TRAIN AND TEST THE DATA

```python
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)
```

```python
x_train = train_datagen.flow_from_directory("/content/Dataset/training_set", target_size=(64,64),batch_size=300,
                                class_mode='categorical', color_mode ="grayscale")
```

Found 15750 images belonging to 9 classes.

```python
x_test = test_datagen.flow_from_directory("/content/Dataset/test_set", target_size=(64,64),batch_size=300,
                                class_mode='categorical', color_mode ="grayscale")
```

Found 2250 images belonging to 9 classes.

MODEL BUILDING

```python
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Convolution2D
from tensorflow.keras.layers import Conv2D, MaxPooling2D
from keras.layers import Dropout
from keras.layers import Flatten
```

```python
model=Sequential()
```

```python
model.add(Convolution2D(32,(3,3), input_shape=(64,64,1), activation = 'relu'))
```

```python
model.add(MaxPooling2D(pool_size=(2,2)))
```

```python
model.add(Flatten())
```

```python
model.add(Dense( units=512, activation='relu'))
```

```python
model.add(Dense(units=9, activation='softmax'))
```

```python
model.compile(loss='categorical_crossentropy', optimizer='adam', metrics=['accuracy'])
```

```python
model.fit_generator(x_train, steps_per_epoch=24, epochs=10, validation_data=x_test,validation_steps=40)
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future versi
on. Please use `Model.fit`, which supports generators.
  """Entry point for launching an IPython kernel.
Epoch 1/10
24/24 [==============================] - 17s 666ms/step - loss: 1.9786 - accuracy: 0.5628
Epoch 2/10
24/24 [==============================] - 16s 662ms/step - loss: 1.4525 - accuracy: 0.6621
Epoch 3/10
24/24 [==============================] - 16s 676ms/step - loss: 0.9580 - accuracy: 0.6842
Epoch 4/10
24/24 [==============================] - 16s 675ms/step - loss: 0.7076 - accuracy: 0.7240
Epoch 5/10
24/24 [==============================] - 16s 659ms/step - loss: 0.6103 - accuracy: 0.7488
Epoch 6/10
24/24 [==============================] - 16s 663ms/step - loss: 0.5005 - accuracy: 0.8054
Epoch 7/10
24/24 [==============================] - 17s 679ms/step - loss: 0.4164 - accuracy: 0.8904
Epoch 8/10
24/24 [==============================] - 18s 723ms/step - loss: 0.3408 - accuracy: 0.8994
Epoch 9/10
24/24 [==============================] - 16s 659ms/step - loss: 0.2641 - accuracy: 0.9536
Epoch 10/10
24/24 [==============================] - 16s 664ms/step - loss: 0.1676 - accuracy: 0.9672
```

```python
model.save('RSL.h5')
```