AIoT L12 Pytorch Basics

▼ 0. 前言(課前準備)

1. Google Meet [會議google Meet https://meet.google.com/qjv-fvrx-rka
2. 請至ilearning 下載 Lecture 12 講義
3. Deep Learning 2大框架: tensorflow.keras, pytorch 比較programming 方式

學習框架	sklearn	tf.keras	pytorch	
Step 1: Load data, import package	from sklearn import SVM data=pd.read_csv("mydata.csv")	import tensorflow from tensorflow import keras	import torch, torchvision	
Step 2: Preprocessing	轉成 numpy, reshape	轉tensor, 設定運行模式為GPU	轉tensor, 設定運行模式為GPU if GPU ⇒ 1. device 2. model.to(device), 3. input.to(device), label.to(device)	
Step 3: Build model	model=SVM()	(forward path) model=Sequential() model.add_layer(xxxx)	(forward path) model=LetNet() // 可自訂	
		(backward path) model.compile(loss,optimizer, learning rate)	(backward path) criterion=nn.BELoss() optimizer=optim.Adam(lr=..)	
Step 4: Training	model.fit()	history=model.fit()	history=[] for epoch in range(100): training……. w ← w -a (dJ/dw) else: with no_grad(): testing …….	
Step 5: Evaluate/Deploy	matplot.pyplot()	matplot.pyplot()	matplot.pyplot()	
範例		https://github.com/kashif/tf-keras-tutorial/blob/tf2/1-fashion-mnist-with-keras.ipynb		

tf.keras build model example

```
model = tf.keras.Sequential()
model.add(tf.keras.layers.Dense(512, activation=tf.nn.relu, input_shape=(784,)))
model.add(tf.keras.layers.Dense(NUM_CAT, activation=tf.nn.softmax))

# We will now compile and print out a summary of our model
model.compile(loss='categorical_crossentropy',
              optimizer='rmsprop',
              metrics=['accuracy'])

model.summary()
```

1.

▼ 1. Pytorch Basics

參考資料 ：香港科技大学 PyTorch 四日速成教程

【香港科技大學PyTorch四日速成教程】「PyTorchZeroToAll」 by Sung Kim

- GitHub:https://github.com/hunkim/PyTorchZeroToAll
- Slides:https://drive.google.com/drive/folders/0B41Zbb4c8HVyUndGdGdJSXd5d3M
- Youtube: • Youtube https://www.pytorchtutorial.com/goto/http://bit.ly/PyTorchVideo

▼ 2. Pytorch CNN

- Lecture 10 **Basic CNN [PPT]** :
  https://docs.google.com/presentation/d/1N5EgIfY9nst75cq20M27SjOSiSG1c7uAhZ0RngwGVzc/edit#slide=id.g27be483

- Lectgure 11 **Advanced CNN [PPT]**:
  https://docs.google.com/presentation/d/1N5EgIfY9nst75cq20M27SjOSiSG1c7uAhZ0RngwGVzc/edit#slide=id.g27be483
- **CMNIST CNN [Code]** https://github.com/hunkim/PyTorchZeroToAll/blob/master/10_1_cnn_mnist.py