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    "from keras.preprocessing.image import ImageDataGenerator\n",

"train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,zoom_range=0.2,h
orizontal_flip=True)\n",
    "test_datagen=ImageDataGenerator(rescale=1)"
   ]
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      "Found 11386 images belonging to 9 classes.\n",
      "Found 3416 images belonging to 9 classes.\n"
     ]
    }
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"x_train=train_datagen.flow_from_directory(r'C:\\Users\\srija\\project\\Dataset
Plant Disease\\Veg-dataset\\Veg-
dataset\\train_set',target_size=(128,128),batch_size=2,class_mode='categorical')\
n",
    "x_test=test_datagen.flow_from_directory(r'C:\\Users\\srija\\project\\Dataset
Plant Disease\\Veg-dataset\\Veg-
dataset\\test_set',target_size=(128,128),batch_size=2,class_mode='categorical')"
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```
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   "source": [
    "from keras.models import Sequential\n",
    "from keras.layers import Dense\n",
    "from keras.layers import Convolution2D\n",
    "from keras.layers import MaxPooling2D\n",
    "from keras.layers import Flatten"
   ]
  },
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   "source": [
    "model=Sequential()"
   ]
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   "cell_type": "code",
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   "id": "fe21b4e6",
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"model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))"
   ]
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    "model.add(MaxPooling2D(pool_size=(2,2)))"
   ]
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  "model.add(Flatten())"
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  "model.add(Dense(units=300,kernel_initializer='uniform',activation='relu'))"
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 "id": "790bddf6",
 "metadata": {},
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  "model.add(Dense(units=150,kernel_initializer='uniform',activation='relu'))"
 ]
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  "model.add(Dense(units=75,kernel_initializer='uniform',activation='relu'))"
 ]
},
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 "execution_count": 11,
 "id": "fedefb79",
 "metadata": {},
 "outputs": [],
 "source": [
  "model.add(Dense(units=9,kernel_initializer='uniform',activation='softmax'))"
 ]
},
{
```

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"model.compile(loss='categorical_crossentropy',optimizer=\"adam\",metrics=[\"accu
racy\"])"
   ]
  },
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      "Epoch 1/20\n",
      "89/89 [==============================] - 95s 1s/step - loss: 2.1765 -
accuracy: 0.1404 - val_loss: 107.0669 - val_accuracy: 0.2407\n",
      "Epoch 2/20\n",
      "89/89 [==============================] - 61s 679ms/step - loss: 2.1010 -
accuracy: 0.2303 - val_loss: 73.7251 - val_accuracy: 0.0741\n",
      "Epoch 3/20\n",
      "89/89 [==============================] - 67s 755ms/step - loss: 2.1514 -
accuracy: 0.1348 - val_loss: 56.0996 - val_accuracy: 0.1111\n",
      "Epoch 4/20\n",
      "89/89 [==============================] - 64s 717ms/step - loss: 2.0868 -
accuracy: 0.1573 - val_loss: 23.7097 - val_accuracy: 0.3148\n",
      "Epoch 5/20\n",
      "89/89 [==============================] - 60s 671ms/step - loss: 2.0239 -
accuracy: 0.3090 - val_loss: 99.1493 - val_accuracy: 0.2222\n",
      "Epoch 6/20\n",
      "89/89 [==============================] - 72s 807ms/step - loss: 1.9236 -
accuracy: 0.2753 - val_loss: 172.7210 - val_accuracy: 0.1296\n",
      "Epoch 7/20\n",
      "89/89 [==============================] - 86s 971ms/step - loss: 1.9143 -
accuracy: 0.2753 - val_loss: 107.2718 - val_accuracy: 0.2778\n",
      "Epoch 8/20\n",
      "89/89 [==============================] - 58s 646ms/step - loss: 1.7796 -
accuracy: 0.3034 - val_loss: 64.2221 - val_accuracy: 0.3148\n",
      "Epoch 9/20\n",
```

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      "89/89 [==============================] - 60s 676ms/step - loss: 1.7756 -
accuracy: 0.3427 - val_loss: 182.9076 - val_accuracy: 0.3519\n",
      "Epoch 10/20\n",
      "89/89 [==============================] - 59s 665ms/step - loss: 1.8444 -
accuracy: 0.2978 - val_loss: 138.7072 - val_accuracy: 0.2407\n",
      "Epoch 11/20\n",
      "89/89 [==============================] - 53s 598ms/step - loss: 1.7811 -
accuracy: 0.2640 - val_loss: 111.3470 - val_accuracy: 0.3333\n",
      "Epoch 12/20\n",
      "89/89 [==============================] - 57s 637ms/step - loss: 1.8700 -
accuracy: 0.2809 - val_loss: 104.8549 - val_accuracy: 0.2778\n",
      "Epoch 13/20\n",
      "89/89 [==============================] - 53s 593ms/step - loss: 1.8179 -
accuracy: 0.3371 - val_loss: 88.9790 - val_accuracy: 0.3519\n",
      "Epoch 14/20\n",
      "89/89 [==============================] - 53s 590ms/step - loss: 1.7108 -
accuracy: 0.2921 - val_loss: 79.7810 - val_accuracy: 0.4074\n",
      "Epoch 15/20\n",
      "89/89 [==============================] - 57s 644ms/step - loss: 1.8212 -
accuracy: 0.2416 - val_loss: 187.6725 - val_accuracy: 0.2222\n",
      "Epoch 16/20\n",
      "89/89 [==============================] - 53s 589ms/step - loss: 1.7251 -
accuracy: 0.3483 - val_loss: 148.7835 - val_accuracy: 0.4259\n",
      "Epoch 17/20\n",
      "89/89 [==============================] - 56s 624ms/step - loss: 1.6795 -
accuracy: 0.3146 - val_loss: 109.7393 - val_accuracy: 0.2593\n",
      "Epoch 18/20\n",
      "89/89 [==============================] - 54s 608ms/step - loss: 1.8275 -
accuracy: 0.3202 - val_loss: 90.4495 - val_accuracy: 0.3148\n",
      "Epoch 19/20\n",
      "89/89 [==============================] - 53s 591ms/step - loss: 1.7737 -
accuracy: 0.3427 - val_loss: 141.6376 - val_accuracy: 0.2593\n",
      "Epoch 20/20\n",
      "89/89 [==============================] - 53s 592ms/step - loss: 1.7060 -
accuracy: 0.4213 - val_loss: 96.3340 - val_accuracy: 0.3889\n"
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       "<keras.callbacks.History at 0x25aa4cdb7f0>"
      ]
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```

```
    }
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"model.fit(x_train,steps_per_epoch=89,epochs=20,validation_data=x_test,validation
_steps=27)"
   ]
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"
   ]
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      "=================================================================\n",
      " conv2d (Conv2D)             (None, 126, 126, 32)      896       \n",
      "                                                                 \n",
      " max_pooling2d (MaxPooling2D  (None, 63, 63, 32)       0         \n",
      " )                                                               \n",
      "                                                                 \n",
      " flatten (Flatten)           (None, 127008)            0         \n",
      "                                                                 \n",
      " dense (Dense)               (None, 300)               38102700  \n",
      "                                                                 \n",
      " dense_1 (Dense)             (None, 150)               45150     \n",
      "                                                                 \n",
      " dense_2 (Dense)             (None, 75)                11325     \n",
      "                                                                 \n",
```

```
      " dense_3 (Dense)             (None, 9)                 684       \n",
      "                                                                 \n",
      "=================================================================\n",
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