人工智慧系統
Artificial Intelligence System

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聽眾Audience

- 大三 third year ungraduate
- 基礎課程 Basic curriculum
- 61 students

Objective

- 引導您了解如何自學。Guide you to know how to learn by yourself.
- 人工智慧系統（Artificial Intelligence System）的歷史是什麼？
- What is the history of the 人工智慧系統(AIS)?
  - Who are the important people AIS? Newton, Lagrange, Gauss and Euler.
  - What are the important events of AIS?
  - Where is the location of AIS?
  - Which objects are related to AIS?
  - When is AIS popular?

材料Materials

- What is AIS
- Python Language
- Tensor flow
- Project and report

程序Procedure

Introduction

Step by step to learn small concepts by doing

A project and report should be done by yourself

1 5 mins

15 mins

50 mins

15 mins

75 mins

Demo:How to solve problem?

Conclusions

家庭作業1/Homework1

Learning efficiency depends on motivation

1. Why do you choose this course?
2. What kind of jobs for AIS?
3. What kind of jobs you want?

How to learn knowledge of AIS efficiently?

1. Python programming
2. Mathematics
3. Tensorflow, scikit learn and, karas

Python programming

Learning topics

1. Using Python as a Calculator
    a. Arithmetic operations
2. Variables
3. if Statements
4. for Statements
5. The range() Function
6. Executing modules as scripts
7. Mathematics
8. Python Functions - W3Schools

Learning Resources

1. Welcome to Python.org
2. Download
3. Python For Beginners
4. The Python Tutorial
5. IntroductoryBooks
6. Python Functions - W3Schools
7. A Visual Introduction to Python
8. Try Jupyter

Python programming

Learning topics

1. Python Functions

```
def my_function():
  print("Hello from a function")

my_function ()
```

Learning Resources

1. Python Functions - W3Schools
2. Run web python or Anaconda
3. http://jupyter.org/try
4. https://hub.mybinder.org/user/jupyterlab-jupyterlab-demo-yqivt6ba/lab#Integration-(scipy.integrate)

Python programming

```
#factor function
def functiona(number):
    result=1
    for x in range(1,number+1):
        result=x*result
    print ('result of a:'+str(result))

functiona(36)
```

1. http://jupyter.org/try

Python programming

```
 #suming function
def functionb(number):
   result=0
   for x in range(0,number+1,1):
      result=x+result
   print ('result of b:'+str(result))

functionb(36)
```

1. http://jupyter.org/try

Python programming

```
def myc(a,b):
  if(a<b):
     print("a smaller b")
  elif(a==b):
     print("a equals b")
  else:
     print("a bigger b")
  return

myc(29,3)
myc(3,29)
myc(3,3)
```

1. http://jupyter.org/try

Python programming

```
# %load sin_graph.py
import numpy as np
import matplotlib.pyplot as plt

# data
x = np.arange(0, 6, 0.1)
y = np.sin(x)

# plot graph
plt.plot(x, y)
plt.show()
```

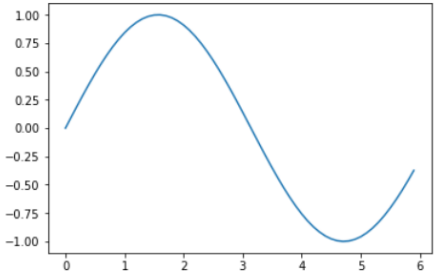
http://jupyter.org/try

In [3]:

```
# %load sin_graph.py
import numpy as np
import matplotlib.pyplot as plt

# data
x = np.arange(0, 6, 0.1)
y = np.sin(x)

# plot graph
plt.plot(x, y)
plt.show()
```

