BUSINESS 2019

JULYEDU

PyTorch公开课

北京七月在线科技有限公司

褚则伟 zeweichu@gmail.com

https://www.julyedu.com/

吾爱程序猿（www.52programer.com）打造专业优质的IT学习分享社区

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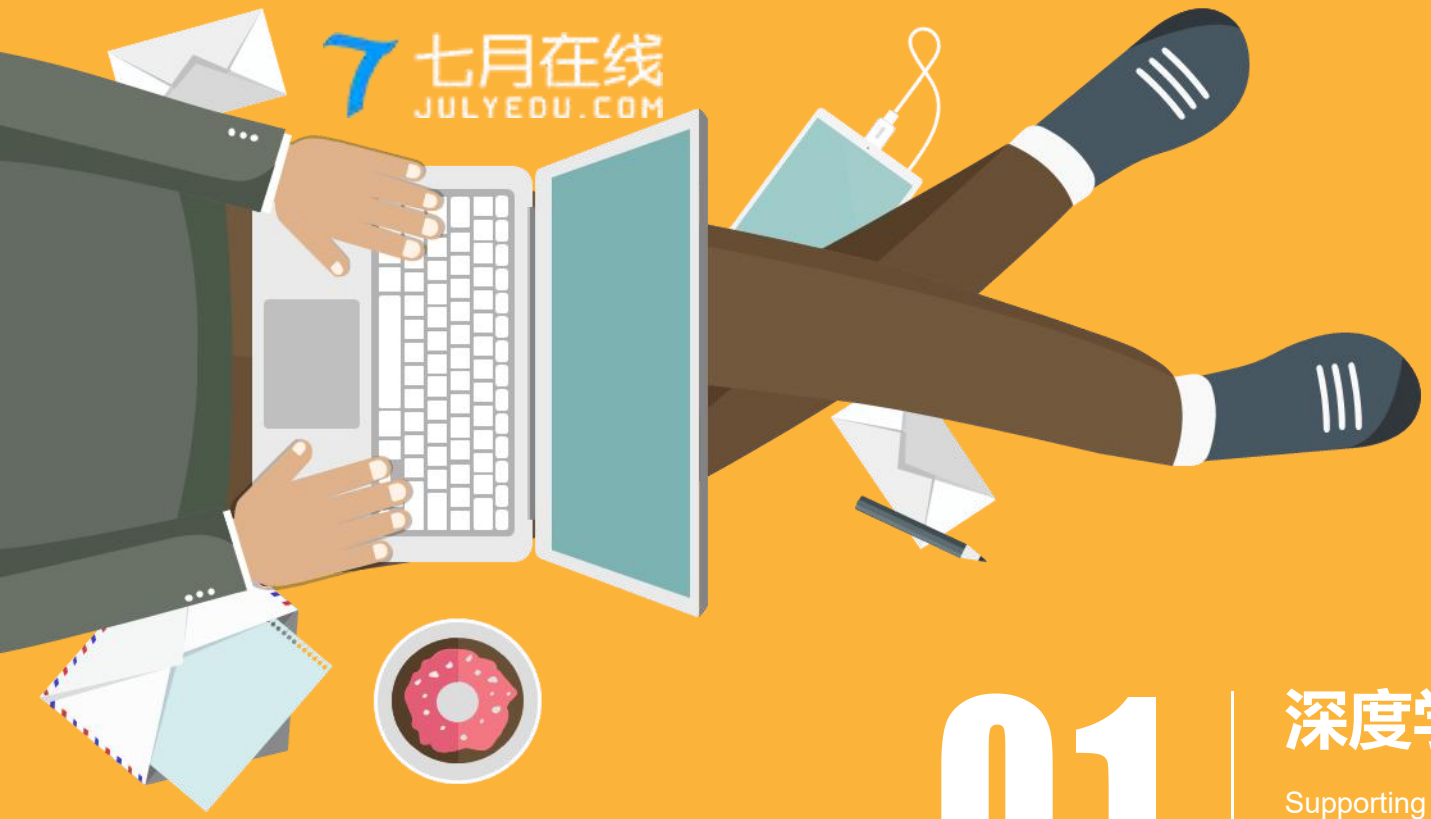

01 深度学习模型入门

Supporting text here.

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什么是机器学习?

Study of algorithms that

- improve their performance P
- at some task T
- with experience E

well-defined learning task: <P,T,E>

来自Tom M. Mitchell, Machine Learning Course

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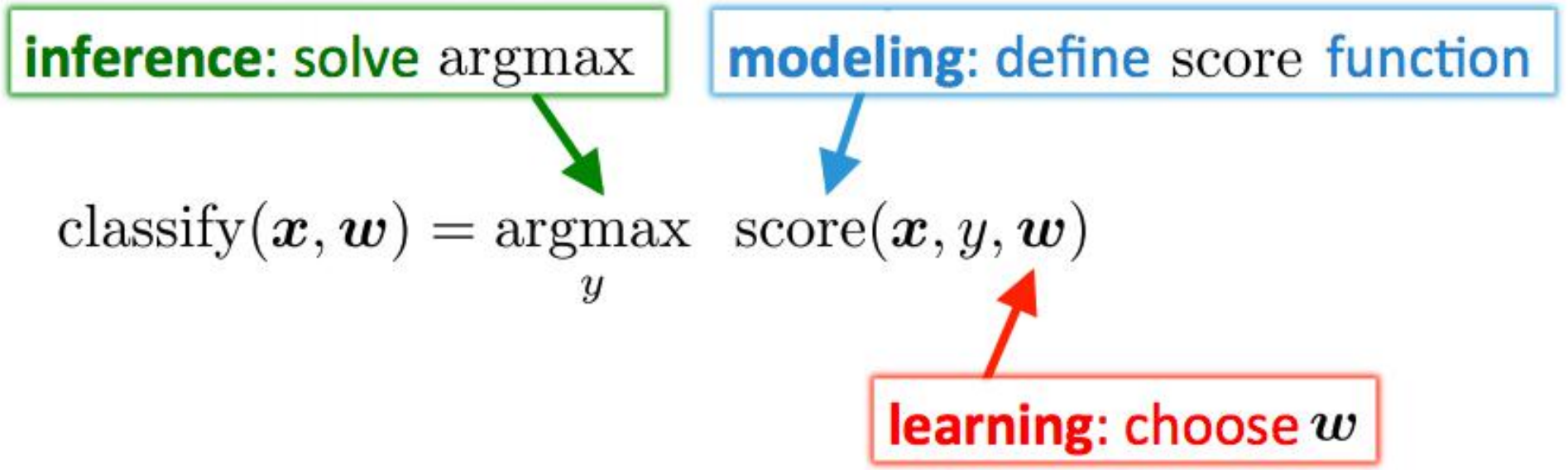
Modeling, Inference, Learning



