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

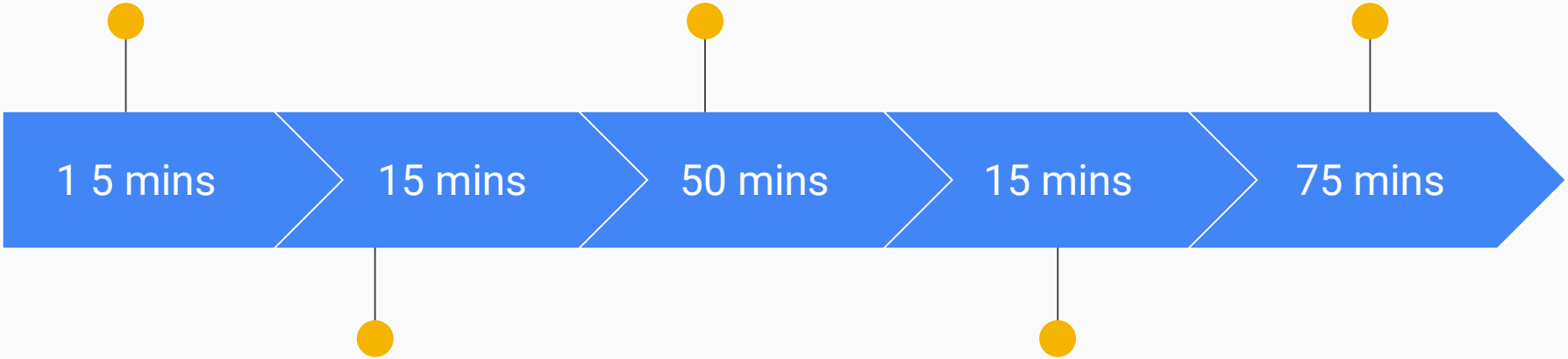
- What is AIS
- Python Language
- Tensor flow
- Project and report

程序Procedure

Introduction

Step by step to learn small concepts by doing

A project and report should be done by yourself



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
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import matplotlib.pyplot as plt

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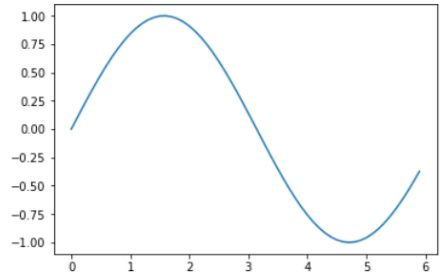
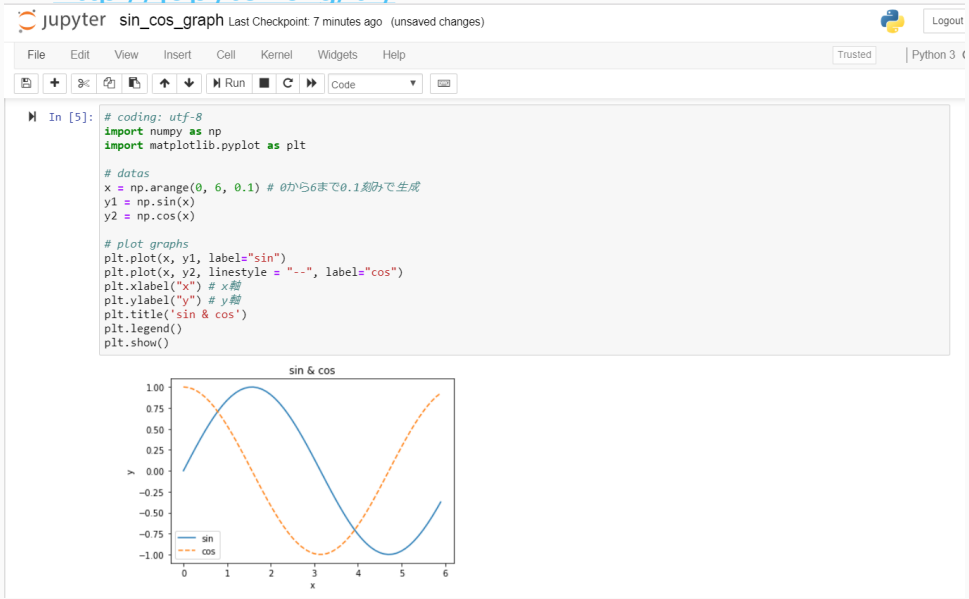