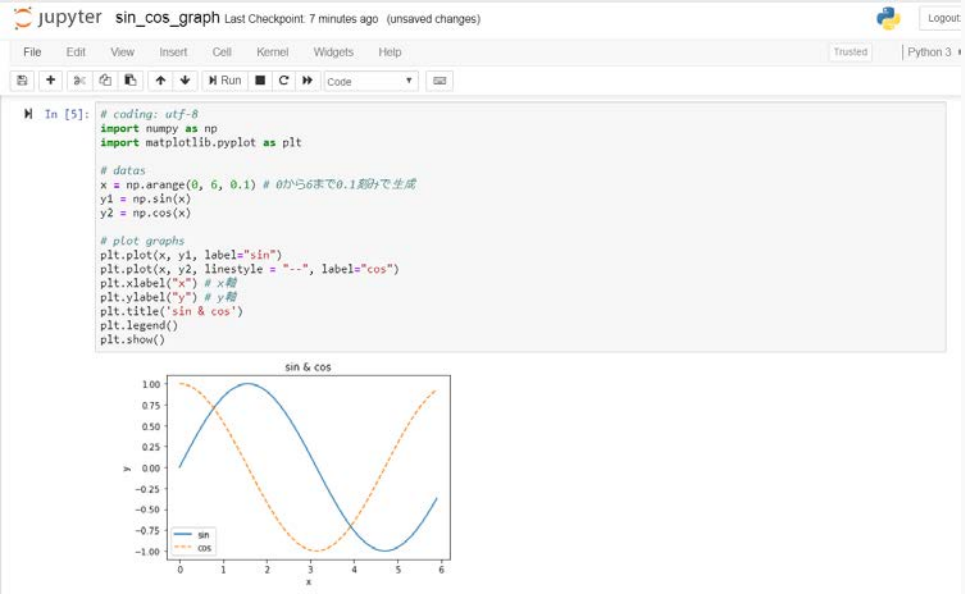


Python programming

```
# coding: utf-8
import numpy as np
import matplotlib.pyplot as plt

# datas
x = np.arange(0, 6, 0.1) # 0から6まで0.1刻みで生成
y1 = np.sin(x)
y2 = np.cos(x)
```

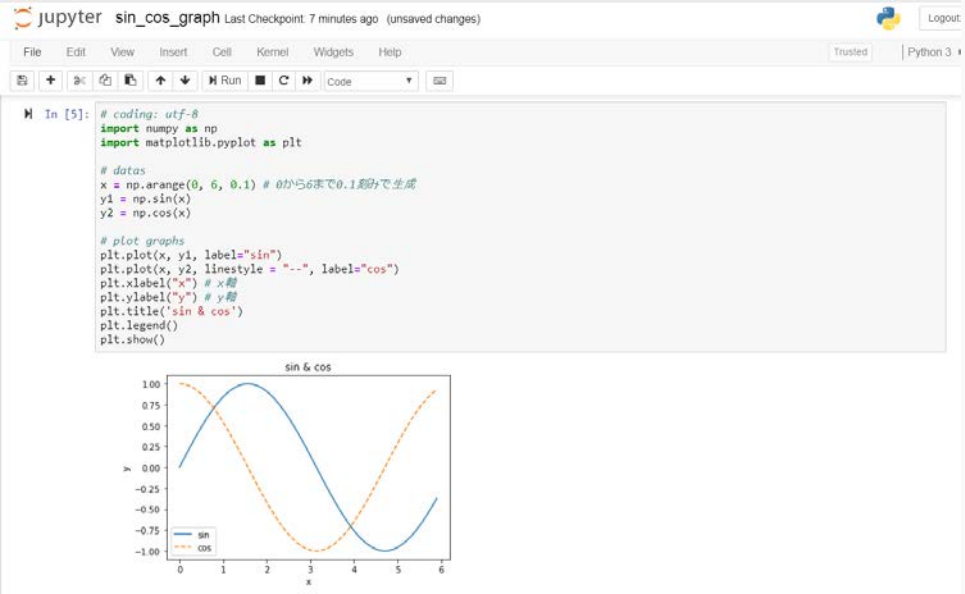
http://jupyter.org/try



Python programming

```
# plot graphs
plt.plot(x, y1, label="sin")
plt.plot(x, y2, linestyle = "--", label="cos")
plt.xlabel("x") # x軸
plt.ylabel("y") # y軸
plt.title('sin &cos')
plt.legend()
plt.show()
```

