Pós-Graduação em Data Science & Big Data

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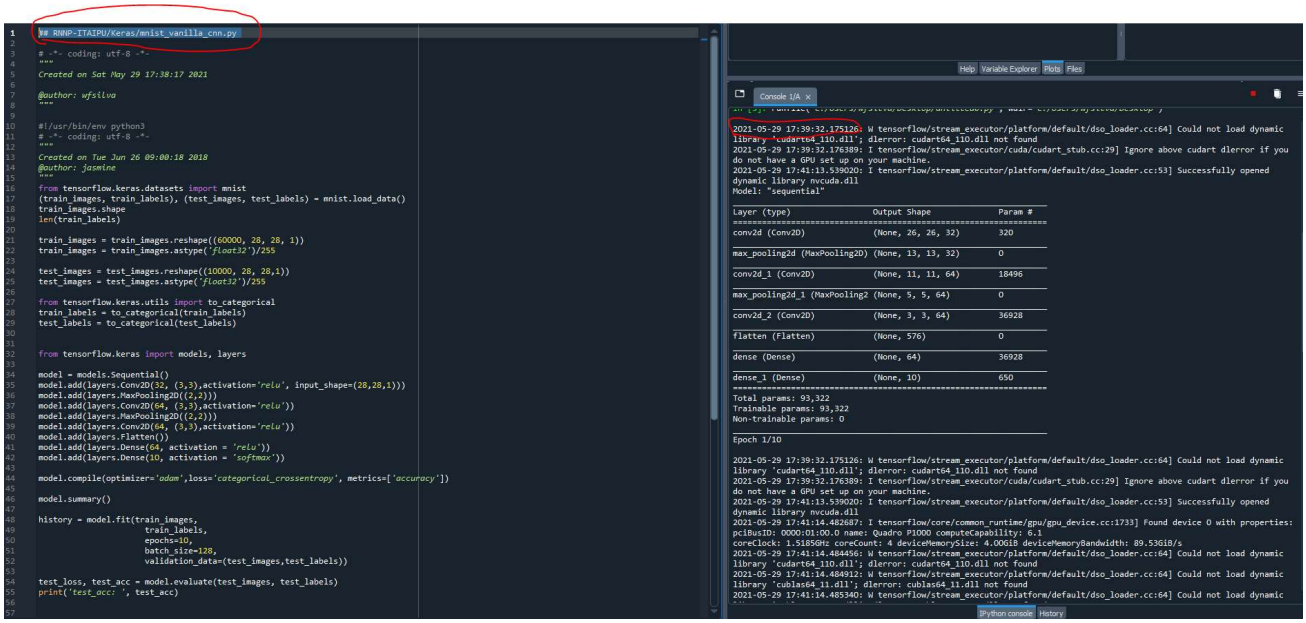
Trabalho: Evidência de execução dos algoritmos apresentados em aula

Programa: mnist_vanilla_cnn.py

Data de Execução: 29/05/2021



```
# RNNP-ITAIPU/Keras/mnist_vanilla_cnn.py

# -*- coding: utf-8 -*-
"""
Created on Sat May 29 17:38:17 2021

@author: wfsilva
"""

#!/usr/bin/env python3
# -*- coding: utf-8 -*-
"""
Created on Tue Jun 26 09:00:18 2018
@author: jasmine
"""
from tensorflow.keras.datasets import mnist
(train_images, train_labels), (test_images, test_labels) = mnist.load_data()
train_images.shape
len(train_labels)

train_images = train_images.reshape((60000, 28, 28, 1))
train_images = train_images.astype('float32')/255

test_images = test_images.reshape((10000, 28, 28,1))
test_images = test_images.astype('float32')/255

from tensorflow.keras.utils import to_categorical
train_labels = to_categorical(train_labels)
test_labels = to_categorical(test_labels)


from tensorflow.keras import models, layers

model = models.Sequential()
model.add(layers.Conv2D(32, (3,3),activation='relu', input_shape=(28,28,1)))
model.add(layers.MaxPooling2D((2,2)))
model.add(layers.Conv2D(64, (3,3),activation='relu'))
model.add(layers.MaxPooling2D((2,2)))
model.add(layers.Conv2D(64, (3,3),activation='relu'))
model.add(layers.Flatten())
model.add(layers.Dense(64, activation = 'relu'))
model.add(layers.Dense(10, activation = 'softmax'))

model.compile(optimizer='adam',loss='categorical_crossentropy', metrics=['accuracy'])

model.summary()

history = model.fit(train_images,
                    train_labels,
                    epochs=10,
                    batch_size=128,
                    validation_data=(test_images,test_labels))

test_loss, test_acc = model.evaluate(test_images, test_labels)
print('test_acc: ', test_acc)
```

```
2021-05-29 17:39:32.175126: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic
library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2021-05-29 17:39:32.176389: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you
do not have a GPU set up on your machine.
2021-05-29 17:41:13.539020: I tensorflow/stream_executor/platform/default/dso_loader.cc:53] Successfully opened
dynamic library nvcuda.dll
Model: "sequential"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
conv2d (Conv2D)              (None, 26, 26, 32)        320
_________________________________________________________________
max_pooling2d (MaxPooling2D) (None, 13, 13, 32)        0
_________________________________________________________________
conv2d_1 (Conv2D)            (None, 11, 11, 64)        18496
_________________________________________________________________
max_pooling2d_1 (MaxPooling2 (None, 5, 5, 64)          0
_________________________________________________________________
conv2d_2 (Conv2D)            (None, 3, 3, 64)          36928
_________________________________________________________________
flatten (Flatten)            (None, 576)               0
_________________________________________________________________
dense (Dense)                (None, 64)                36928
_________________________________________________________________
dense_1 (Dense)              (None, 10)                650
=================================================================
Total params: 93,322
Trainable params: 93,322
Non-trainable params: 0
_________________________________________________________________
Epoch 1/10

2021-05-29 17:39:32.175126: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic
library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2021-05-29 17:39:32.176389: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you
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2021-05-29 17:41:13.539020: I tensorflow/stream_executor/platform/default/dso_loader.cc:53] Successfully opened
dynamic library nvcuda.dll
2021-05-29 17:41:14.482687: I tensorflow/core/common_runtime/gpu/gpu_device.cc:1733] Found device 0 with properties:
pciBusID: 0000:01:00.0 name: Quadro P1000 computeCapability: 6.1
coreClock: 1.5185GHz coreCount: 4 deviceMemorySize: 4.00GiB deviceMemoryBandwidth: 89.53GiB/s
2021-05-29 17:41:14.484456: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic
library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2021-05-29 17:41:14.484912: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic
library 'cublas64_11.dll'; dlerror: cublas64_11.dll not found
2021-05-29 17:41:14.485340: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic
```

Resultado Final da Execução