Python programming

```
# 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)
```

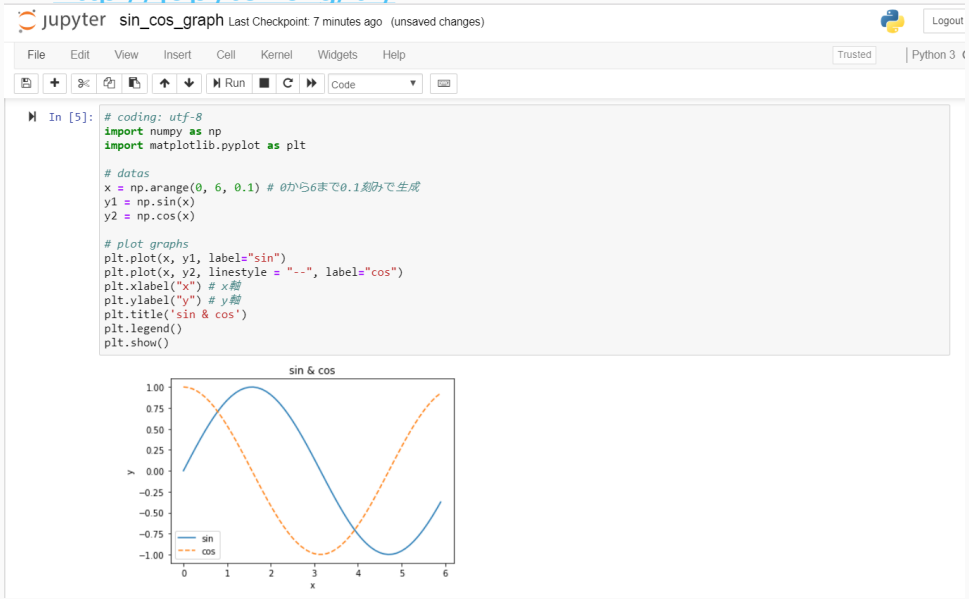
http://jupyter.org/try



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

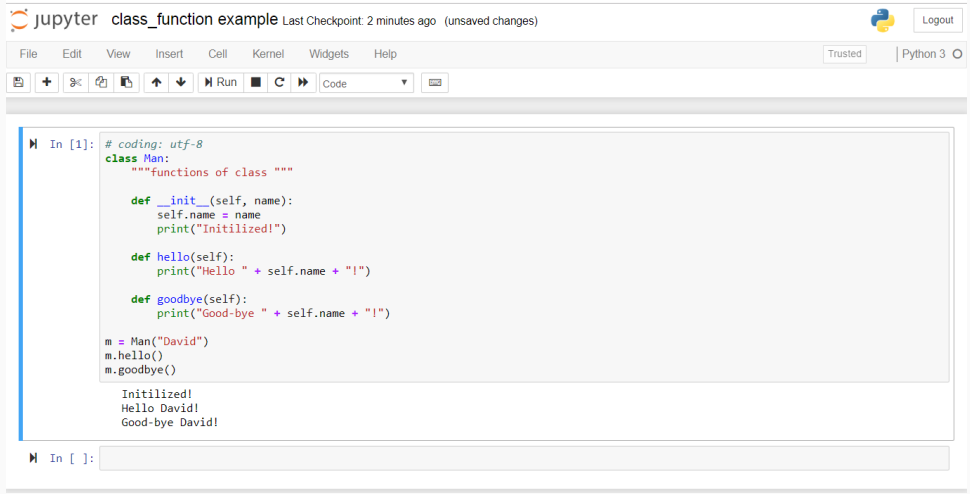
```
class Man:
    """functions of class """

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