http://jupyter.org/try



Python programming

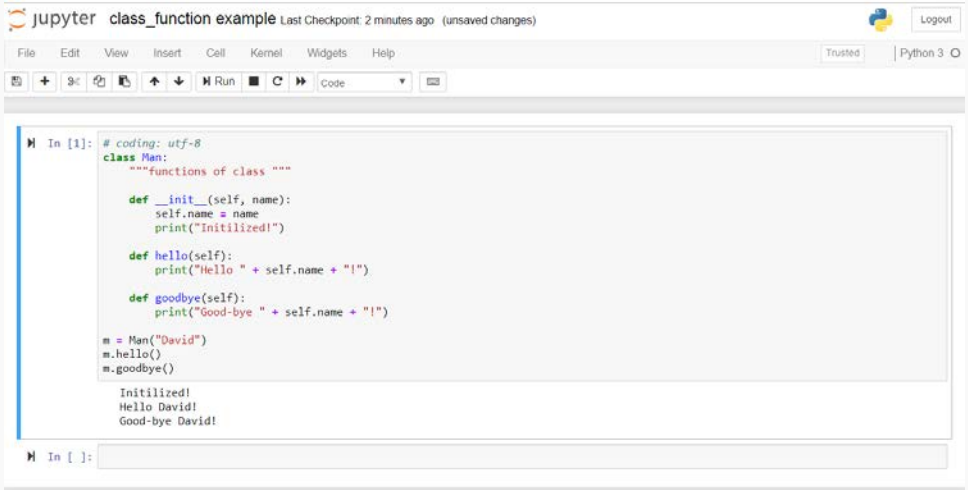
```
class Man:
    """functions of class """

    def __init__(self, name):
        self.name = name
        print("Initilized!")

    def hello(self):
        print("Hello " + self.name + "!")

    def goodbye(self):
        print("Good-bye " + self.name + "!")
```

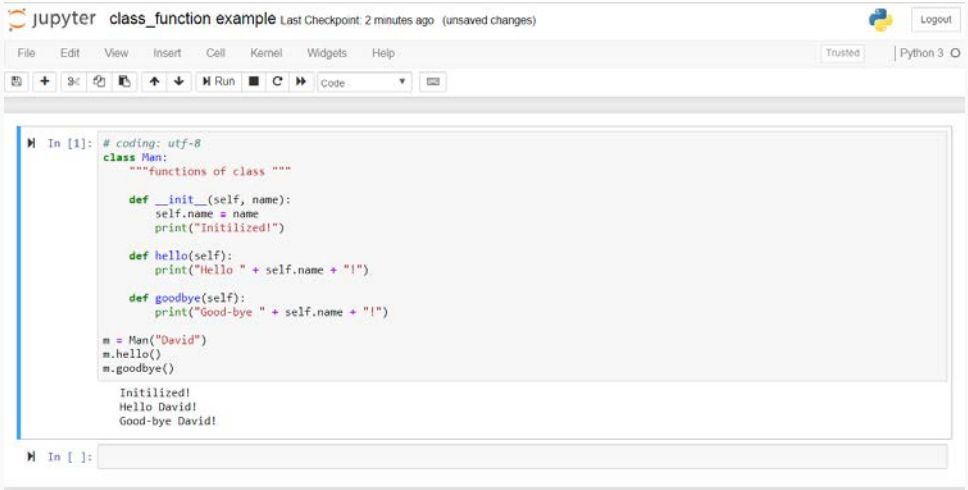
http://jupyter.org/try



Python programming

```
m = Man("David")
m.hello()
m.goodbye()
```

http://jupyter.org/try



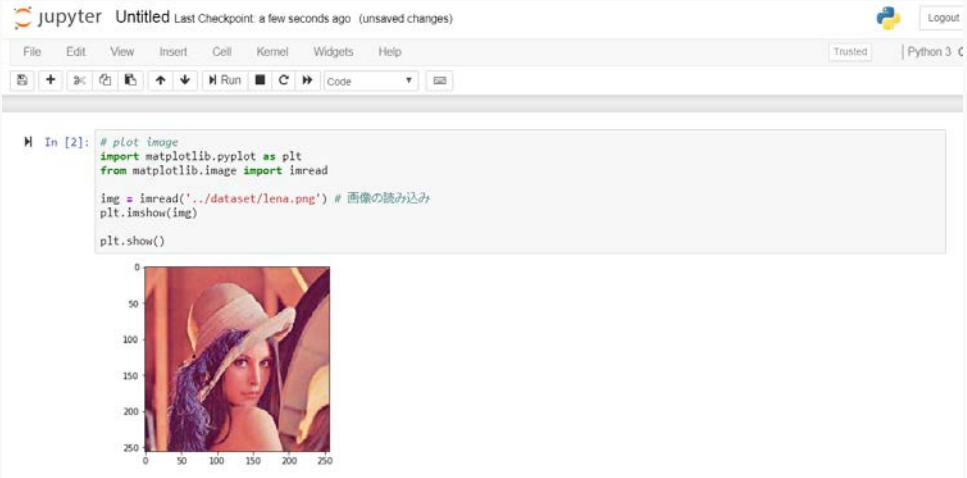
Python programming

```
# plot image
import matplotlib.pyplot as plt
from matplotlib.image import imread

img = imread('../dataset/lena.png') # 画像の読み込み
plt.imshow(img)

plt.show()
```