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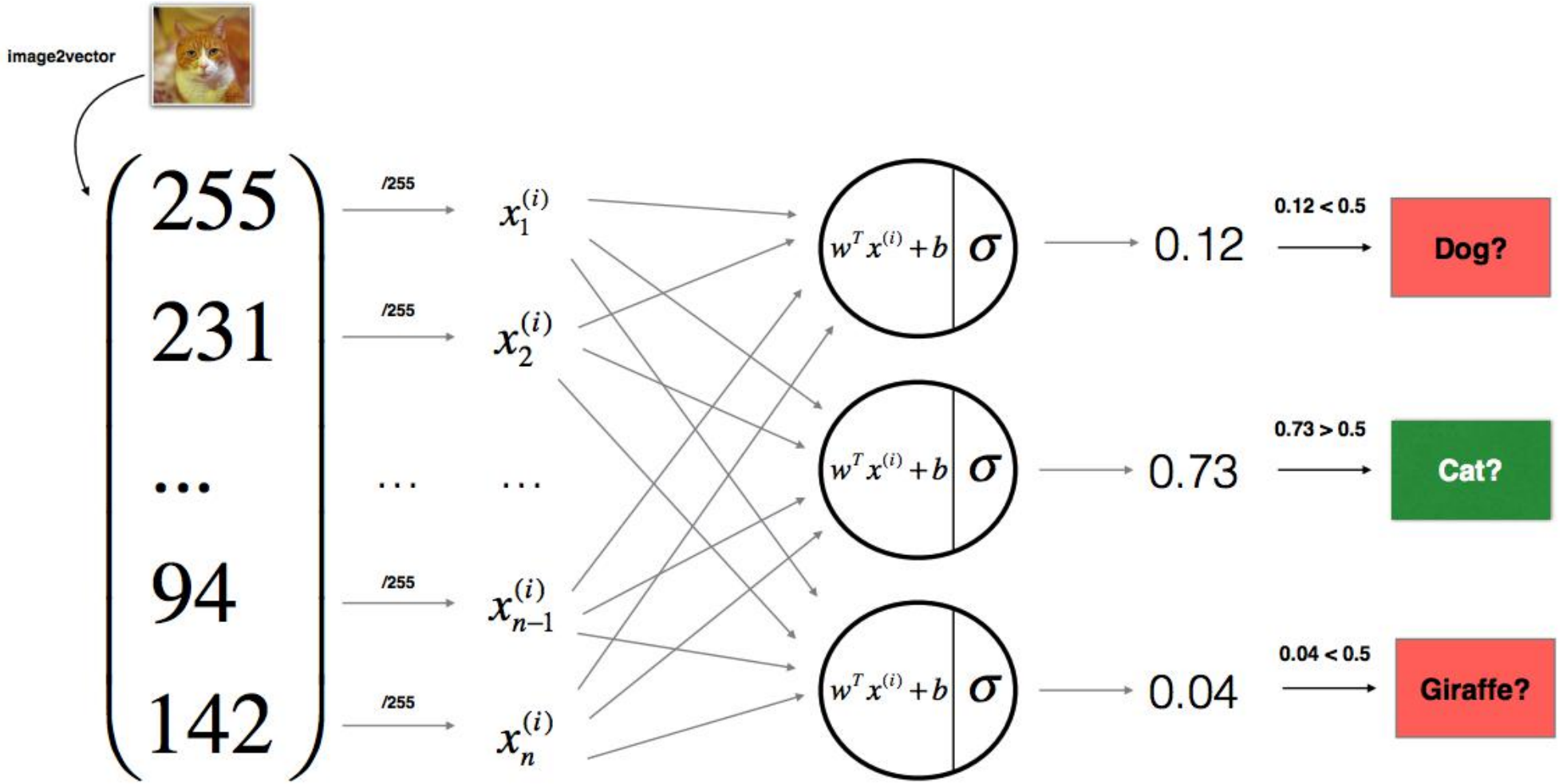
什么是深度学习?



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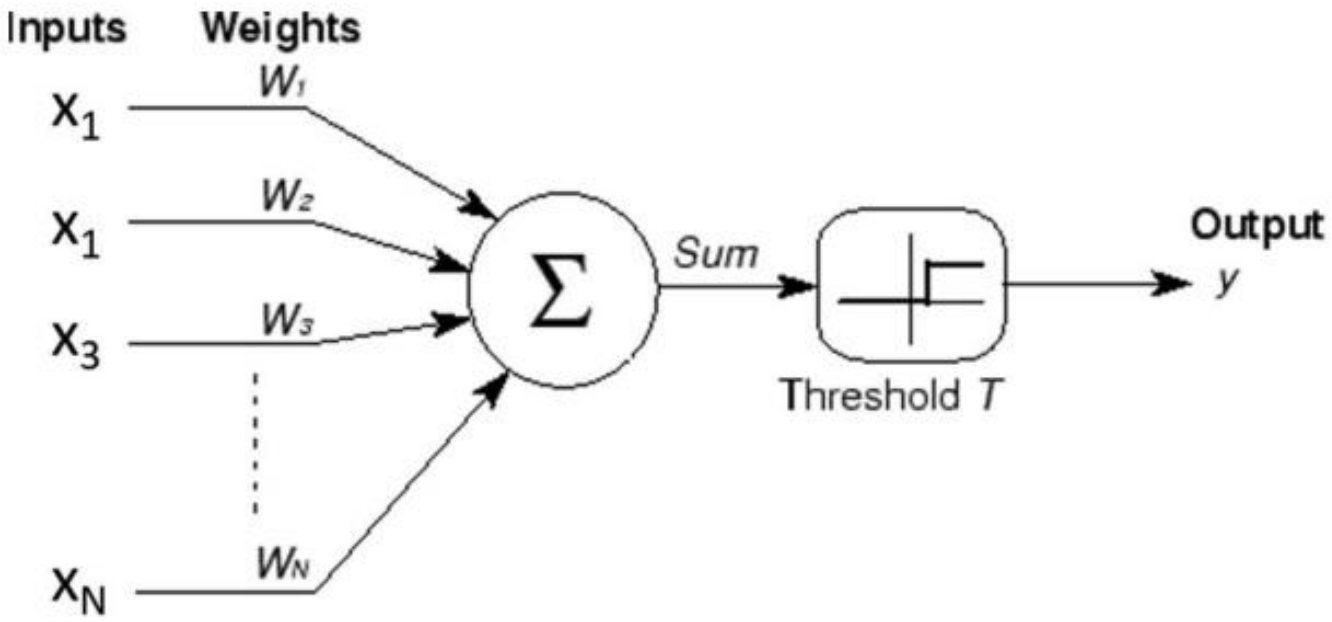
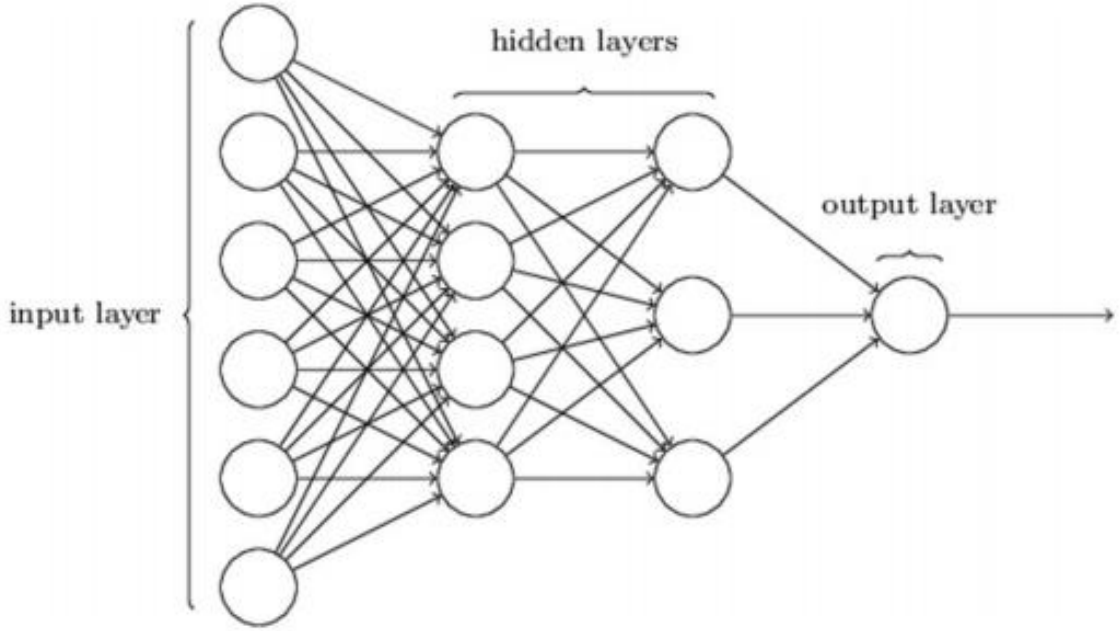
什么是神经网络?





