19 November 2022
Team ID	PNT2022TMID14822
Project Name	Real-Time Communication System Powered by AI for Specially Abled
Maximum Marks	2 Marks

```
from keras.preprocessing.image import ImageDataGenerator

train_datagen = ImageDataGenerator(rescale = 1./255 , shear_range=0.2,
zoom_range=0.2,horizontal_flip=True)
test_datagen = ImageDataGenerator(rescale = 1./255)
x_train =
train_datagen.flow_from_directory('dataset/training_set',target_size=(
64,64),batch_size=900, class_mode='categorical',
color_mode='grayscale') x_test =
test_datagen.flow_from_directory('dataset/test_set',target_size=(64,64 ),batch_size=900,
class_mode='categorical', color_mode='grayscale')
Found 15750 images belonging to 9 classes. Found 2250 images
belonging to 9 classes.
x_train.class_indices
{'A': 0, 'B': 1, 'C': 2, 'D': 3, 'E': 4, 'F': 5, 'G': 6, 'H': 7, 'I': 8}

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

# Creating Model
model=Sequential()
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# Adding Layers
model.add(Convolution2D(32,
(3,3),activation='relu',input_shape=(64,64,1))) model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())

# Adding Hidden Layers
model.add(Dense(300,activation='relu')) model.add(Dense(512,activation='relu'))

# Adding Output Layer
model.add(Dense(9, activation='softmax'))

# Compiling the Model
model.compile(loss='categorical_crossentropy',optimizer='adam',metrics =['accuracy'])

# Fitting the Model Generator
model.fit(x_train,steps_per_epoch=len(x_train),epochs=10,validation_da
ta=x_test,validation_steps=len(x_test))

Epoch 1/10
18/18 [==============================] - 35s 2s/step - loss: 0.8970 -
accuracy: 0.6950 - val_loss: 0.3145 - val_accuracy: 0.8987
Epoch 2/10
18/18 [==============================] - 38s 2s/step - loss: 0.1944 -
accuracy: 0.9416 - val_loss: 0.2033 - val_accuracy: 0.9440
Epoch 3/10
18/18 [==============================] - 30s 2s/step - loss: 0.0844 -
accuracy: 0.9750 - val_loss: 0.1841 - val_accuracy: 0.9582
Epoch 4/10
18/18 [==============================] - 26s 1s/step - loss: 0.0436 -
accuracy: 0.9881 - val_loss: 0.1549 - val_accuracy: 0.9751
Epoch 5/10
18/18 [==============================] - 26s 1s/step - loss: 0.0252 -
accuracy: 0.9937 - val_loss: 0.1570 - val_accuracy: 0.9769
Epoch 6/10
18/18 [==============================] - 28s 2s/step - loss: 0.0133 -
accuracy: 0.9976 - val_loss: 0.1618 - val_accuracy: 0.9764
Epoch 7/10
18/18 [==============================] - 25s 1s/step - loss: 0.0097 -
accuracy: 0.9981 - val_loss: 0.1936 - val_accuracy: 0.9760
```

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Epoch 8/10
18/18 [==============================] - 25s 1s/step - loss: 0.0081 -
accuracy: 0.9982 - val_loss: 0.2045 - val_accuracy: 0.9769
Epoch 9/10
18/18 [==============================] - 25s 1s/step - loss: 0.0056 -
accuracy: 0.9987 - val_loss: 0.2384 - val_accuracy: 0.9760
Epoch 10/10
18/18 [==============================] - 25s 1s/step - loss: 0.0042 - accuracy: 0.9994 -
val_loss: 0.2156 - val_accuracy: 0.9760
<keras.callbacks.History at 0x2251f7f8130>
model.save('aslpng1.h5')
# Current accuracy is 0.9994
```