```
{
  "nbformat": 4,
  "nbformat_minor": 0,
  "metadata": {
    "colab": {
      "provenance": []
    },
    "kernelspec": {
      "name": "python3",
      "display_name": "Python 3"
    },
    "language_info": {
      "name": "python"
    }
  },
  "cells": [
    {
      "cell_type": "code",
      "execution_count": 1,
      "metadata": {
        "id": "M9TDYjHFMfBL"
      },
      "outputs": [],
      "source": [
        "import keras\n",
        "from keras.preprocessing.image import ImageDataGenerator"
      ]
    },
    {
      "cell_type": "code",
      "source": [
        "#Define the parameters/arguments for ImageDataGenerator class\n",
        "train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,rotation
_range=180,zoom_range=0.2,horizontal_flip=True)\n",
        "\n",
        "test_datagen=ImageDataGenerator(rescale=1./255)"
      ],
      "metadata": {
        "id": "KEFqxyqwMqMu"
      },
      "execution_count": 2,
      "outputs": []
    },
    {
      "cell_type": "code",
      "source": [
        "#Applying ImageDataGenerator functionality to trainset\n",
        "x_train=train_datagen.flow_from_directory('/content/drive/MyDrive/Dataset/Dat
aset/train_set',target_size=(128,128),batch_size=32,class_mode='binary')"
      ],
```

```
    "metadata": {
     "colab": {
      "base_uri": "https://localhost:8080/"
     },
     "id": "D5S4LCT-Mu2L",
     "outputId": "a4113be0-c0b3-4a95-bf3e-ea77de8b744d"
    },
    "execution_count": 4,
    "outputs": [
     {
      "output_type": "stream",
      "name": "stdout",
      "text": [
       "Found 436 images belonging to 2 classes.\n"
      ]
     }
    ]
   },
   {
    "cell_type": "code",
    "source": [
     "#Applying ImageDataGenerator functionality to testset\n",
     "x_test=test_datagen.flow_from_directory('/content/drive/MyDrive/Dataset/Data
set/test_set',target_size=(128,128),batch_size=32,class_mode='binary')"
    ],
    "metadata": {
     "colab": {
      "base_uri": "https://localhost:8080/"
     },
     "id": "rQakYllkMxQG",
     "outputId": "5d4f7c20-34c2-42ca-e0d8-a8fbfedf01c4"
    },
    "execution_count": 5,
    "outputs": [
     {
      "output_type": "stream",
      "name": "stdout",
      "text": [
       "Found 121 images belonging to 2 classes.\n"
      ]
     }
    ]
   },
   {
    "cell_type": "code",
    "source": [
     "#import model building libraries\n",
     "\n",
     "#To define Linear initialisation import Sequential\n",
     "from keras.models import Sequential\n",
```

```
        "#To add layers import Dense\n",
        "from keras.layers import Dense\n",
        "#To create Convolution kernel import Convolution2D\n",
        "from keras.layers import Convolution2D\n",
        "#import Maxpooling layer\n",
        "from keras.layers import MaxPooling2D\n",
        "#import flatten layer\n",
        "from keras.layers import Flatten\n",
        "import warnings\n",
        "warnings.filterwarnings('ignore')"
       ],
       "metadata": {
        "id": "tbh9PKR1M9H8"
       },
       "execution_count": 6,
       "outputs": []
      },
      {
       "cell_type": "code",
       "source": [
        "#initializing the model\n",
        "model=Sequential()"
       ],
       "metadata": {
        "id": "vlNVG-FhM_gF"
       },
       "execution_count": 7,
       "outputs": []
      },
      {
       "cell_type": "code",
       "source": [
        "#add convolutional layer\n",
        "model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))\
n",
        "#add maxpooling layer\n",
        "model.add(MaxPooling2D(pool_size=(2,2)))\n",
        "#add flatten layer \n",
        "model.add(Flatten())"
       ],
       "metadata": {
        "id": "Ul-pbzGNNCQ5"
