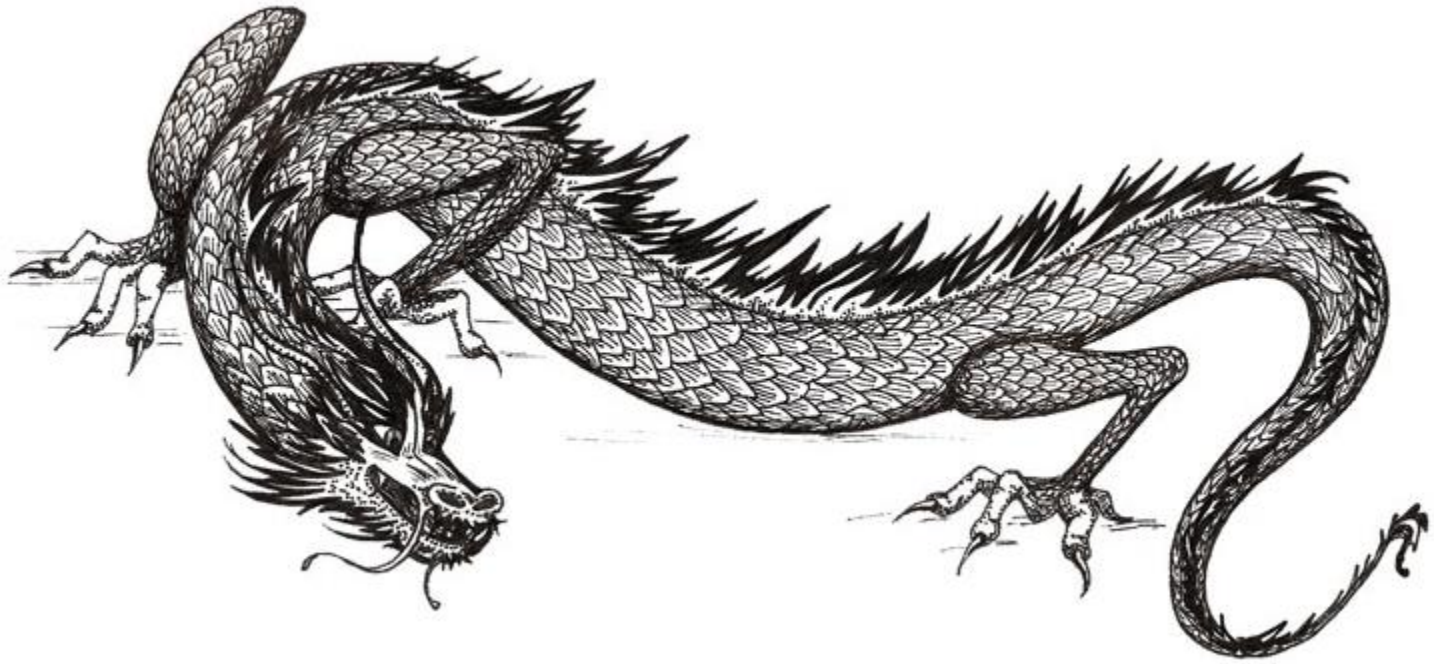


深度学习框架

主讲：龙良曲

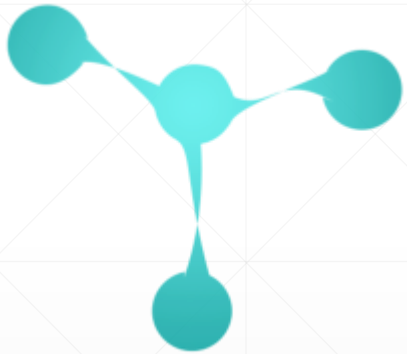

PyTorch

Outline

- PyTorch的发展