http://jupyter.org/try



Python programming

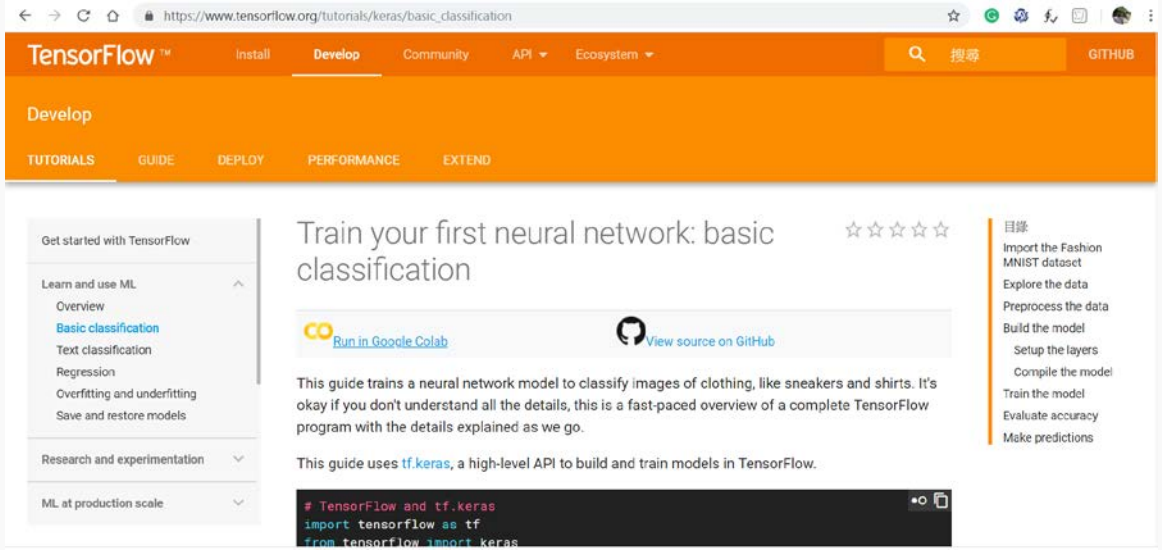
http://jupyter.org/try

Question:
Design a Class
With functions
plotsin()
plotsincos()
Plotimage()

Python programming

Train your first neural network: basic classification

[Run in Google Colab]



