pwd

'/home/wsuser/work'

**!**pip install keras

**!**pip install tensorflow

Requirement already satisfied: keras in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.0)

Requirement already satisfied: tensorflow in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (2.7.0)

Requirement already satisfied: keras<2.8,>=2.7.0rc0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)

Requirement already satisfied: wrapt>=1.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.12.1)

Requirement already satisfied: typing-extensions>=3.6.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (4.1.1)

Requirement already satisfied: gast<0.5.0,>=0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.4.0)

Requirement already satisfied: absl-py>=0.4.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.3.0)

Requirement already satisfied: numpy>=1.14.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.20.3)

Requirement already satisfied: tensorflow-estimator<2.8,~=2.7.0rc0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.7.0)

Requirement already satisfied: wheel<1.0,>=0.32.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.37.0)

Requirement already satisfied: astunparse>=1.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.6.3)

Requirement already satisfied: keras-preprocessing>=1.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.2)

Requirement already satisfied: tensorflow-io-gcs-filesystem>=0.21.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.23.1)

Requirement already satisfied: termcolor>=1.1.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.1.0)

Requirement already satisfied: protobuf>=3.9.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.19.1)

Requirement already satisfied: h5py>=2.9.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.2.1)

Requirement already satisfied: six>=1.12.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.15.0)

Requirement already satisfied: google-pasta>=0.1.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (0.2.0)

Requirement already satisfied: flatbuffers<3.0,>=1.12 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.0)

Requirement already satisfied: tensorboard~=2.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (2.8.0)

Requirement already satisfied: libclang>=9.0.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (14.0.6)

Requirement already satisfied: grpcio<2.0,>=1.24.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (1.42.0)

Requirement already satisfied: opt-einsum>=2.3.2 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorflow) (3.3.0)

Requirement already satisfied: markdown>=2.6.8 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (3.3.3)

Requirement already satisfied: werkzeug>=0.11.15 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (2.0.2)

Requirement already satisfied: requests<3,>=2.21.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (2.26.0)

Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (0.6.1)

Requirement already satisfied: setuptools>=41.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (58.0.4)

Requirement already satisfied: tensorboard-plugin-wit>=1.6.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (1.6.0)

Requirement already satisfied: google-auth<3,>=1.6.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (1.23.0)

Requirement already satisfied: google-auth-oauthlib<0.5,>=0.4.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from tensorboard~=2.6->tensorflow) (0.4.4)

Requirement already satisfied: cachetools<5.0,>=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow) (4.2.2)

Requirement already satisfied: rsa<5,>=3.1.4 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow) (4.7.2)

Requirement already satisfied: pyasn1-modules>=0.2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow) (0.2.8)

Requirement already satisfied: requests-oauthlib>=0.7.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from google-auth-oauthlib<0.5,>=0.4.1->tensorboard~=2.6->tensorflow) (1.3.0)

Requirement already satisfied: pyasn1<0.5.0,>=0.4.6 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pyasn1-modules>=0.2.1->google-auth<3,>=1.6.3->tensorboard~=2.6->tensorflow) (0.4.8)

Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow) (3.3)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow) (1.26.7)

Requirement already satisfied: charset-normalizer~=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow) (2.0.4)

Requirement already satisfied: certifi>=2017.4.17 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests<3,>=2.21.0->tensorboard~=2.6->tensorflow) (2022.9.24)

Requirement already satisfied: oauthlib>=3.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests-oauthlib>=0.7.0->google-auth-oauthlib<0.5,>=0.4.1->tensorboard~=2.6->tensorflow) (3.2.1)

**Import libraries**

**import** pandas **as** pd

**import** numpy **as** np

**import** matplotlib.pyplot **as** plt

**import** seaborn **as** sns

**from** sklearn.model\_selection **import** train\_test\_split

**from** sklearn.metrics **import** confusion\_matrix

**import** keras

**from** tensorflow.keras.models **import** Sequential

**from** keras.layers **import** Conv2D, Lambda, MaxPooling2D

**from** keras.layers **import** Dense, Dropout, Flatten

**from** tensorflow.keras.layers **import** BatchNormalization

**from** keras.preprocessing.image **import** ImageDataGenerator

**from** keras.utils.np\_utils **import** to\_categorical

**from** keras.datasets **import** mnist

**Load the data**

(X\_train, Y\_train), (X\_test, Y\_test) **=** mnist**.**load\_data()

print(X\_train**.**shape)

print(X\_test**.**shape)

(60000, 28, 28)

(10000, 28, 28)

**Data pre-processing**

X\_train **=** X\_train **/** 255.0

X\_test **=** X\_test **/** 255.0

X\_train **=** X\_train**.**reshape(**-**1,28,28,1)