- PyTorch与同类框架
- PyTorch功能演示

Torch

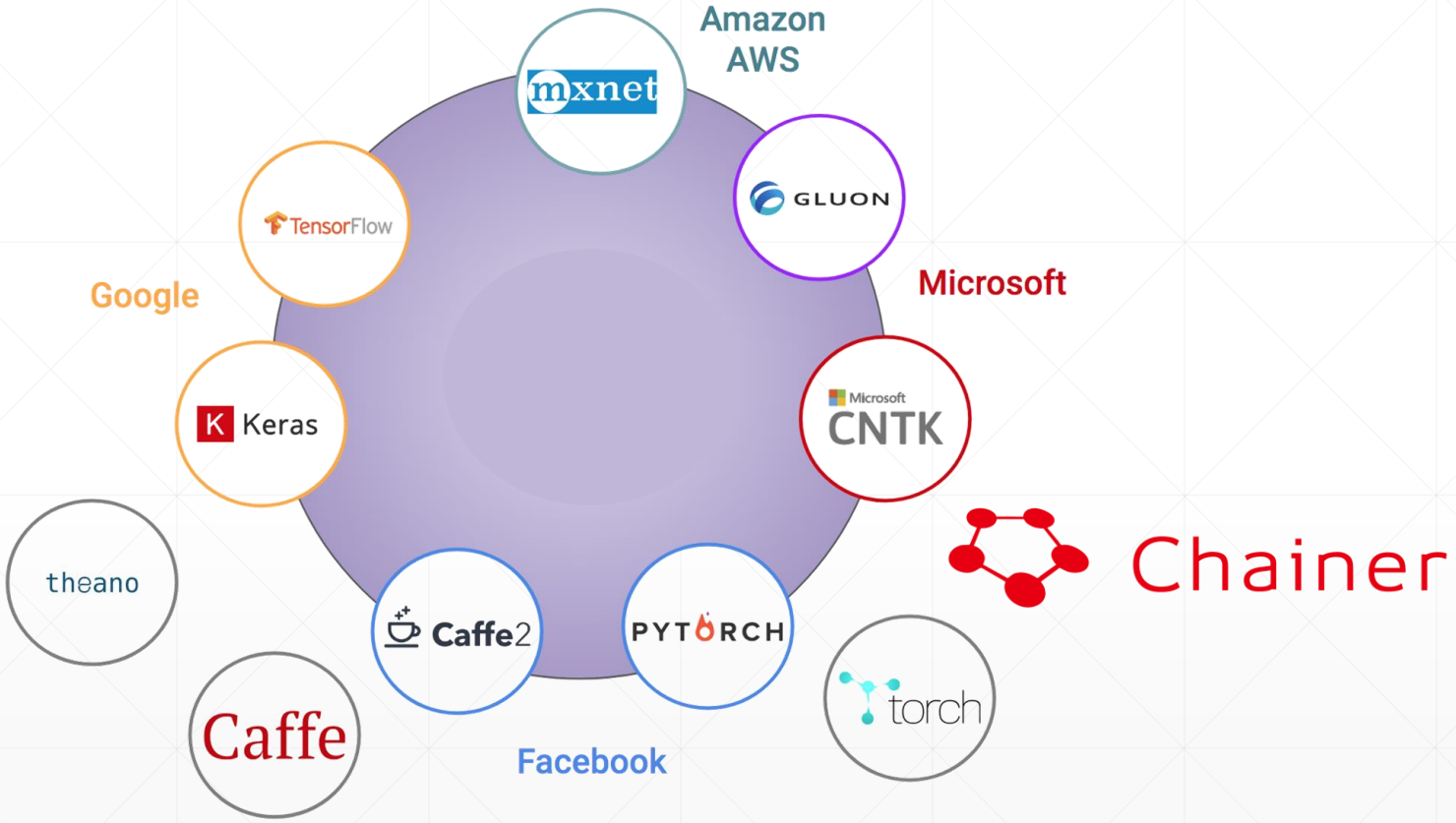
- 2002年 Torch
- 2011年 Torch7
- Lua



PyTorch

