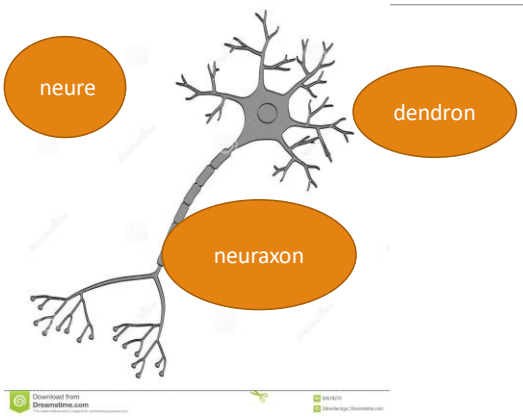
Python and Neural Network

TIM

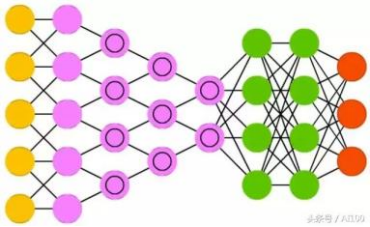
30TH.JUNE

CONTENTS

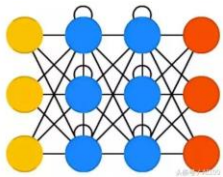
What is Netural Network



CNN：Convolutional neural networks



RNN：Recurrent neural networks



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Some Basic Netural Networks

1. FF or FFNN：Feed forward neural networks and P：perceptrons (the two adjacent layers of nerve cells are fully connected.)
2. RBF：Radial basis function
3. HN：Hopfield network (A network in which each neuron is connected to other neurons.)
4. MC：Markov Chain (Memorylessness)
5. BM：Boltzmann machines (close to the Hopefield network, but some neurons are input neurons and the rest are hidden neurons.)
6. RBM：Restricted Boltzmann machines
7. AE：Autoencoders (Like compression , not encryption)
8. SAE：Sparse autoencoders (anti with AE)
9. VAE：Variational autoencoders
10. DAE：Denoising autoencoders
11. DBN：Deep belief networks
12. CNN：Convolutional neural networks

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Some Basic Netural Networks

13. DN：Deconvolutional networks (inverse graphics networks or anti-CNN)

14. DCIGN：Deep convolutional inverse graphics networks

15. GAN：Generative adversarial networks (GAN can be made up of any two networks (but usually FF and CNN), one of which is used to generate content and the other to authenticate the generated content.)

16. RNN：Recurrent neural networks

17. LSTM：Long / short term memory (Gate structure, forgotten gate added)

18. GRU : Gated recurrent units (simplified version of LSTM)

Some Basic Netural Networks

19. NTM: Neural Turing machines (abstract of LSTM)

20. BiRNN：Bidirectional recurrent neural networks BiLSTM：bidirectional long / short term memory networks BiGRU：bidirectional gated recurrent units

21.DRN: Deep residual networks (Jump form one layer to another layer)

22. ESN：Echo state networks (freshen, control error)

23. ELM：Extreme learning machines

24. LSM：Liquid state machines

25. SVM：Support vector machines (find the best sloution)

26. Kohonen or SOM/SOFM：self organi sing (feature) map (Drive adjacent neurons)

What is Python

Python

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Why Python

Easy
Free
Embeddable

Unable to encrypt
Slow

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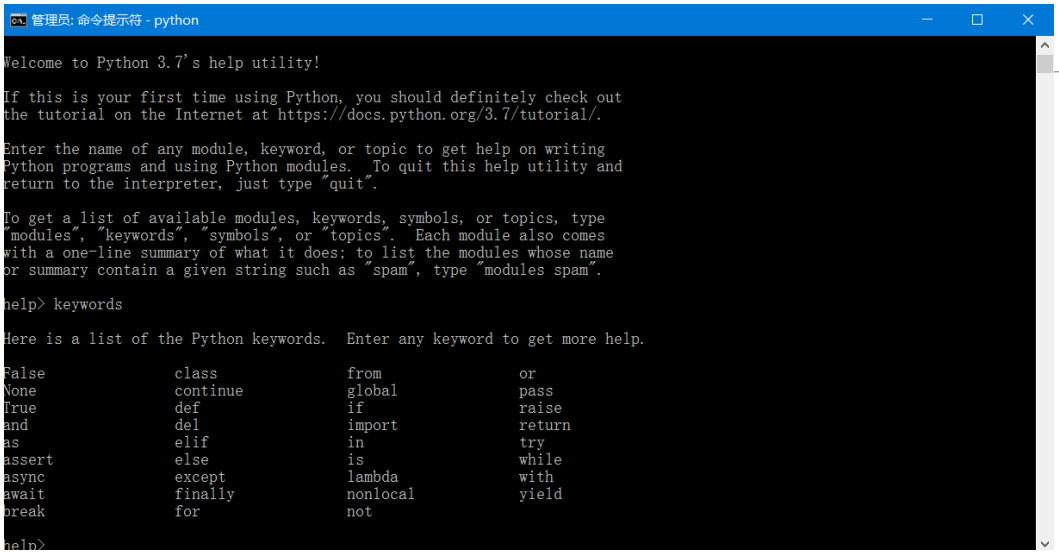
REPL or Shell



Basic Grammar

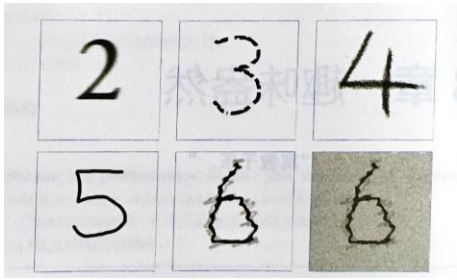
1. .py
2. interpreter not compiler
3. PYTHONPATH and environment variable
4. package and _init._.py
5. import as from import (from import *)
6. Everything is object.
7. Data type
8. List, set, dict, tuple
9. if and else

Basic Grammar

10. Never use while else
11. def function and recursion
12. Parameter trap
13. Operator can not be overload
14. Using of class

Netural Network with Python

An example of the hand writing



https://github.com/makeyourownneuralnetwork/makeyourownneuralnetwork/blob/master/part3_load_own_images.ipynb