https://www.tensorflow.org/tutorials/keras/basic_classification

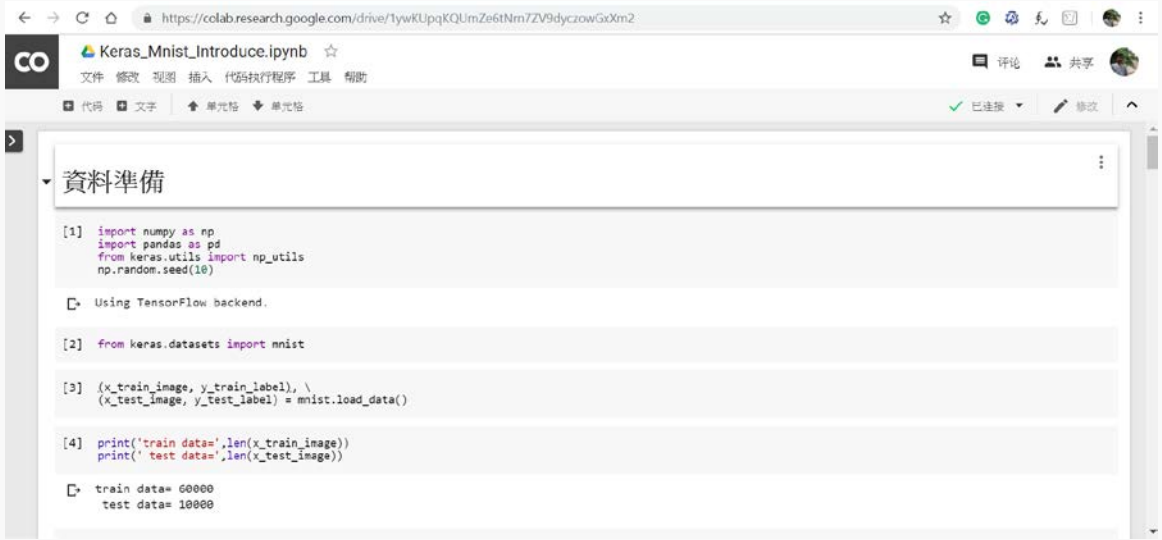
Python programming

TensorFlow+Keras
深度學習人工智慧實務應用

載範例程式（用下列URL）http://www.drmaster.com.tw/download/example/MP21710_example.zip

Python programming

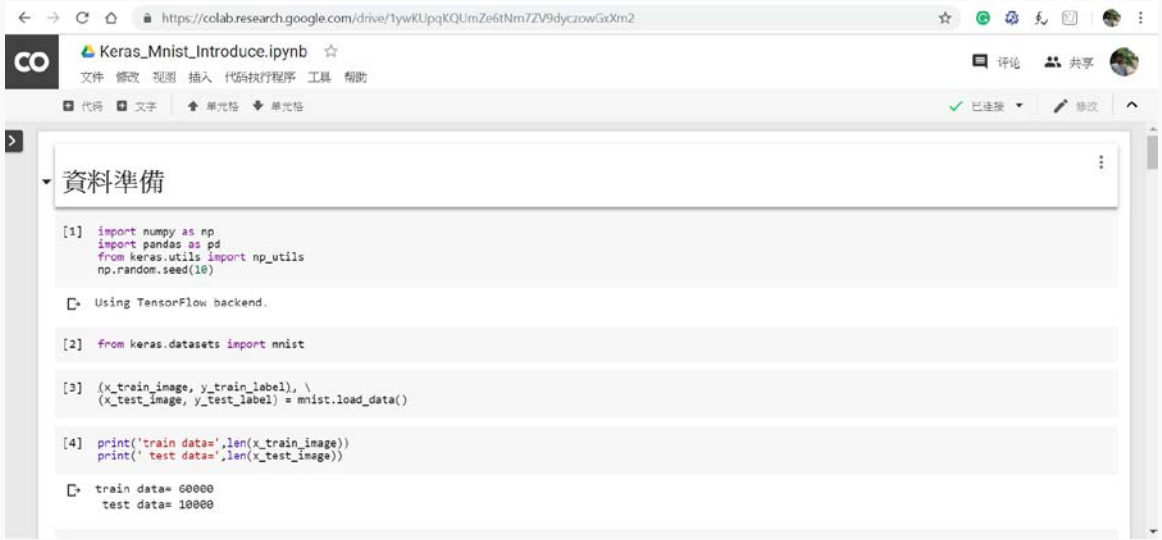
Upload
Keras_Mnist_Introduce.ipynb



載範例程式（用下列URL
）http://www.drmaster.com.tw/download/example/MP21710_example.zip

Python programming

Upload
Keras_Mnist_MLP_h256.ipynb



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）http://www.drmaster.com.tw/download/example/MP21710_example.zip

Python programming

- predictive models with sklearn pipelines

Notebook Code Data (1) Comments (1) Log Versions (2) Forks (5) Fork Notebook

Building End to End predictive models with sklearn pipelines

Sklearn pipelines have been around for a while now. I always thought pipelines as a nifty feature that can take out the back forth scrolling in kernel notebooks between data cleaning, feature engineering and prediction steps, and have a single object/pipe that can take in data and give out predictions. I also found that this was a promiseland, it was not a easy task to create a practical/useful pipeline, that took in a DataFrame and gave out predictions.

But now, after a revisit to the land of pipelines, I could bet you that pipelines are back in action. No, I'm serious, I bet that it's possible to acheive the most organized and concise code for a problem by adapting pipelines. I'm willing to bet my upvote on it ;)

I've explained every step along the way, So it should be easy to follow.

What can you expect in this notebook

Beginner - I've never heard of sklearn pipelines - You are in for a treat. You I'll be introduced to a new/clean/easy coding model to build predictive models

Intermediate - I've dabbled with pipes, haven't used them end to end - I'll introduce you to new techniques that can help you use pipelines better.

https://www.kaggle.com/gautham11/building-predictive-models-with-sklearn-pipelines

Python programming

- How to predict input image using trained model in Keras?

https://stackoverflow.com/questions/43469281/how-to-predict-input-image-using-trained-model-in-keras