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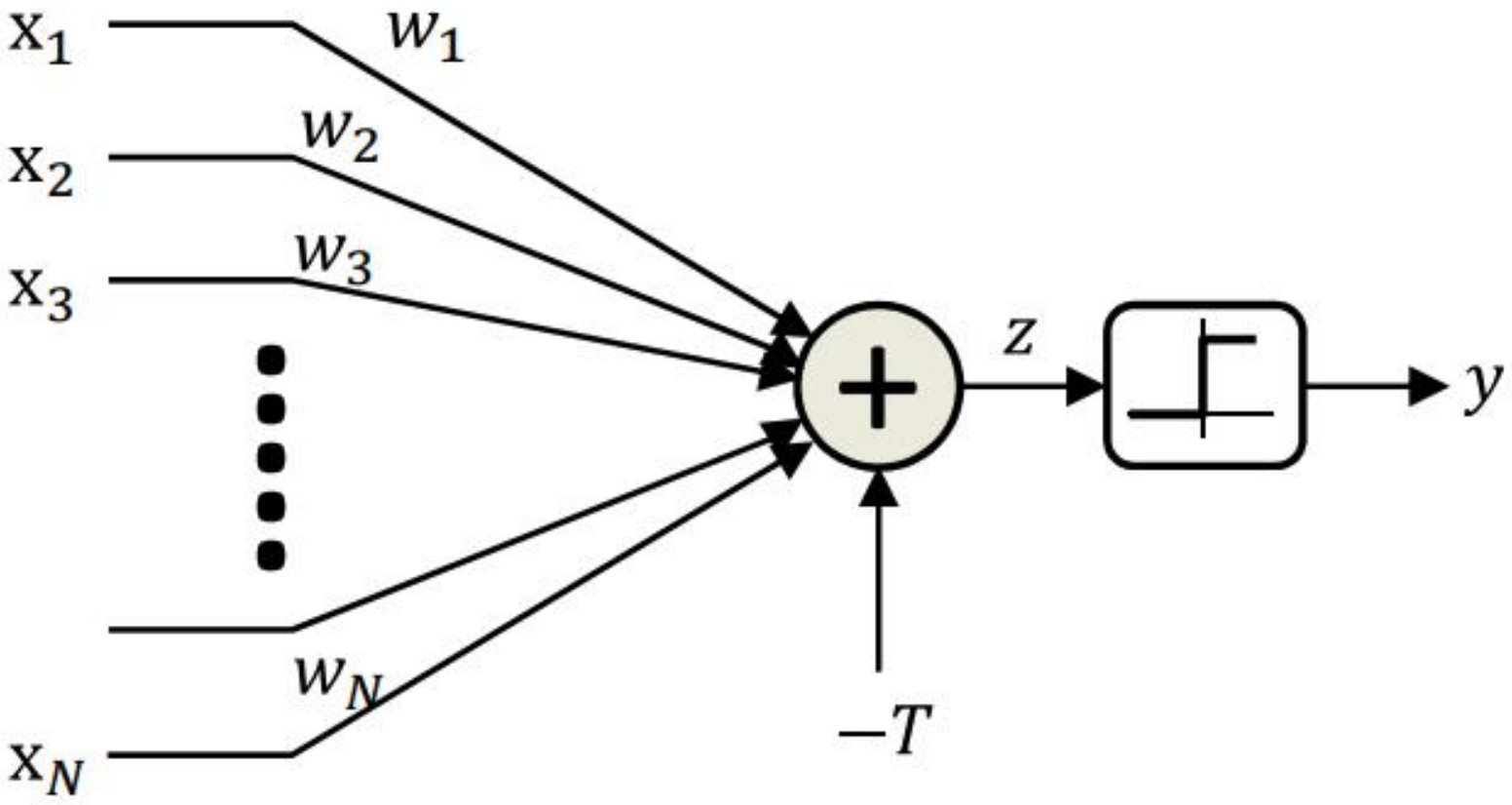
什么是神经网络?



$$z = \sum_i w_i x_i - T$$

$$y = \begin{cases} 1 \; if \; z \geq 0 \\ 0 \; else \end{cases}$$

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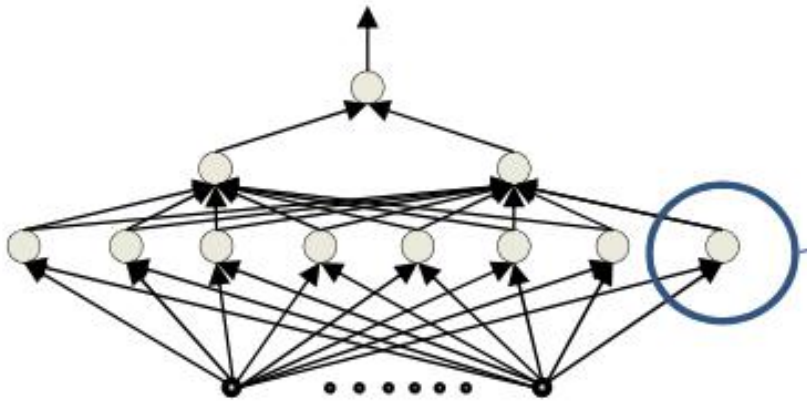
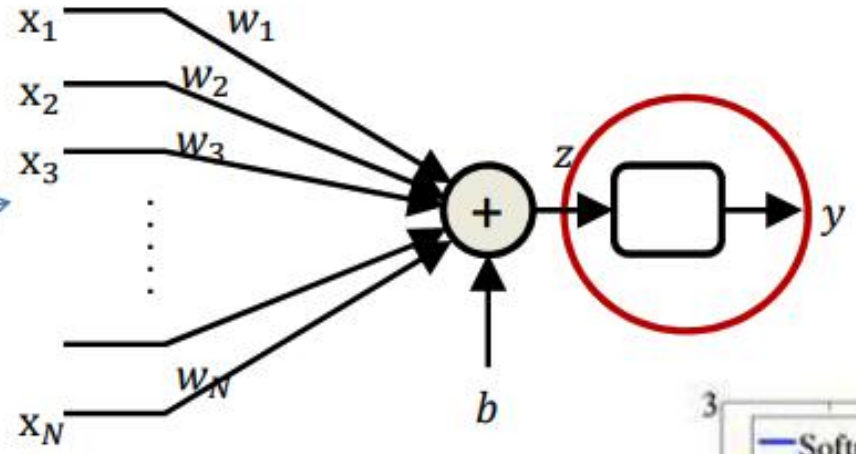
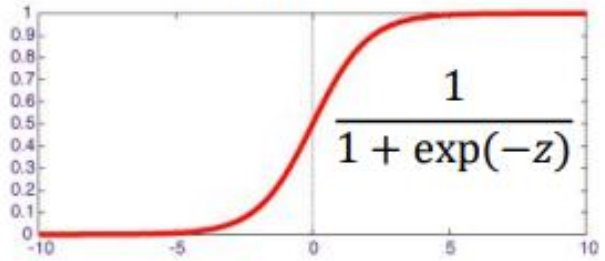
激活函数