       },
       "execution_count": 8,
       "outputs": []
      },
      {
       "cell_type": "code",
       "source": [
        "#add hidden layer\n",
```

```
        "model.add(Dense(150,activation='relu'))\n",
        "#add output layer\n",
        "model.add(Dense(1,activation='sigmoid'))"
       ],
       "metadata": {
        "id": "CHkc6tNmND_Q"
       },
       "execution_count": 10,
       "outputs": []
      },
      {
       "cell_type": "code",
       "source": [
        "#configure the learning process\n",
        "model.compile(loss='binary_crossentropy',optimizer=\"adam\",metrics=[\"accur
acy\"])"
       ],
       "metadata": {
        "id": "T71QZpAVNH7P"
       },
       "execution_count": 11,
       "outputs": []
      },
      {
       "cell_type": "code",
       "source": [
        "#Training the model\n",
        "model.fit_generator(x_train,steps_per_epoch=14,epochs=10,validation_data=x
_test,validation_steps=4)"
       ],
       "metadata": {
        "colab": {
         "base_uri": "https://localhost:8080/"
        },
        "id": "aTbX1IgCN8Md",
        "outputId": "68023839-025c-4295-d02b-88409de396ba"
       },
       "execution_count": 12,
       "outputs": [
        {
         "output_type": "stream",
         "name": "stdout",
         "text": [
          "Epoch 1/10\n",
          "14/14 [==============================] - 153s 11s/step - loss:
0.6812 - accuracy: 0.6399 - val_loss: 0.6765 - val_accuracy: 0.5950\n",
          "Epoch 2/10\n",
          "14/14 [==============================] - 26s 2s/step - loss: 0.6577 -
accuracy: 0.6445 - val_loss: 0.6765 - val_accuracy: 0.5950\n",
          "Epoch 3/10\n",
```

```
          "14/14 [==============================] - 25s 2s/step - loss: 0.6532 -
accuracy: 0.6445 - val_loss: 0.6820 - val_accuracy: 0.5950\n",
          "Epoch 4/10\n",
          "14/14 [==============================] - 26s 2s/step - loss: 0.6512 -
accuracy: 0.6445 - val_loss: 0.6794 - val_accuracy: 0.5950\n",
          "Epoch 5/10\n",
          "14/14 [==============================] - 25s 2s/step - loss: 0.6510 -
accuracy: 0.6445 - val_loss: 0.6793 - val_accuracy: 0.5950\n",
          "Epoch 6/10\n",
          "14/14 [==============================] - 25s 2s/step - loss: 0.6509 -
accuracy: 0.6445 - val_loss: 0.6806 - val_accuracy: 0.5950\n",
          "Epoch 7/10\n",
          "14/14 [==============================] - 26s 2s/step - loss: 0.6509 -
accuracy: 0.6445 - val_loss: 0.6807 - val_accuracy: 0.5950\n",
          "Epoch 8/10\n",
          "14/14 [==============================] - 25s 2s/step - loss: 0.6513 -
accuracy: 0.6445 - val_loss: 0.6815 - val_accuracy: 0.5950\n",
          "Epoch 9/10\n",
          "14/14 [==============================] - 25s 2s/step - loss: 0.6511 -
accuracy: 0.6445 - val_loss: 0.6797 - val_accuracy: 0.5950\n",
          "Epoch 10/10\n",
          "14/14 [==============================] - 26s 2s/step - loss: 0.6514 -
accuracy: 0.6445 - val_loss: 0.6809 - val_accuracy: 0.5950\n"
        ]
       },
       {
        "output_type": "execute_result",
        "data": {
         "text/plain": [
          "<keras.callbacks.History at 0x7efcd64ba3d0>"
         ]
        },
        "metadata": {},
        "execution_count": 12
       }
      ]
     },
     {
      "cell_type": "code",
      "source": [
       "model.save(\"forest1.h5\")"
      ],
      "metadata": {
       "id": "XijgvH8lQ9Qy"
      },
      "execution_count": 13,
      "outputs": []
     },
     {
      "cell_type": "code",
```

```
      "source": [],
      "metadata": {
        "id": "IBDMxiLGQ9xY"
      },
      "execution_count": null,
      "outputs": []
    }
  ]
}
```


ReplyForward