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

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

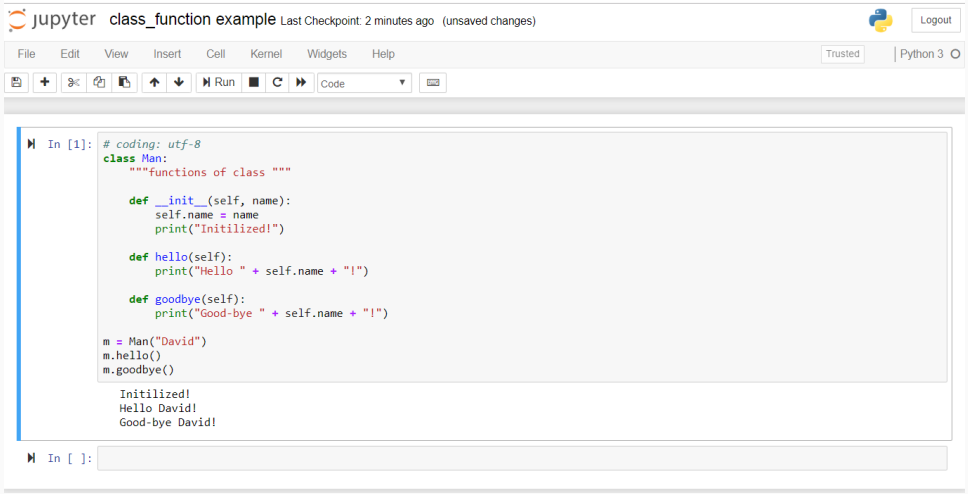
http://jupyter.org/try



Python programming

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

http://jupyter.org/try



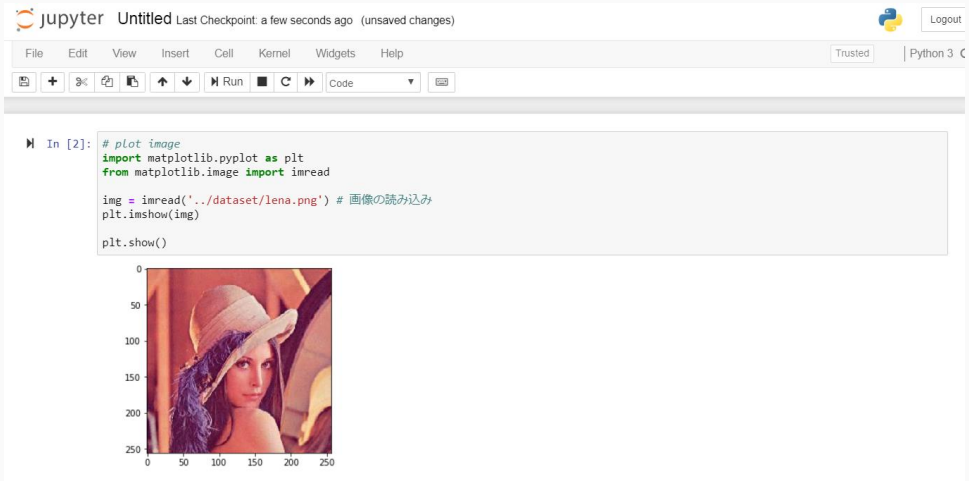
Python programming