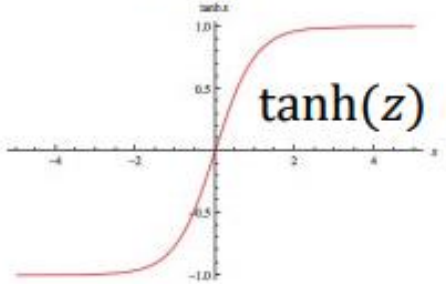


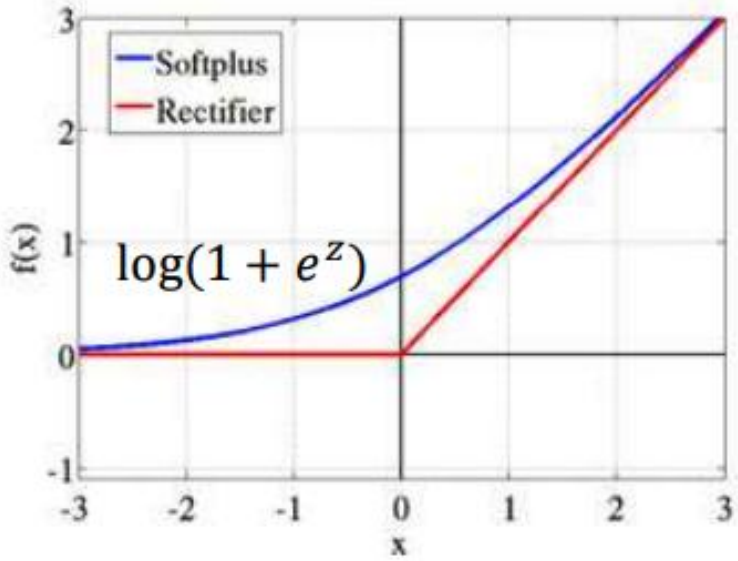


sigmoid



tanh





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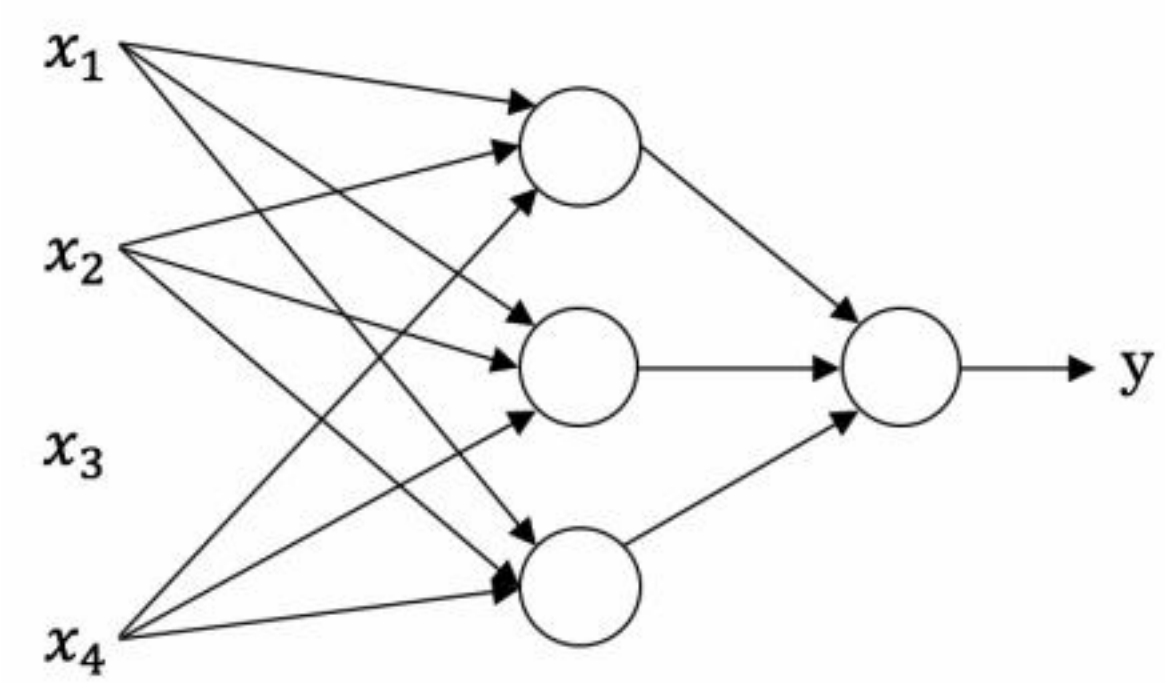
前向神经网络



Standard NN

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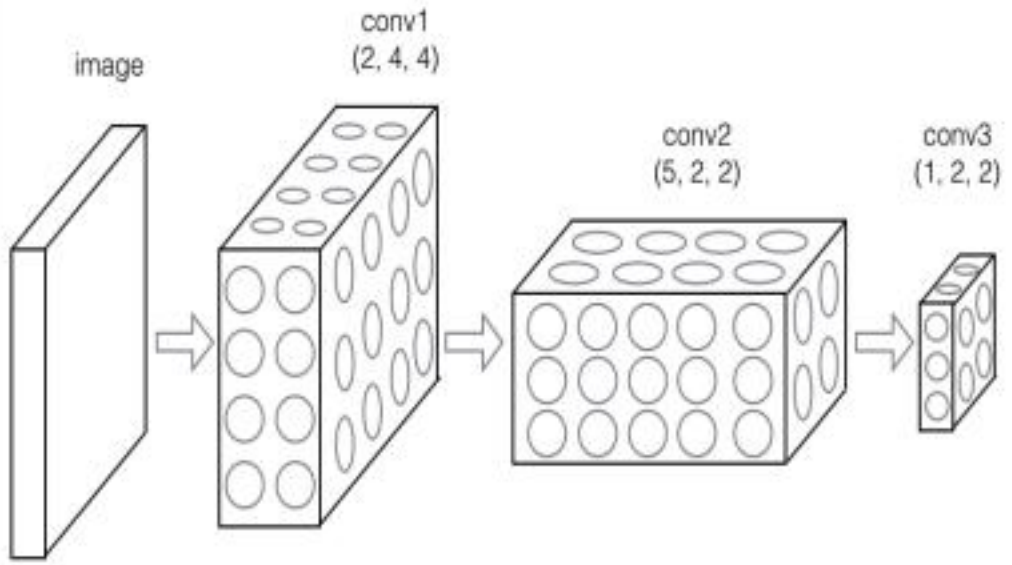
Convolutional NN



Convolutional NN

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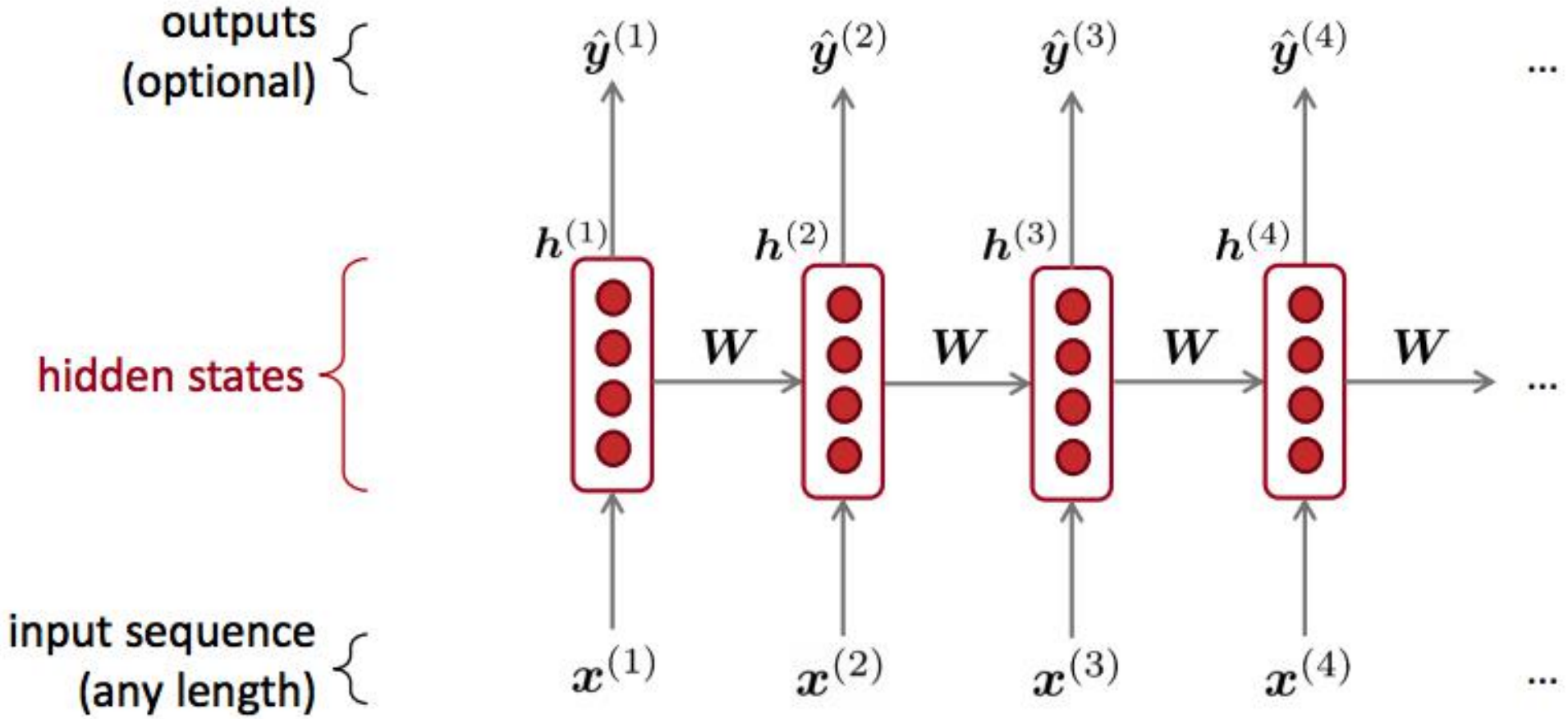
Recurrent Neural Networks



