Deep Learning

Lecture 2: PyTorch Programming

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First and foremost ...

Apologies I am not there in person

- Life (and death) is unexpected!
- I should be back next week.

Lecture Overview

1 Implementing Deep Learning

- Deep learning frameworks
- Why PyTorch?

2 PyTorch Programming

- Tensors
- Datasets
- Backpropagation
- Classification

Deep Learning Frameworks

- PyTorch
- TensorFlow
- Caffe
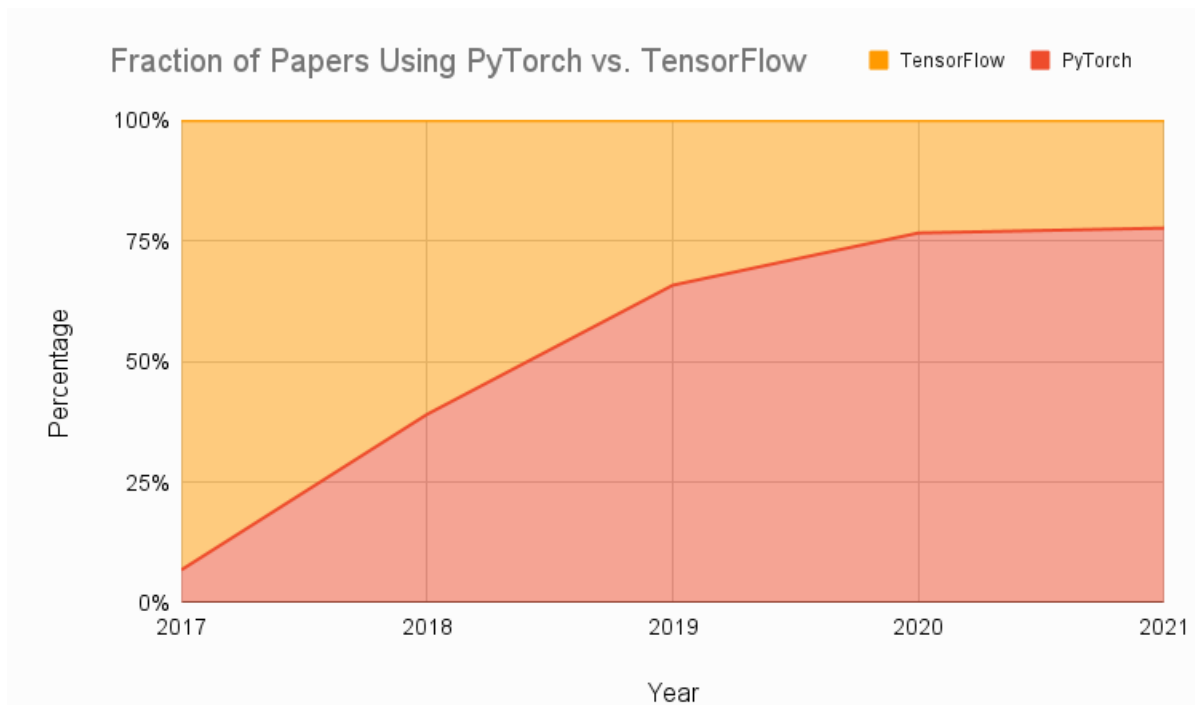- MXNet
- ONNX
- Theano
- DL4J
- Keras
- JAX and …

Why PyTorch?

- Dynamic computational graph
- Memory efficient
- "Pythonic"
- More suitable for research
- Model availability
  - Research papers
  - https://paperswithcode.com/
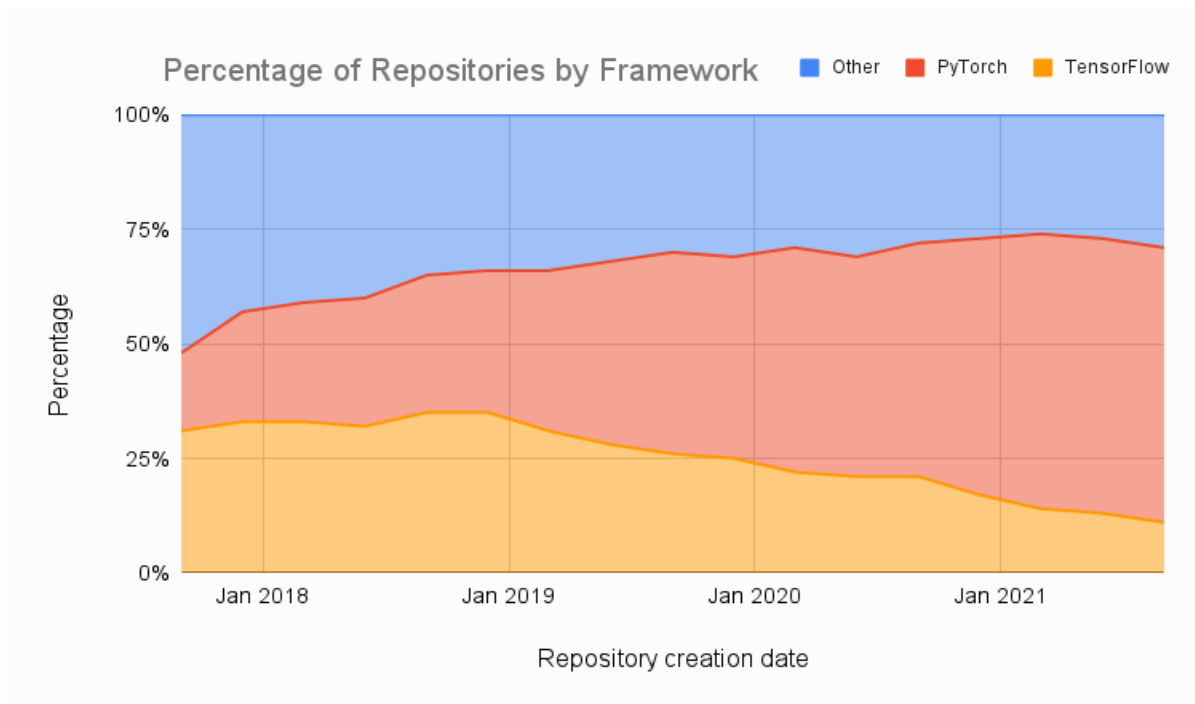 - Large NLP Models