```
# 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

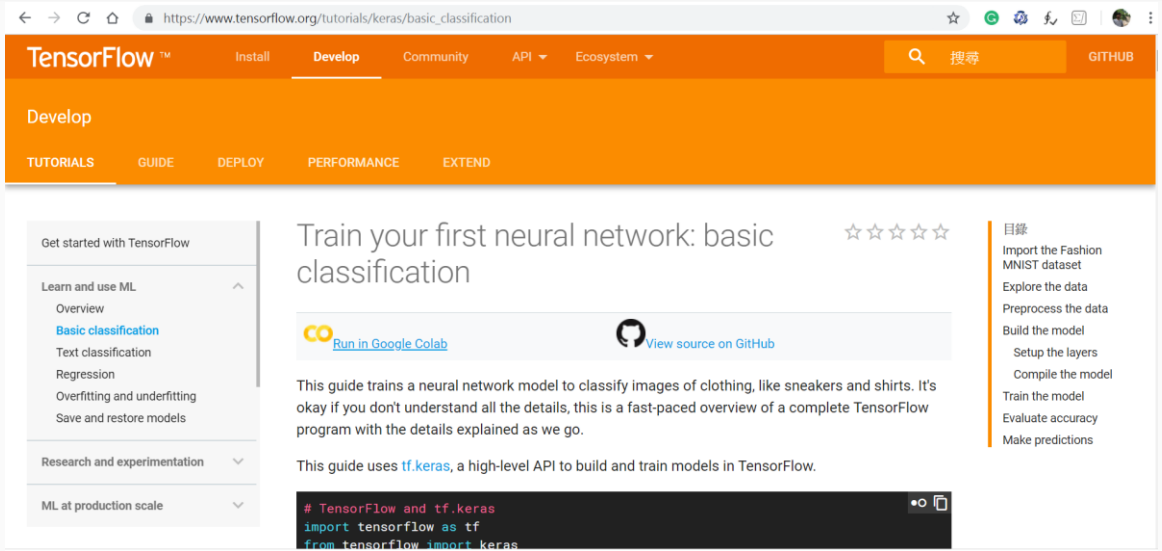
Question:
Design a Class
With functions
plotsin()
plotsincos()
Plotimage()

http://jupyter.org/try

Python programming

Train your first neural network: basic classification

[Run in Google Colab]