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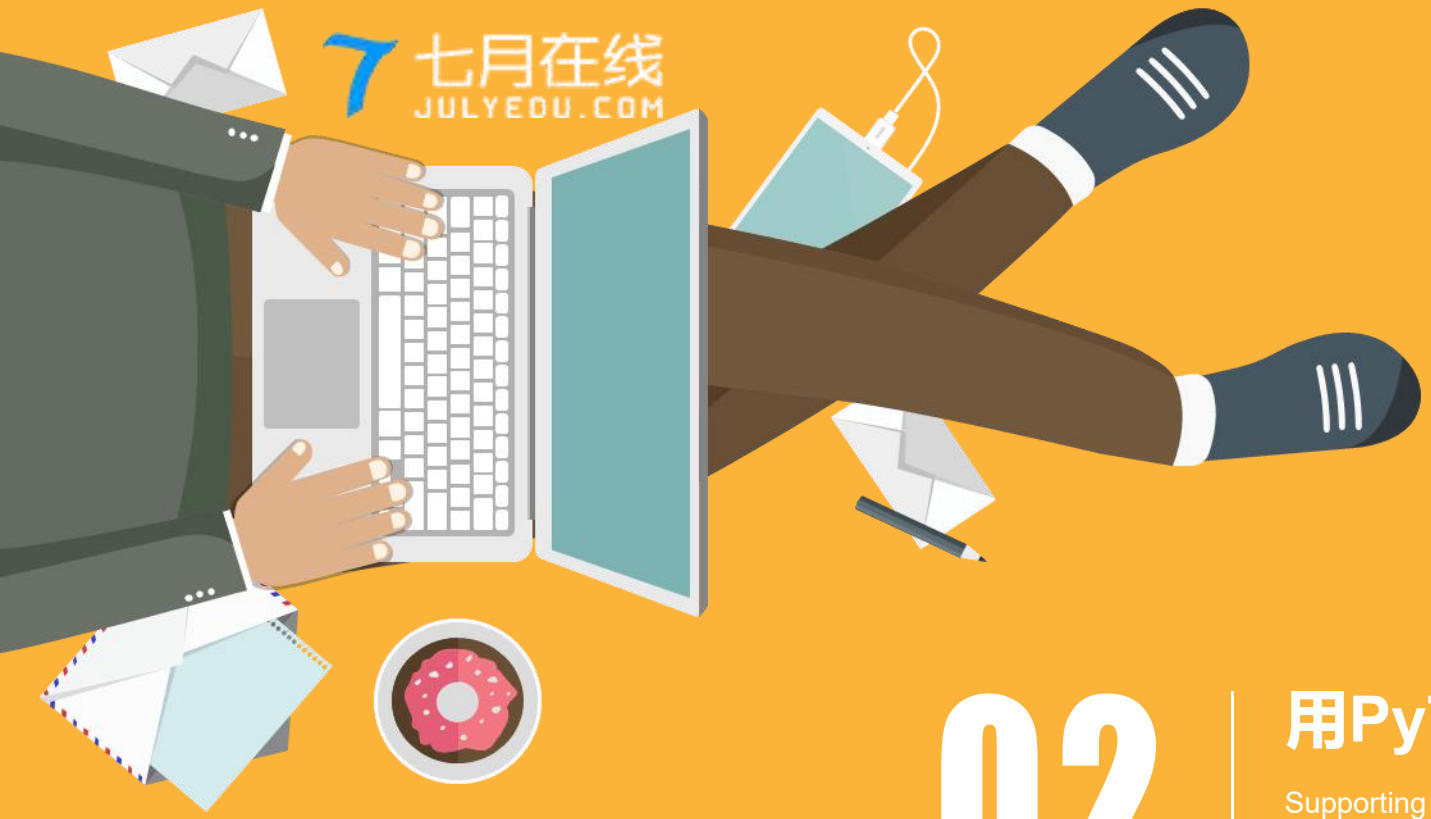

02 用PyTorch构建深度学习模型

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深度学习模型框架概览

TensorFlow

mxnet

PyTorch

Caffe

ay/net

Keras

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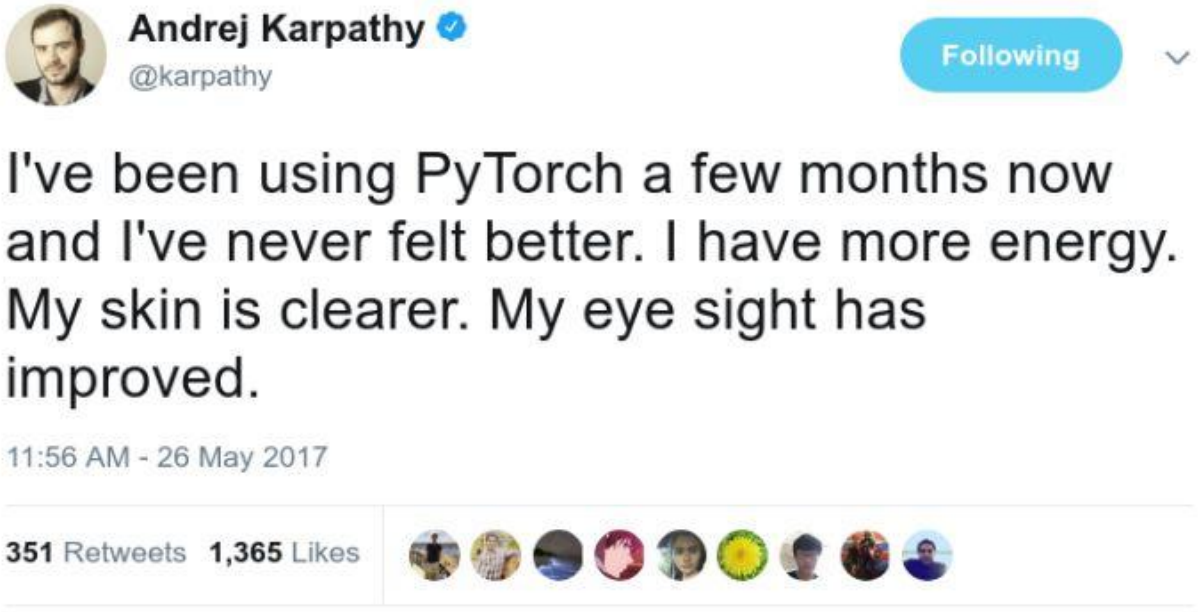
PyTorch与其他框架的对比

- PyTorch: 动态计算图 Dynamic Computation Graph
- Tensorflow: 静态计算图 Static Computation Graph

