Train on IBM Cloud

Date	16 November 2022
Team ID	PNT2022TMID26984
Project Name	Project - Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image Representation
Maximum Marks	4 Marks

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In [14]: # Configure The Learning Process
model.compile(optimizer='adam',loss='categorical_crossentropy',metrics=['accuracy'])

In [15]: model.fit_generator(generator=x_train,steps_per_epoch=len(x_train),epochs=10,validation_data=x_test,validation_steps=len(x_test))

/tmp/wsuser/ipykernel_164/745884578.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use `Model.fit`, which supports generators.
  model.fit_generator(generator=x_train,steps_per_epoch=len(x_train),epochs=10,validation_data=x_test,validation_steps=len(x_test))

```
Epoch 1/10
480/480 [==============================] - 55s 113ms/step - loss: 0.8534 - accuracy: 0.7134 - val_loss: 0.4537 - val_accuracy: 0.8280
Epoch 2/10
480/480 [==============================] - 54s 112ms/step - loss: 0.2921 - accuracy: 0.9139 - val_loss: 0.3219 - val_accuracy: 0.8979
Epoch 3/10
480/480 [==============================] - 54s 111ms/step - loss: 0.2343 - accuracy: 0.9316 - val_loss: 0.3997 - val_accuracy: 0.8722
Epoch 4/10
480/480 [==============================] - 54s 113ms/step - loss: 0.2107 - accuracy: 0.9372 - val_loss: 0.3627 - val_accuracy: 0.8727
Epoch 5/10
480/480 [==============================] - 54s 111ms/step - loss: 0.1863 - accuracy: 0.9442 - val_loss: 0.3402 - val_accuracy: 0.8837
Epoch 6/10
480/480 [==============================] - 56s 117ms/step - loss: 0.1614 - accuracy: 0.9501 - val_loss: 0.3607 - val_accuracy: 0.8816
Epoch 7/10
480/480 [==============================] - 54s 113ms/step - loss: 0.1538 - accuracy: 0.9544 - val_loss: 0.2740 - val_accuracy: 0.9190
Epoch 8/10
480/480 [==============================] - 54s 112ms/step - loss: 0.1349 - accuracy: 0.9583 - val_loss: 0.2914 - val_accuracy: 0.9127
Epoch 9/10
480/480 [==============================] - 54s 113ms/step - loss: 0.1317 - accuracy: 0.9608 - val_loss: 0.2978 - val_accuracy: 0.9086
Epoch 10/10
480/480 [==============================] - 54s 112ms/step - loss: 0.1230 - accuracy: 0.9626 - val_loss: 0.3585 - val_accuracy: 0.9141
```

Out[15]: <keras.callbacks.History at 0x7fd493a49f70>

In [16]: # Save The Model
model.save('ECG.h5')

In [17]: !tar -zcvf ECG-classification.tgz ECG.h5

ECG.h5

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```
'updated_at': '2022-11-16T04:05:57.006Z',
'url': '/v2/spaces/ef3cd409-5af2-45ad-a9f5-952291d35e2a'}}]}
```

In [24]: client.spaces.list()

```
Note: 'limit' is not provided. Only first 50 records will be displayed if the number of records exceed 50
------------------------------------  ----  ------------------------
ID                                    NAME  CREATED
ef3cd409-5af2-45ad-a9f5-952291d35e2a  ECG   2022-11-16T04:05:41.652Z
5cf1a711-eeeb-4201-9932-b20486d55a52  Demo  2022-11-08T10:28:13.914Z
------------------------------------  ----  ------------------------
```

In [29]: def guid_from_space_name(client,space_name):
            space = client.spaces.get_details()
            return(next(item for item in space['resources'] if item['entity']["name"]==space_name)['metadata']['id'])

In [30]: space_uid = guid_from_space_name(client,'ECG')
         print("Space UID: " + space_uid)

Space UID: ef3cd409-5af2-45ad-a9f5-952291d35e2a

In [31]: client.set.default_space(space_uid)

Out[31]: 'SUCCESS'

In [32]: client.software_specifications.list()

```
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NAME                          ASSET_ID                              TYPE
default_py3.6                 0062b0c9-8b7d-44a0-a9b9-46c416adcbd9   base
kernel-spark3.2-scala2.12     020d69ce-7ac1-5e68-ac1a-3118986735fa  base
pytorch-onnx_1.3-py3.7-edt    069ea134-3346-5748-b513-49120e15d288  base
scikit-learn_0.20-py3.6       09c5a1d0-9c1e-4473-a344-eb7b665ff687  base
spark-mllib_3.0-scala_2.12    09f4cff0-90a7-5899-b9ed-1ef348aebdee  base
pytorch-onnx_rt22.1-py3.9     0b848dd4-e681-5599-be41-b5f6fccc6471  base
ai-function_0.1-py3.6         0cdb0f1e-5376-4f4d-92dd-da3b69aa9bda  base
shiny-r3.6                    0e6e79df-875e-4f24-8ae9-62dcc2148306  base
tensorflow_2.4-py3.7-horovod  1092590a-307d-563d-9b62-4eb7d64b3f22  base
pytorch_1.1-py3.6             10ac12d6-6b30-4ccd-8392-3e922c096a92  base
tensorflow_1.15-py3.6-ddl     111e41b3-de2d-5422-a4d6-bf776828c4b7  base
autoai-kb_rt22.2-py3.10       125b6d9a-5b1f-5e8d-972a-b251688ccf40  base
runtime-22.1-py3.9            12b83a17-24d8-5082-900f-0ab31fbfd3cb  base
scikit-learn_0.22-py3.6       154010fa-5b3b-4ac1-82af-4d5ee5abbc85  base
```