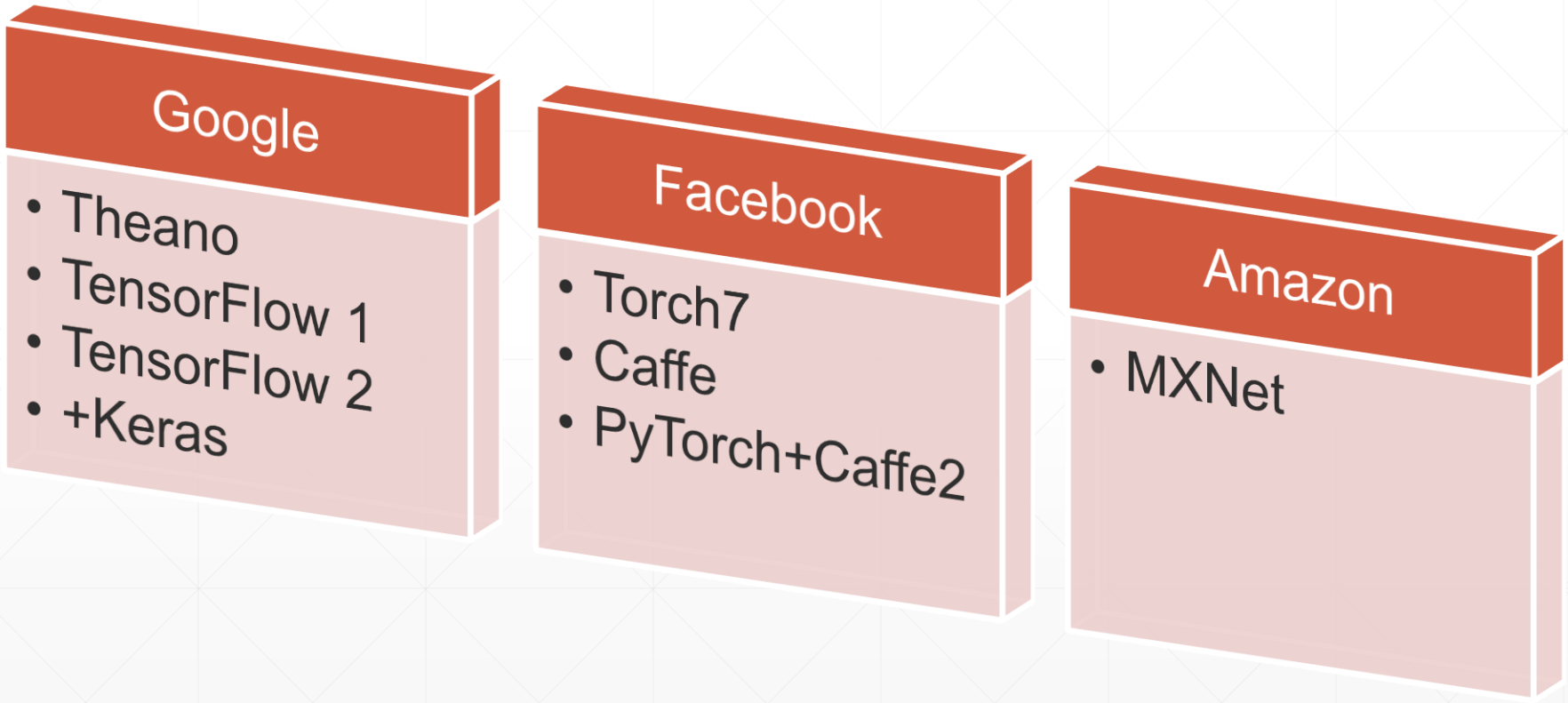
- 2016.10 发布0.1，THNN后端
- 2018.12 发布1.0 ， CAFFE2后端
- 2019.5 发布1.1
- Facebook AI Research