- PyTorch代码通俗易懂，非常接近Python原生代码，不会让人感觉是完全在学习一门新的语言。

- 拥有Facebook支持，社区活跃。



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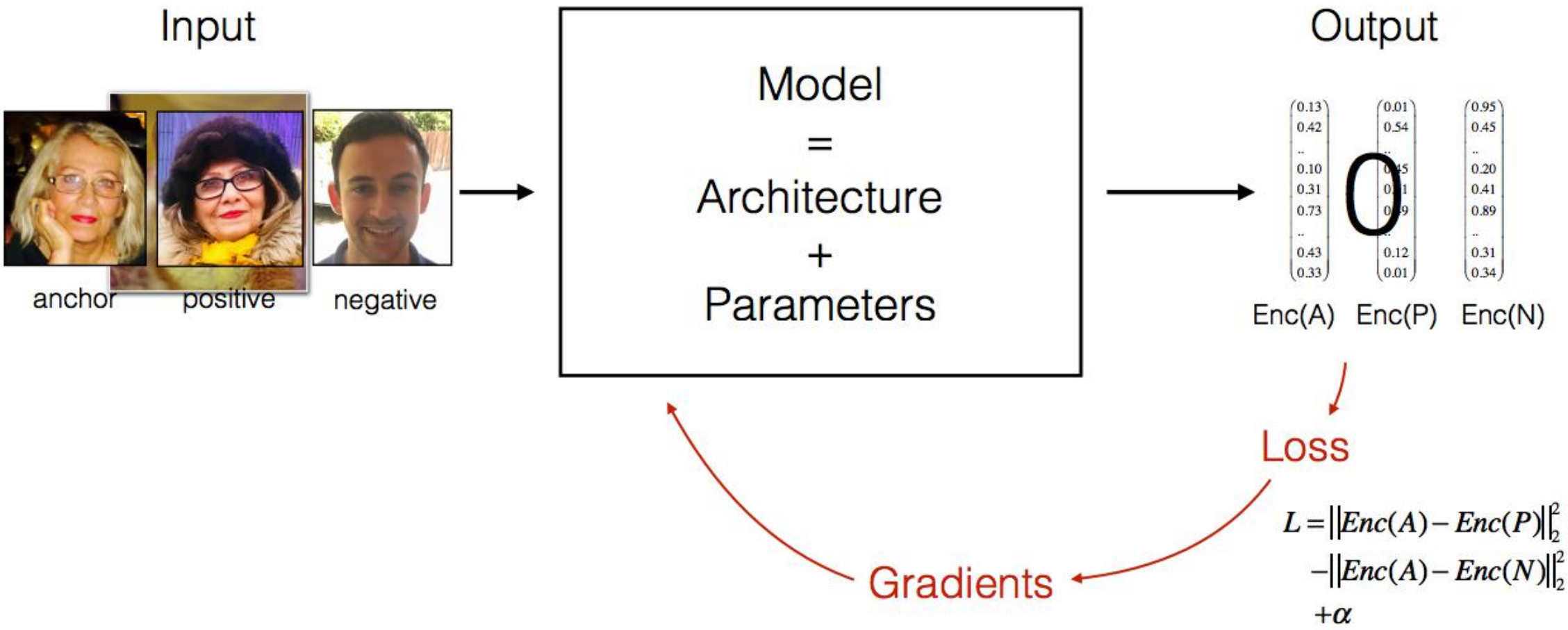
PyTorch可以做什么?



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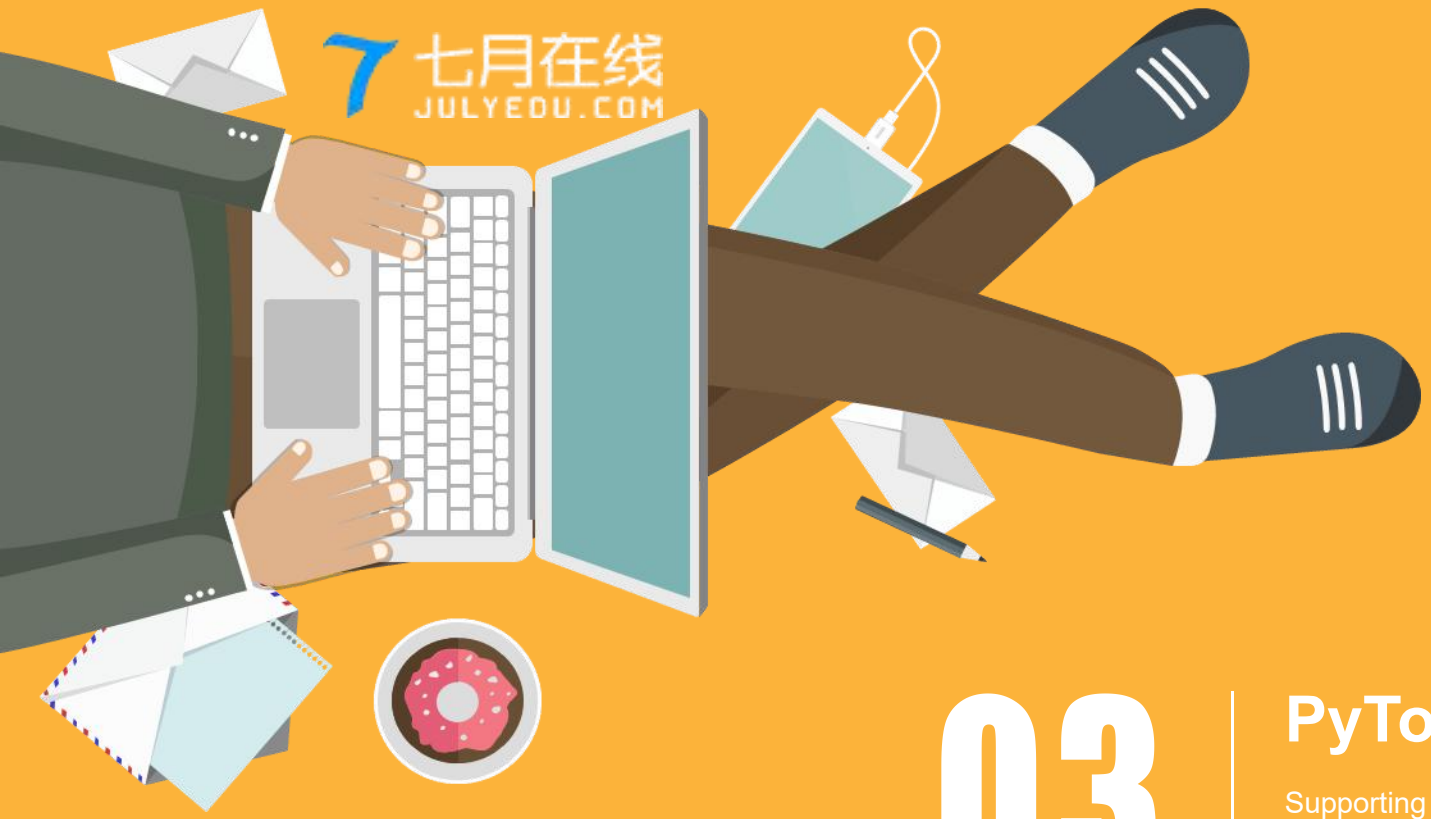