X\_test **=** X\_test**.**reshape(**-**1,28,28,1)

Y\_train **=** to\_categorical(Y\_train)

Y\_test **=** to\_categorical(Y\_test)

mean **=** np**.**mean(X\_train)

std **=** np**.**std(X\_train)

**def** standardize(x):

**return** (x**-**mean)**/**std

**Create the model**

model**=**Sequential()

model**.**add(Conv2D(filters**=**64, kernel\_size **=** (3,3), activation**=**"relu", input\_shape**=**(28,28,1)))

model**.**add(Conv2D(filters**=**64, kernel\_size **=** (3,3), activation**=**"relu"))

model**.**add(MaxPooling2D(pool\_size**=**(2,2)))

model**.**add(BatchNormalization())

model**.**add(Conv2D(filters**=**128, kernel\_size **=** (3,3), activation**=**"relu"))

model**.**add(Conv2D(filters**=**128, kernel\_size **=** (3,3), activation**=**"relu"))

model**.**add(MaxPooling2D(pool\_size**=**(2,2)))

model**.**add(BatchNormalization())

model**.**add(Conv2D(filters**=**256, kernel\_size **=** (3,3), activation**=**"relu"))

model**.**add(MaxPooling2D(pool\_size**=**(2,2)))

model**.**add(BatchNormalization())

model**.**add(Flatten())

model**.**add(Dense(512,activation**=**"relu"))

model**.**add(Dense(10,activation**=**"softmax"))

model**.**compile(loss**=**"categorical\_crossentropy", optimizer**=**"adam", metrics**=**["accuracy"])

2022-11-16 18:37:01.212724: W tensorflow/stream\_executor/platform/default/dso\_loader.cc:64] Could not load dynamic library 'libcuda.so.1'; dlerror: libcuda.so.1: cannot open shared object file: No such file or directory; LD\_LIBRARY\_PATH: /opt/ibm/dsdriver/lib:/opt/oracle/lib:/opt/conda/envs/Python-3.9/lib/python3.9/site-packages/tensorflow

2022-11-16 18:37:01.212774: W tensorflow/stream\_executor/cuda/cuda\_driver.cc:269] failed call to cuInit: UNKNOWN ERROR (303)

model**.**summary()

Model: "sequential"

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Layer (type) Output Shape Param #

=================================================================

conv2d (Conv2D) (None, 26, 26, 64) 640

conv2d\_1 (Conv2D) (None, 24, 24, 64) 36928

max\_pooling2d (MaxPooling2D (None, 12, 12, 64) 0

)

batch\_normalization (BatchN (None, 12, 12, 64) 256

ormalization)

conv2d\_2 (Conv2D) (None, 10, 10, 128) 73856

conv2d\_3 (Conv2D) (None, 8, 8, 128) 147584

max\_pooling2d\_1 (MaxPooling (None, 4, 4, 128) 0

2D)

batch\_normalization\_1 (Batc (None, 4, 4, 128) 512

hNormalization)

conv2d\_4 (Conv2D) (None, 2, 2, 256) 295168

max\_pooling2d\_2 (MaxPooling (None, 1, 1, 256) 0

2D)

batch\_normalization\_2 (Batc (None, 1, 1, 256) 1024

hNormalization)

flatten (Flatten) (None, 256) 0

dense (Dense) (None, 512) 131584

dense\_1 (Dense) (None, 10) 5130

=================================================================

Total params: 692,682

Trainable params: 691,786

Non-trainable params: 896

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Define training parameters**

datagen **=** ImageDataGenerator(

featurewise\_center**=False**,

samplewise\_center**=False**,

featurewise\_std\_normalization**=False**,

samplewise\_std\_normalization**=False**,

zca\_whitening**=False**,

rotation\_range**=**15,

zoom\_range **=** 0.01,

width\_shift\_range**=**0.1,

height\_shift\_range**=**0.1,

horizontal\_flip**=False**,

vertical\_flip**=False**)

train\_gen **=** datagen**.**flow(X\_train, Y\_train, batch\_size**=**128)

test\_gen **=** datagen**.**flow(X\_test, Y\_test, batch\_size**=**128)

epochs **=** 1

batch\_size **=** 128

train\_steps **=** X\_train**.**shape[0] **//** batch\_size

valid\_steps **=** X\_test**.**shape[0] **//** batch\_size

es **=** keras**.**callbacks**.**EarlyStopping(

monitor**=**"val\_accuracy",

patience**=**10,

verbose**=**1,

mode**=**"max",

restore\_best\_weights**=True**,

)

rp **=** keras**.**callbacks**.**ReduceLROnPlateau(

monitor**=**"val\_accuracy",

factor**=**0.2,

patience**=**3,

verbose**=**1,

mode**=**"max",

min\_lr**=**0.00001,

)

