from tensorflow import keras

from keras.layers import Input, Lambda, Dense, Flatten

from keras.models import Model

from keras.applications.vgg16 import VGG16

from keras.applications.vgg16 import preprocess\_input

from keras.preprocessing import image

from keras.preprocessing.image import ImageDataGenerator

from keras.models import Sequential

import numpy as np

from glob import glob

import matplotlib.pyplot as plt

IMAGE\_SIZE = [224, 224]

train\_path = '/content/drive/MyDrive/bca final year project/chest\_xray/train'

valid\_path = '/content/drive/MyDrive/bca final year project/chest\_xray/test'

vgg = VGG16(input\_shape=IMAGE\_SIZE + [3], weights='imagenet', include\_top=False)

for layer in vgg.layers:

    layer.trainable = False

folders = glob('/content/drive/MyDrive/bca final year project/chest\_xray/train/\*')

x = Flatten()(vgg.output)

prediction = Dense(len(folders), activation='softmax')(x)

model = Model(inputs=vgg.input, outputs=prediction)

model.summary()

model.compile(

  loss='categorical\_crossentropy',

  optimizer='adam',

  metrics=['accuracy']

)

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)

training\_set = train\_datagen.flow\_from\_directory('/content/drive/MyDrive/bca final year project/chest\_xray/train',

                                                 target\_size = (224, 224),

                                                 batch\_size = 10,

                                                 class\_mode = 'categorical')

test\_set = test\_datagen.flow\_from\_directory('/content/drive/MyDrive/bca final year project/chest\_xray/test',

                                            target\_size = (224, 224),

                                            batch\_size = 10,

                                            class\_mode = 'categorical')

r = model.fit\_generator(

  training\_set,

  validation\_data=test\_set,

  epochs=1,

  steps\_per\_epoch=len(training\_set),

  validation\_steps=len(test\_set)

)

import tensorflow as tf

from keras.models import load\_model

model.save('chest\_xray.h5')

from keras.models import load\_model

from keras.preprocessing import image

from keras.applications.vgg16 import preprocess\_input

import numpy as np

model=load\_model('/content/chest\_xray.h5')

ls

img=image.load\_img('/content/drive/MyDrive/bca final year project/chest\_xray/val/NORMAL/NORMAL2-IM-1427-0001.jpeg',target\_size=(224,224))

x=image.img\_to\_array(img)

x=np.expand\_dims(x, axis=0)

img\_data=preprocess\_input(x)

classes=model.predict(img\_data)

result=int(classes[0][0])

if result==0:

    print("Person is Affected By PNEUMONIA")

else:

    print("Result is Normal")

import streamlit as st