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03

PyTorch精彩项目介绍

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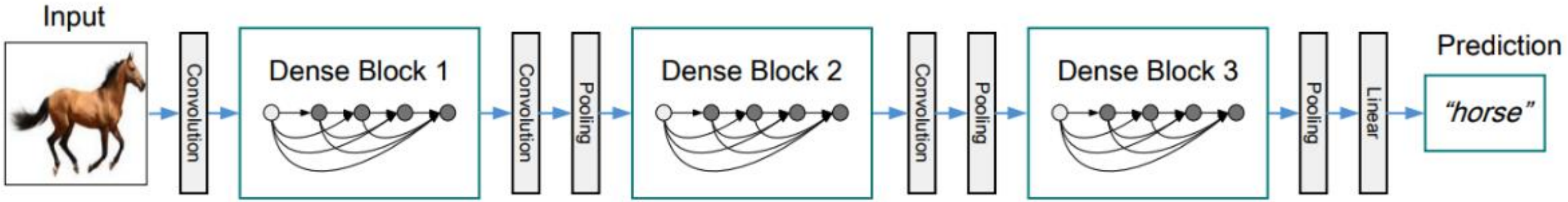
图像分类



https://github.com/floydhub/imagenet

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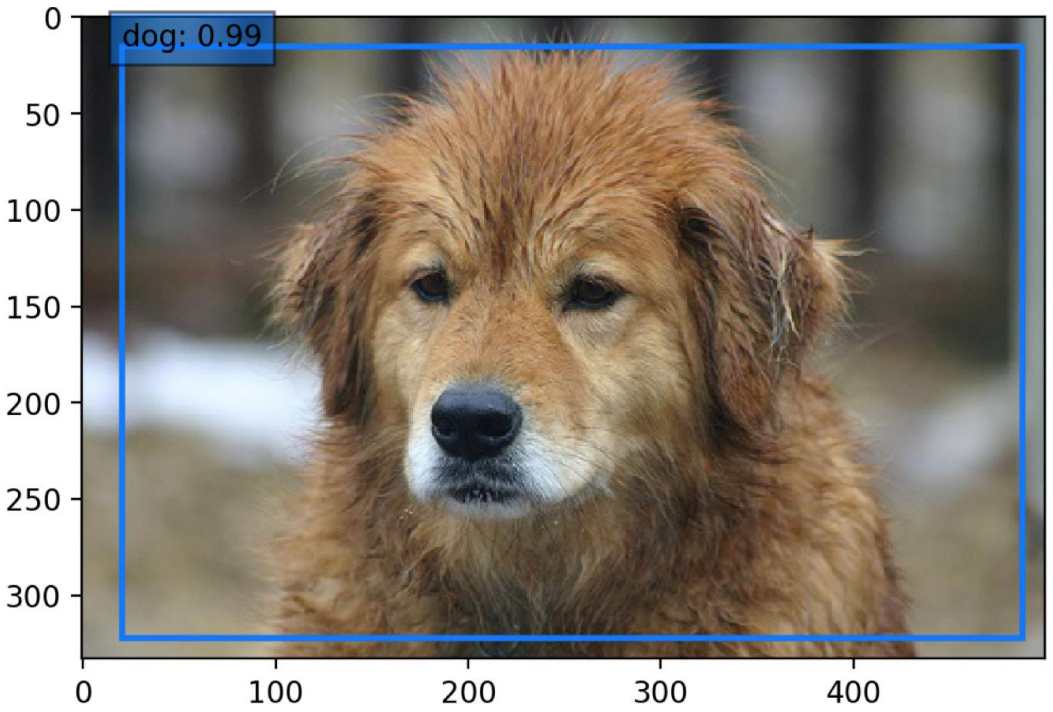
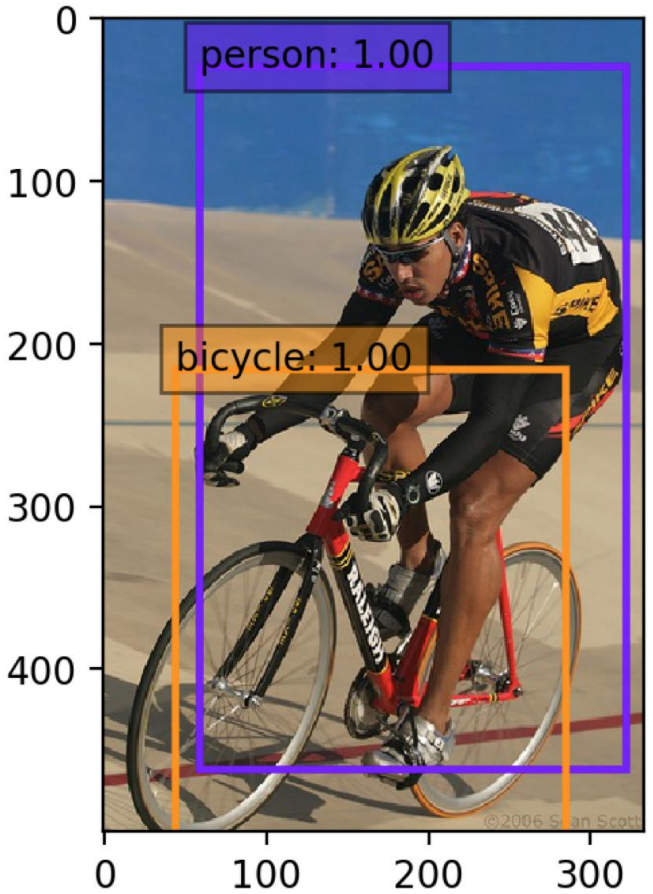
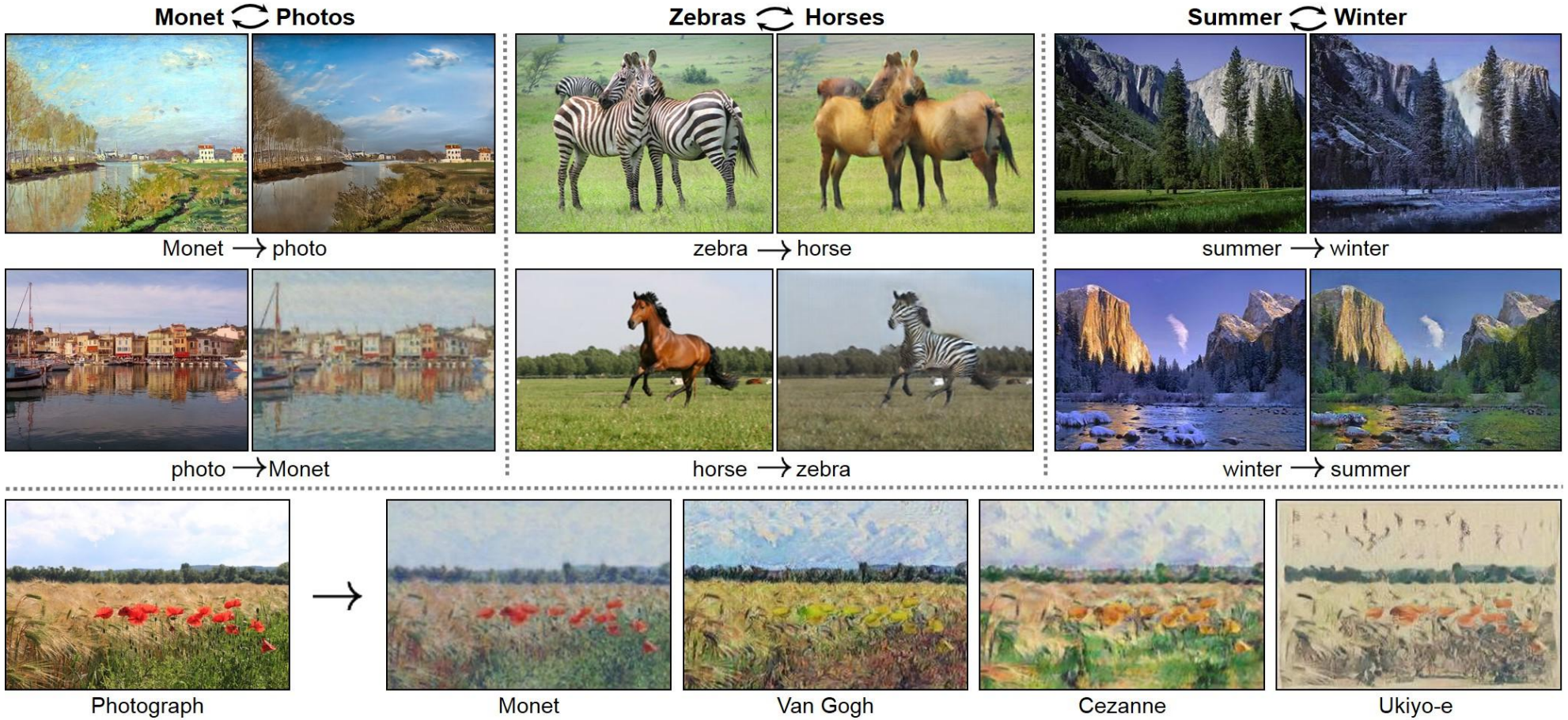
Object Detection