Research Publications

Fraction of Papers Using PyTorch vs. TensorFlow

Papers with Code - paperswithcode.com

Percentage of Repositories by Framework

Large Models - huggingface.co

Number of Models on HuggingFace
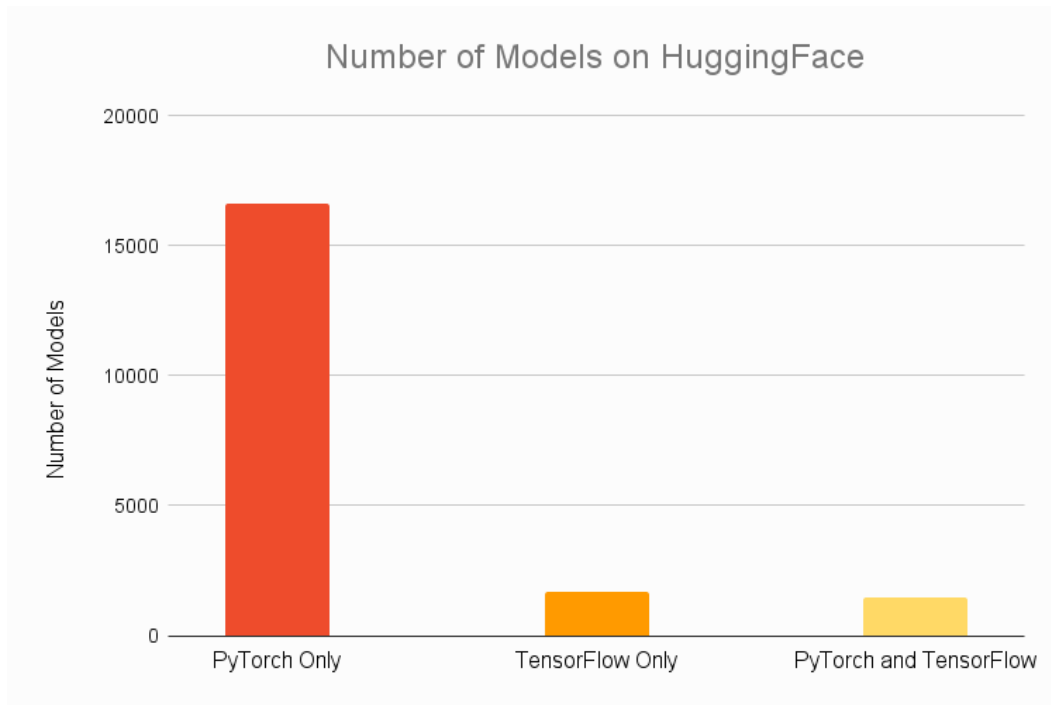
Let's Look at Code!

0. Environment Setup
Video: https://youtu.be/k-VpBk81k-U
Code: https://bit.ly/3cl7oVZ

1. Tensors
Video: https://youtu.be/enShn2dhlPo
Code: https://bit.ly/3dTvtUi

2. Datasets
Video: https://youtu.be/UIk0MgOsa6c
Code: https://bit.ly/3pDnHR4
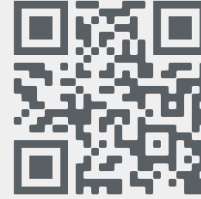
3. Backpropagation
Video: https://youtu.be/mLc78Vcqv-g
Code: https://bit.ly/3AKznYu

4. Classification
Video:
https://youtu.be/Yvvm3w3jLfg
Code:
https://bit.ly/3PNp7mL

What we learned today!

1 Tools to implement Deep Learning projects

- Deep learning frameworks
- Why PyTorch?

2 PyTorch Programming

- Tensors
- Datasets
- Backpropagation
- Classification