同类框架

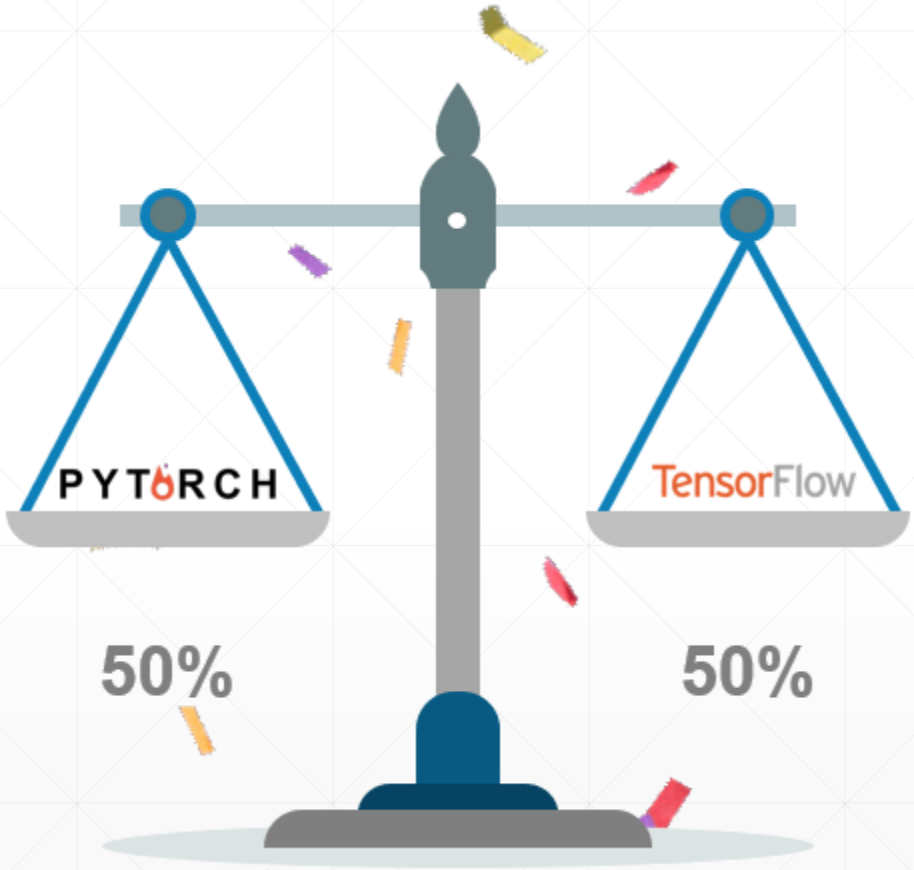


https://towardsdatascience.com/battle-of-the-deep-learning-frameworks-part-i-cff0e3841750

大浪淘沙


Google
• Theano
• TensorFlow 1
• TensorFlow 2
• +Keras
Facebook
• Torch7
• Caffe
• PyTorch+Caffe2
Amazon
• MXNet

王者之争



https://www.edureka.co/blog/pytorch-vs-tensorflow/

动态图

A graph is created on the fly

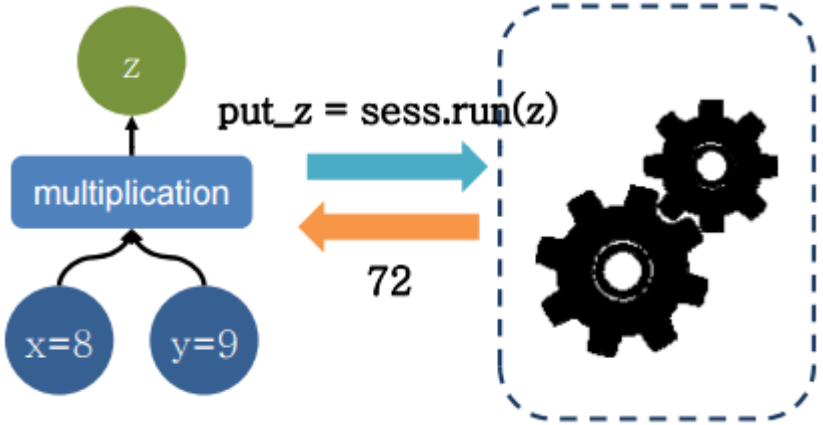

```
W_h = torch.randn(20, 20, requires_grad=True)
W_x = torch.randn(20, 10, requires_grad=True)
x = torch.randn(1, 10)
prev_h = torch.randn(1, 20)
```