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

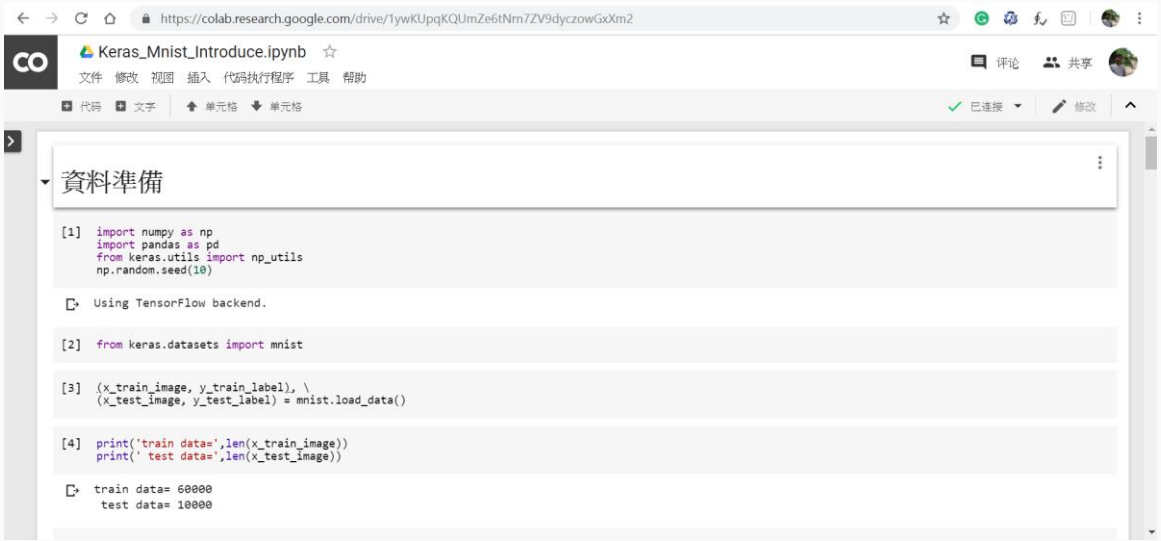
Python programming

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



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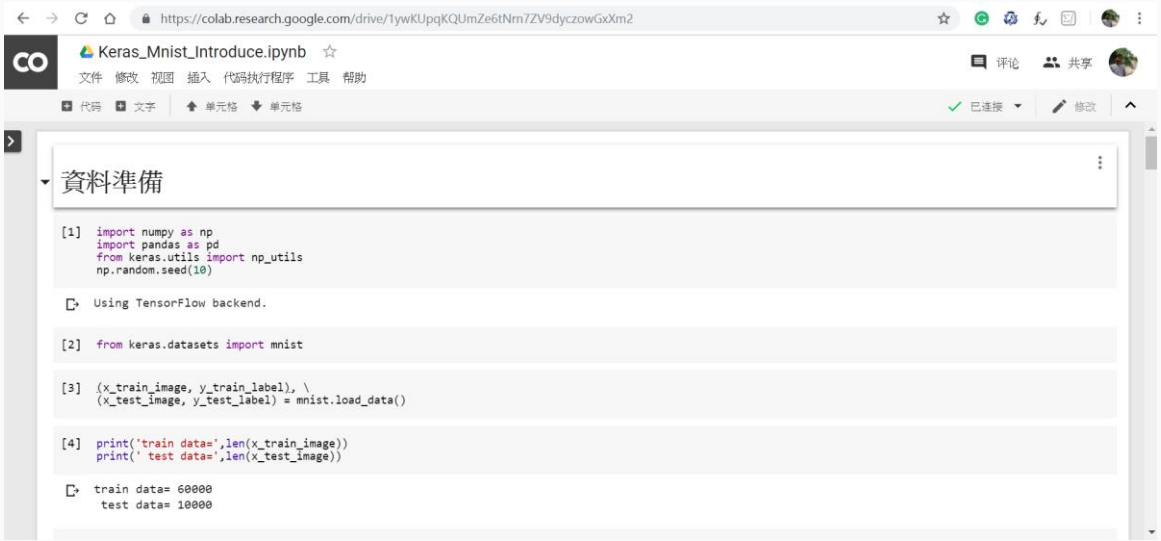
http://www.drmaster.com.tw/download/example/MP21710_example.zip

Python programming

Upload
Keras_Mnist_MLP_h256.ipynb



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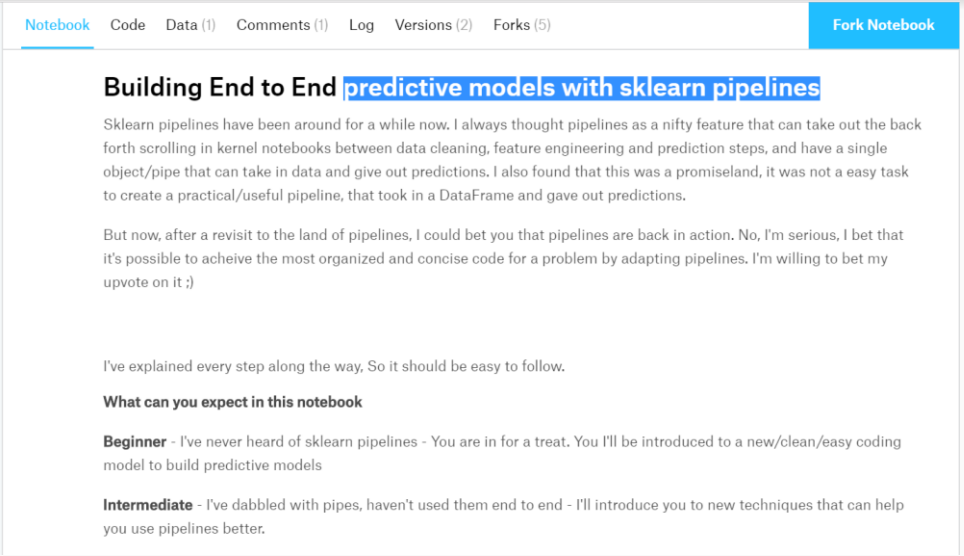
Python programming

- predictive models with sklearn pipelines



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