**Train the model**

history **=** model**.**fit(train\_gen,

epochs **=** epochs,

steps\_per\_epoch **=** train\_steps,

validation\_data **=** test\_gen,

validation\_steps **=** valid\_steps,

callbacks**=**[es, rp])

468/468 [==============================] - 416s 890ms/step - loss: 0.0551 - accuracy: 0.9827 - val\_loss: 0.0446 - val\_accuracy: 0.9861 - lr: 0.0010

**Save the model**

model**.**save("model.h5")

**!**tar -zcvf model.tgz model.h5

model.h5

**Install package**

**!**pip install watson-machine-learning-client --upgrade

Collecting watson-machine-learning-client

Downloading watson\_machine\_learning\_client-1.0.391-py3-none-any.whl (538 kB)

|████████████████████████████████| 538 kB 8.4 MB/s eta 0:00:01

Requirement already satisfied: urllib3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.26.7)

Requirement already satisfied: pandas in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.3.4)

Requirement already satisfied: requests in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.26.0)

Requirement already satisfied: ibm-cos-sdk in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2.11.0)

Requirement already satisfied: certifi in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (2022.9.24)

Requirement already satisfied: tqdm in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (4.62.3)

Requirement already satisfied: boto3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (1.18.21)

Requirement already satisfied: tabulate in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.8.9)

Requirement already satisfied: lomond in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from watson-machine-learning-client) (0.3.3)

Requirement already satisfied: botocore<1.22.0,>=1.21.21 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (1.21.41)

Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (0.10.0)

Requirement already satisfied: s3transfer<0.6.0,>=0.5.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from boto3->watson-machine-learning-client) (0.5.0)

Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from botocore<1.22.0,>=1.21.21->boto3->watson-machine-learning-client) (2.8.2)

Requirement already satisfied: six>=1.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from python-dateutil<3.0.0,>=2.1->botocore<1.22.0,>=1.21.21->boto3->watson-machine-learning-client) (1.15.0)

Requirement already satisfied: ibm-cos-sdk-core==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-machine-learning-client) (2.11.0)

Requirement already satisfied: ibm-cos-sdk-s3transfer==2.11.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from ibm-cos-sdk->watson-machine-learning-client) (2.11.0)

Requirement already satisfied: charset-normalizer~=2.0.0 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->watson-machine-learning-client) (2.0.4)

Requirement already satisfied: idna<4,>=2.5 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from requests->watson-machine-learning-client) (3.3)

Requirement already satisfied: pytz>=2017.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas->watson-machine-learning-client) (2021.3)

Requirement already satisfied: numpy>=1.17.3 in /opt/conda/envs/Python-3.9/lib/python3.9/site-packages (from pandas->watson-machine-learning-client) (1.20.3)

Installing collected packages: watson-machine-learning-client

Successfully installed watson-machine-learning-client-1.0.391

**Connect to IBM Watson Machine Learning instance**

**from** ibm\_watson\_machine\_learning **import** APIClient

API\_KEY **=** "hXFJaBL1u3AzIC6m6xVnnXWh3Bx\_9is80s39JaByOKfY"

credentials **=** {

"url": "https://us-south.ml.cloud.ibm.com",

"apikey": API\_KEY

}

client **=** APIClient(credentials)

**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'])

*#space\_uid = guid\_from\_space\_name(client, 'Handwritten Digit Recognition')*

*#print("Space UID: ", space\_uid)*

space\_uid **=** guid\_from\_space\_name(client,'HandwrittenDigitRecognition')

print("Space UID = " **+** space\_uid)

Space UID = fe894e29-093b-4e58-8667-15e8b6547282

client**.**set**.**default\_space(space\_uid)

'SUCCESS'

**Define model specifications for deployment**

client**.**software\_specifications**.**list()