https://towardsdatascience.com/battle-of-the-deep-learning-frameworks-part-i-cff0e3841750

静态图

```
x_ph = tf.placeholder(tf.int32, name='x')
y_ph = tf.placeholder(tf.int32,name='y')
z_ph = tf.multiply(a_ph, b_ph, name="x*y")

with tf.Session() as sess:
    z_val = sess.run(z_ph, feed_dict={x_ph: [8], y_ph:
[9]})print(z_val)
```



综合评价

	PyTorch	TensorFlow 1	TensorFlow 2
性能	★★★★	★★★★	★★★★
生态	★★★★	★★★★★	★★
工业界	★★★	★★★★★	★★
学术界	★★★★★	★★★	★★
上手难度	★★★★★	★★	★★★★
易用性	★★★★★	★	★★★★
兼容性	★★★★	★	★
发展前景	★★★★	0	★★★★

小结

PyTorch

VS

TensorFlow

PyTorch生态


PyTorch NLP
PyTorch geometric
AllenNLP
Fast.ai
TorchVision
ONNX

PyTorch能做什么?

- GPU加速
- 自动求导
- 常用网络层

1. GPU加速

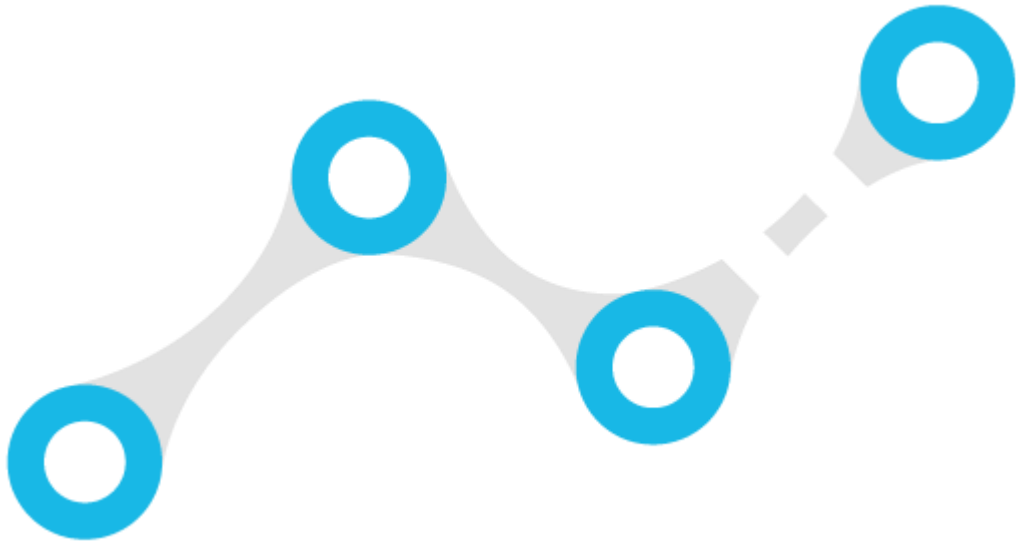
2. 自动求导

3. 常用网络层

- nn.Linear
- nn.Conv2d
- nn.LSTM

- nn.ReLU
- nn.Sigmoid

- nn.Softmax
- nn.CrossEntropyLoss
- nn.MSE



下一课时

开发环境安装

Thank You.