In [1]:

```
# importing libraries
from keras.models import Sequential
from keras.layers import Dense
from keras.layers import Convolution2D
from keras.layers import MaxPooling2D
from keras.layers import Flatten
```

```
Using TensorFlow backend.
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:516: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  _np_qint8 = np.dtype([("qint8", np.int8, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:517: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  _np_quint8 = np.dtype([("quint8", np.uint8, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:518: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  _np_qint16 = np.dtype([("qint16", np.int16, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:519: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  _np_quint16 = np.dtype([("quint16", np.uint16, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:520: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  _np_qint32 = np.dtype([("qint32", np.int32, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorflow\python\fram
ework\dtypes.py:525: FutureWarning: Passing (type, 1) or '1type' as a synony
m of type is deprecated; in a future version of numpy, it will be understood
as (type, (1,)) / '(1,)type'.
  np_resource = np.dtype([("resource", np.ubyte, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
sorflow_stub\dtypes.py:541: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  _np_qint8 = np.dtype([("qint8", np.int8, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
sorflow_stub\dtypes.py:542: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  _np_quint8 = np.dtype([("quint8", np.uint8, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
sorflow_stub\dtypes.py:543: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  _np_qint16 = np.dtype([("qint16", np.int16, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
sorflow_stub\dtypes.py:544: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  _np_quint16 = np.dtype([("quint16", np.uint16, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
```

```
sorflow_stub\dtypes.py:545: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  _np_qint32 = np.dtype([("qint32", np.int32, 1)])
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\tensorboard\compat\ten
sorflow_stub\dtypes.py:550: FutureWarning: Passing (type, 1) or '1type' as a
synonym of type is deprecated; in a future version of numpy, it will be unde
rstood as (type, (1,)) / '(1,)type'.
  np_resource = np.dtype([("resource", np.ubyte, 1)])
```

In [2]:

```
# Initializing the model
model = Sequential()
```

```
WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\backend\tensorflow_backend.py:74: The name tf.get_default_graph is d
eprecated. Please use tf.compat.v1.get_default_graph instead.
```

In [3]:

```
# convolution layer
model.add(Convolution2D(32,(3,3),input_shape = (64,64,3), activation = 'relu'))
```

```
WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\backend\tensorflow_backend.py:517: The name tf.placeholder is deprec
ated. Please use tf.compat.v1.placeholder instead.

WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\backend\tensorflow_backend.py:4138: The name tf.random_uniform is de
precated. Please use tf.random.uniform instead.
```

In [4]:

```
# convolution layer2
model.add(Convolution2D(32,(3,3),input_shape = (64,64,3), activation = 'relu'))
```

In [5]:

```
# Max Pooling Layer
model.add(MaxPooling2D(pool_size = (2,2)))
```

```
WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\backend\tensorflow_backend.py:3976: The name tf.nn.max_pool is depre
cated. Please use tf.nn.max_pool2d instead.
```

In [6]:

```
# flattening layer
model.add(Flatten())
```

In [7]:

```
# hidden layer 1
model.add(Dense(output_dim = 128, init = 'uniform', activation = 'relu'))
```

```
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\ipykernel_launcher.py:
2: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activati
on="relu", units=128, kernel_initializer="uniform")`
```

In [8]:

```
# hidden layer 2
model.add(Dense(output_dim = 128, init = 'uniform', activation = 'relu'))
```

```
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\ipykernel_launcher.py:
2: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activati
on="relu", units=128, kernel_initializer="uniform")`
```

In [9]:

```
# hidden layer 3
model.add(Dense(output_dim = 64, init = 'uniform', activation = 'relu'))
```

```
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\ipykernel_launcher.py:
2: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activati
on="relu", units=64, kernel_initializer="uniform")`
```

In [10]:

```
# hidden layer 4
model.add(Dense(output_dim = 64, init = 'uniform', activation = 'relu'))
```

```
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\ipykernel_launcher.py:
2: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activati
on="relu", units=64, kernel_initializer="uniform")`
```

In [11]:

```
# o/p layer
model.add(Dense(output_dim = 5, init = 'uniform', activation = 'softmax'))
```

```
C:\Users\Aishwarya Suresh\anaconda3\lib\site-packages\ipykernel_launcher.py:
2: UserWarning: Update your `Dense` call to the Keras 2 API: `Dense(activati
on="softmax", units=5, kernel_initializer="uniform")`
```

In [12]:

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

In [13]:

```
train_datagen = ImageDataGenerator(rescale = 1./255, shear_range = 0.2, zoom_range = 0.2, h
test_datagen = ImageDataGenerator(rescale = 1)
```

In [14]:

```
x_train = train_datagen.flow_from_directory('D:/Skin Disease Prediction/Dataset/Skin Diseas
x_test = test_datagen.flow_from_directory('D:/Skin Disease Prediction/Dataset/Skin Diseases
```

```
Found 2205 images belonging to 5 classes.
Found 550 images belonging to 5 classes.
```

In [15]:

```
x_train.class_indices
```

Out[15]:

```
{'Acne': 0, 'Melanoma': 1, 'Psoriasis': 2, 'Rosacea': 3, 'Vitiligo': 4}
```

In [16]:

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

```
WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\optimizers.py:790: The name tf.train.Optimizer is deprecated. Please
use tf.compat.v1.train.Optimizer instead.

WARNING:tensorflow:From C:\Users\Aishwarya Suresh\anaconda3\lib\site-package
s\keras\backend\tensorflow_backend.py:3295: The name tf.log is deprecated. P
lease use tf.math.log instead.
```

In [18]:

```
model.fit_generator(x_train, steps_per_epoch =100, epochs = 100, validation_data = x_test,
```

```
Epoch 1/100
69/69 [==============================] - 28s 404ms/step - loss: 0.7748 - a
cc: 0.6945 - val_loss: 9.2703 - val_acc: 0.4216
Epoch 2/100
69/69 [==============================] - 28s 407ms/step - loss: 0.7523 - a
cc: 0.7065 - val_loss: 10.2710 - val_acc: 0.3598
Epoch 3/100
69/69 [==============================] - 28s 405ms/step - loss: 0.7818 - a
cc: 0.6890 - val_loss: 8.7438 - val_acc: 0.4491
Epoch 4/100
69/69 [==============================] - 28s 403ms/step - loss: 0.7528 - a
cc: 0.7027 - val_loss: 8.9959 - val_acc: 0.4325
Epoch 5/100
69/69 [==============================] - 28s 405ms/step - loss: 0.8082 - a
cc: 0.6888 - val_loss: 8.8445 - val_acc: 0.4491
Epoch 6/100
69/69 [==============================] - 28s 410ms/step - loss: 0.7768 - a
cc: 0.6902 - val_loss: 9.3352 - val_acc: 0.4168
Epoch 7/100
```

In [19]:

```
model.save("Skin_Diseases.h5")
```

In [ ]:

```

```