----------------------------- ------------------------------------ ----

NAME ASSET\_ID TYPE

default\_py3.6 0062b8c9-8b7d-44a0-a9b9-46c416adcbd9 base

kernel-spark3.2-scala2.12 020d69ce-7ac1-5e68-ac1a-31189867356a 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

default\_r3.6 1b70aec3-ab34-4b87-8aa0-a4a3c8296a36 base

pytorch-onnx\_1.3-py3.6 1bc6029a-cc97-56da-b8e0-39c3880dbbe7 base

kernel-spark3.3-r3.6 1c9e5454-f216-59dd-a20e-474a5cdf5988 base

pytorch-onnx\_rt22.1-py3.9-edt 1d362186-7ad5-5b59-8b6c-9d0880bde37f base

tensorflow\_2.1-py3.6 1eb25b84-d6ed-5dde-b6a5-3fbdf1665666 base

spark-mllib\_3.2 20047f72-0a98-58c7-9ff5-a77b012eb8f5 base

tensorflow\_2.4-py3.8-horovod 217c16f6-178f-56bf-824a-b19f20564c49 base

runtime-22.1-py3.9-cuda 26215f05-08c3-5a41-a1b0-da66306ce658 base

do\_py3.8 295addb5-9ef9-547e-9bf4-92ae3563e720 base

autoai-ts\_3.8-py3.8 2aa0c932-798f-5ae9-abd6-15e0c2402fb5 base

tensorflow\_1.15-py3.6 2b73a275-7cbf-420b-a912-eae7f436e0bc base

kernel-spark3.3-py3.9 2b7961e2-e3b1-5a8c-a491-482c8368839a base

pytorch\_1.2-py3.6 2c8ef57d-2687-4b7d-acce-01f94976dac1 base

spark-mllib\_2.3 2e51f700-bca0-4b0d-88dc-5c6791338875 base

pytorch-onnx\_1.1-py3.6-edt 32983cea-3f32-4400-8965-dde874a8d67e base

spark-mllib\_3.0-py37 36507ebe-8770-55ba-ab2a-eafe787600e9 base

spark-mllib\_2.4 390d21f8-e58b-4fac-9c55-d7ceda621326 base

autoai-ts\_rt22.2-py3.10 396b2e83-0953-5b86-9a55-7ce1628a406f base

xgboost\_0.82-py3.6 39e31acd-5f30-41dc-ae44-60233c80306e base

pytorch-onnx\_1.2-py3.6-edt 40589d0e-7019-4e28-8daa-fb03b6f4fe12 base

pytorch-onnx\_rt22.2-py3.10 40e73f55-783a-5535-b3fa-0c8b94291431 base

default\_r36py38 41c247d3-45f8-5a71-b065-8580229facf0 base

autoai-ts\_rt22.1-py3.9 4269d26e-07ba-5d40-8f66-2d495b0c71f7 base

autoai-obm\_3.0 42b92e18-d9ab-567f-988a-4240ba1ed5f7 base

pmml-3.0\_4.3 493bcb95-16f1-5bc5-bee8-81b8af80e9c7 base

spark-mllib\_2.4-r\_3.6 49403dff-92e9-4c87-a3d7-a42d0021c095 base

xgboost\_0.90-py3.6 4ff8d6c2-1343-4c18-85e1-689c965304d3 base

pytorch-onnx\_1.1-py3.6 50f95b2a-bc16-43bb-bc94-b0bed208c60b base

autoai-ts\_3.9-py3.8 52c57136-80fa-572e-8728-a5e7cbb42cde base

spark-mllib\_2.4-scala\_2.11 55a70f99-7320-4be5-9fb9-9edb5a443af5 base

spark-mllib\_3.0 5c1b0ca2-4977-5c2e-9439-ffd44ea8ffe9 base

autoai-obm\_2.0 5c2e37fa-80b8-5e77-840f-d912469614ee base

spss-modeler\_18.1 5c3cad7e-507f-4b2a-a9a3-ab53a21dee8b base

cuda-py3.8 5d3232bf-c86b-5df4-a2cd-7bb870a1cd4e base

autoai-kb\_3.1-py3.7 632d4b22-10aa-5180-88f0-f52dfb6444d7 base

pytorch-onnx\_1.7-py3.8 634d3cdc-b562-5bf9-a2d4-ea90a478456b base

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Note: Only first 50 records were displayed. To display more use 'limit' parameter.

software\_spec\_uid **=** client**.**software\_specifications**.**get\_uid\_by\_name("runtime-22.1-py3.9")

software\_spec\_uid

'12b83a17-24d8-5082-900f-0ab31fbfd3cb'

model\_details **=** client**.**repository**.**store\_model(model**=**"model.tgz", meta\_props**=**{

client**.**repository**.**ModelMetaNames**.**NAME: "CNN",

client**.**repository**.**ModelMetaNames**.**TYPE: "tensorflow\_2.7",

client**.**repository**.**ModelMetaNames**.**SOFTWARE\_SPEC\_UID: software\_spec\_uid

})

model\_id **=** client**.**repository**.**get\_model\_id(model\_details)

model\_id

'4f6ec698-5443-4ef8-b98c-182e5d07513e'

**Download the deployed model**

client**.**repository**.**download(model\_id, "model.tar.gz")