IMAGE PROCESSING FRAMEWORK SURVEY

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Deep Learning Framework Power Scores 2018

- TensorFlow: 96.77
- Keras: 51.55
- PyTorch: 22.72
- Caffe: 17.15
- Theano: 12.02
- MXNET: 8.37
- CNTK: 4.89
- DeepLearning4J: 3.65
- Caffe2: 2.71
- Chainer: 1.18
- FastAI: 1.06

https://towardsdatascience.com/deep-learning-framework-power-scores-2018-23607ddf297a
**TENSORFLOW**

- It is an open source framework backed by Google and based on Theano.
- It was published on Nov. 9, 2015 on Apache 2.0.
- It is the most popular framework with developers, which is searched on google most and has more codes on GitHub than any other NN frameworks / libraries.
- It is production facing with good scalability in addition to research purposes.
- It allows customization and tracking/controlling on node level.
- It provides high level operations such as multithreading and queues.
- It embraces static computational graph philosophy, which requires definition of entire graph first.
- It is good for pattern recognition for images, videos, sound, voice, text, and time sequential data.
• It is a high level API based on TensorFlow.
• It is easier to pick up and learn and only takes simple elegant codes to build generic NN models, hence it is very user friendly.
• It can not do high level operations like multithreading or queues.
• It has no control over nodes or weights associated, hence less flexibilities vs TensorFlow.
PYTORCH

• It is an open source framework based on Torch and backed by Facebook.
• It was made public in Oct. 2016.
• It practices dynamic graph philosophy where computation graph can be defined/updated on the go, hence more flexibilities to handle variable length inputs.
• It has more modularity thanks to python.
• It is good for NLP applications.
CAFFE

- It was made public in April, 2017 and backed by Facebook.
- It is relatively lightweight and easy to use.
- It will need to define each layer.
- It is very good for image but bad at sequence applications.
- It is popular with mobile phone and other computationally constrained platforms.
- It is not as good as TensorFlow in terms of speed, memory use, portability, and scalability.
THEANO

- It was published in 2007 as open source project by University of Montreal.
- It pioneered in the machine learning and used to be popular in academic community.
- Its current popularity is in decline.