https://github.com/amdegroot/ssd.pytorch

CycleGAN



https://github.com/junyanz/pytorch-CycleGAN-and-pix2pix

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Image Style Transfer

https://github.com/zhanghang1989/PyTorch-Multi-Style-Transfer

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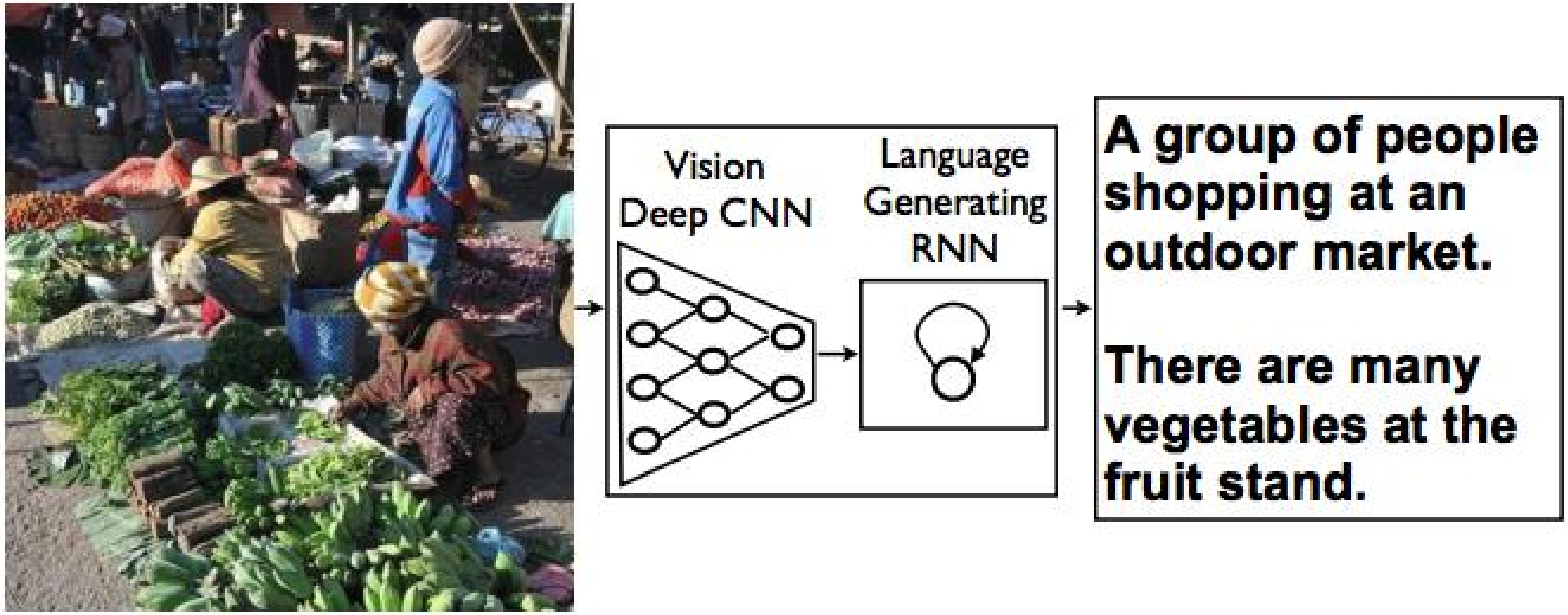
Image Captioning



https://github.com/ruotianluo/ImageCaptioning.pytorch

情感分析

An example negative review...

```
predict_sentiment("This film is terrible")
```

```
0.05760132521390915
```

An example positive review...

```
predict_sentiment("This film is great")
```

```
0.9212645292282104
```

https://github.com/bentrevett/pytorch-sentiment-analysis

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Question Answering

Question: Which British general was killed at Khartoum in 1885?
Answer: Gordon

Context: In February 1885 Gordon returned to the Sudan to evacuate Egyptian forces. Khartoum came under siege the next month and rebels broke into the city, killing Gordon and the other defenders. The British public reacted to his death by acclaiming 'Gordon of Khartoum', a saint. However, historians have suggested that Gordon defied orders and refused to evacuate...

https://github.com/allenai/document-qa

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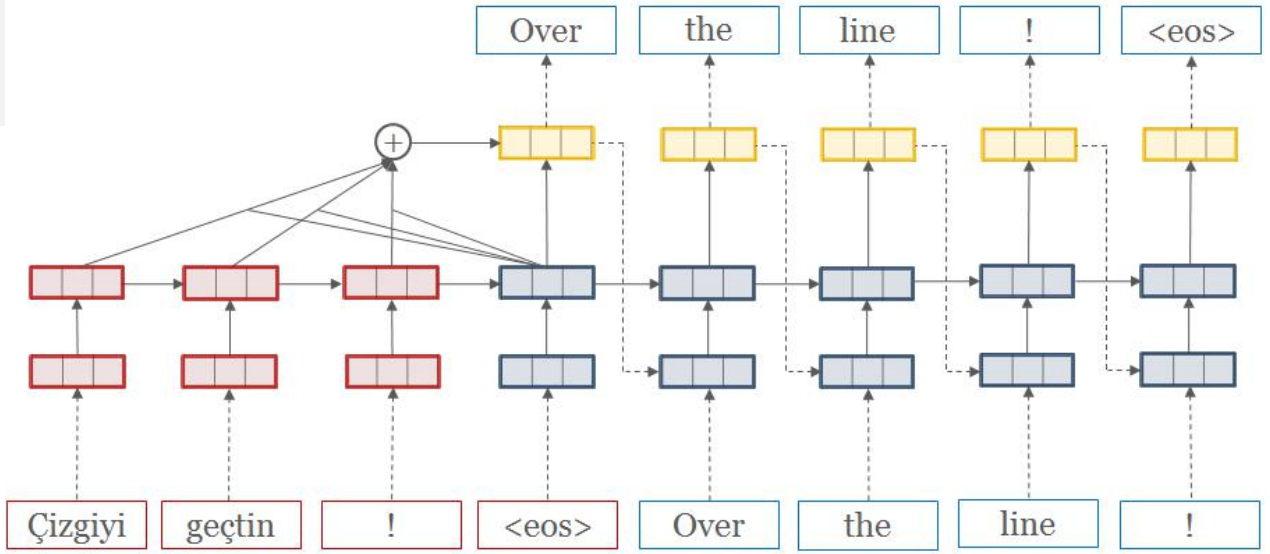
Translation: OpenNMT-py

Verstehen Sie?

Do you understand?



https://github.com/OpenNMT/OpenNMT-py

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ChatBot

```
me: what's your name ?
Bot: my name is sam . score:-0.46
Bot: my name is mona white . score:-0.53
Bot: my name is james . score:-0.57
Bot: my name is zhuang lingy . how are you , miss kelly ? score:-0.57
Bot: my name is zhuang lingy . how are you ? score:-0.61

me: how old are you ?
Bot: i am twenty-five years old . score:-0.85
Bot: i am not sure . what about you ? score:-0.89
Bot: i am going to have a picnic with my friends . score:-0.96
Bot: i am going to buy a birthday party for you . score:-0.97
Bot: 5 years old . score:-0.98
```

https://github.com/czs0x55aa/pytorch-chatbot

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Deep Reinforcement Learning

https://github.com/jingweiz/pytorch-rl

https://pytorch.org/tutorials/intermediate/reinforcement_q_learning.html

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如何成为PyTorch大神?

- 学好深度学习的基础知识
- 学习PyTorch官方tutorial
- 学习GitHub以及各种博客上的教程(别人创建好的list)
- 阅读documentation，使用论坛https://discuss.pytorch.org/
- 跑通以及学习开源PyTorch项目
- 阅读深度学习模型paper，学习别人的模型实现
- 通过阅读paper，自己实现模型
- 自己创造模型(也可以写paper)

- 报名七月在线PyTorch课程 https://www.julyedu.com/course/getDetail/140/

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