

# Deep Learning

## Lecture 2: PyTorch Programming

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## 1 Implementing Deep Learning

- Deep learning frameworks
- Why PyTorch?

## 2 PyTorch Programming

- Tensors
- Datasets
- Backpropagation
- Classification

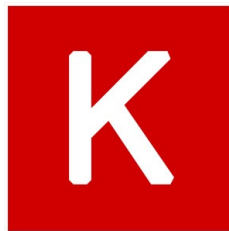
# Deep Learning Frameworks



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



Caffe



mxnet

theano



DL4J



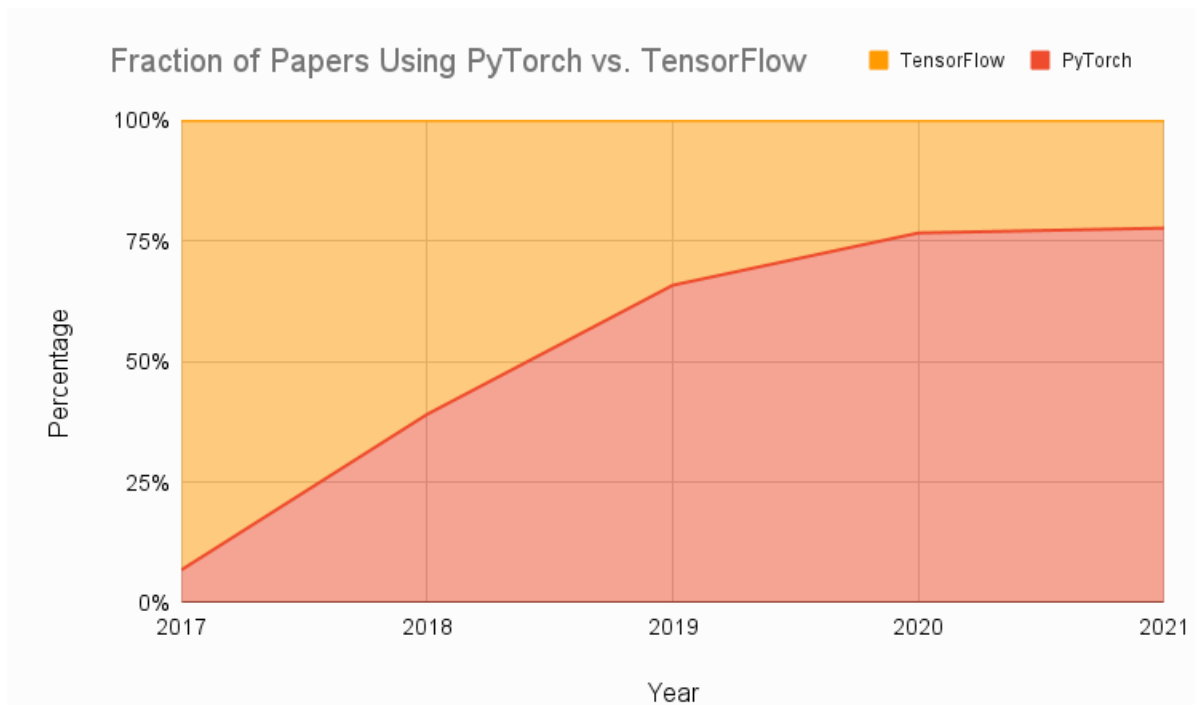
# Why PyTorch?



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

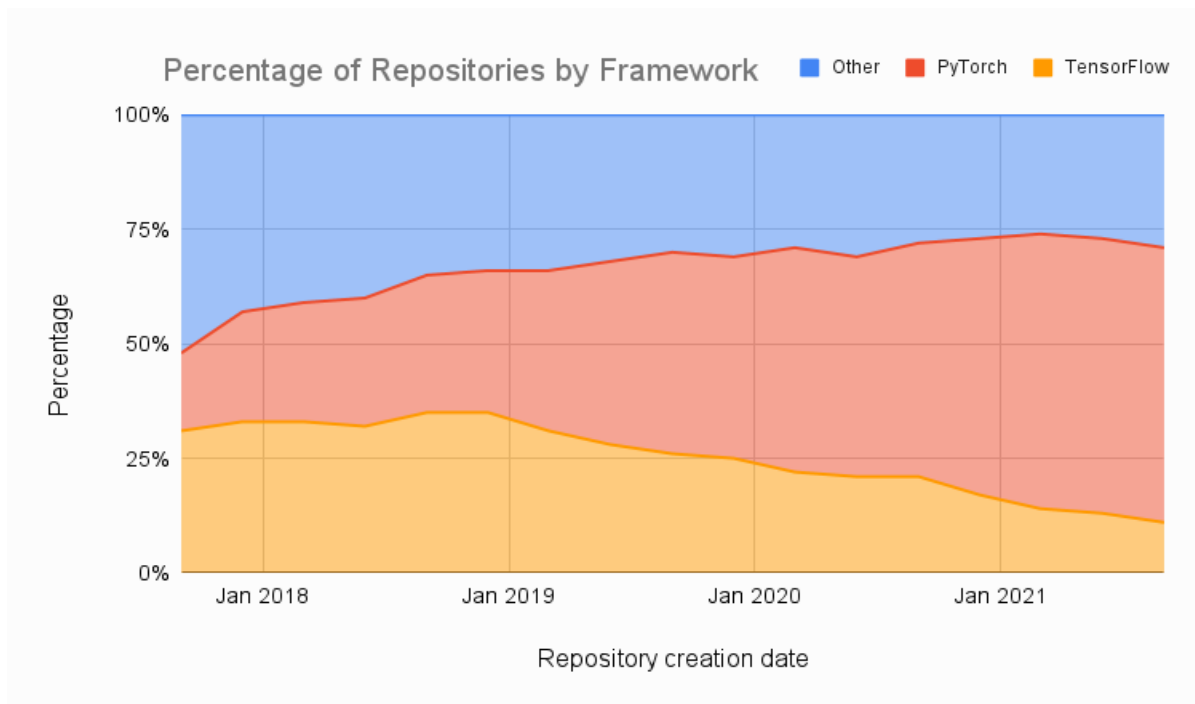


## Research Publications



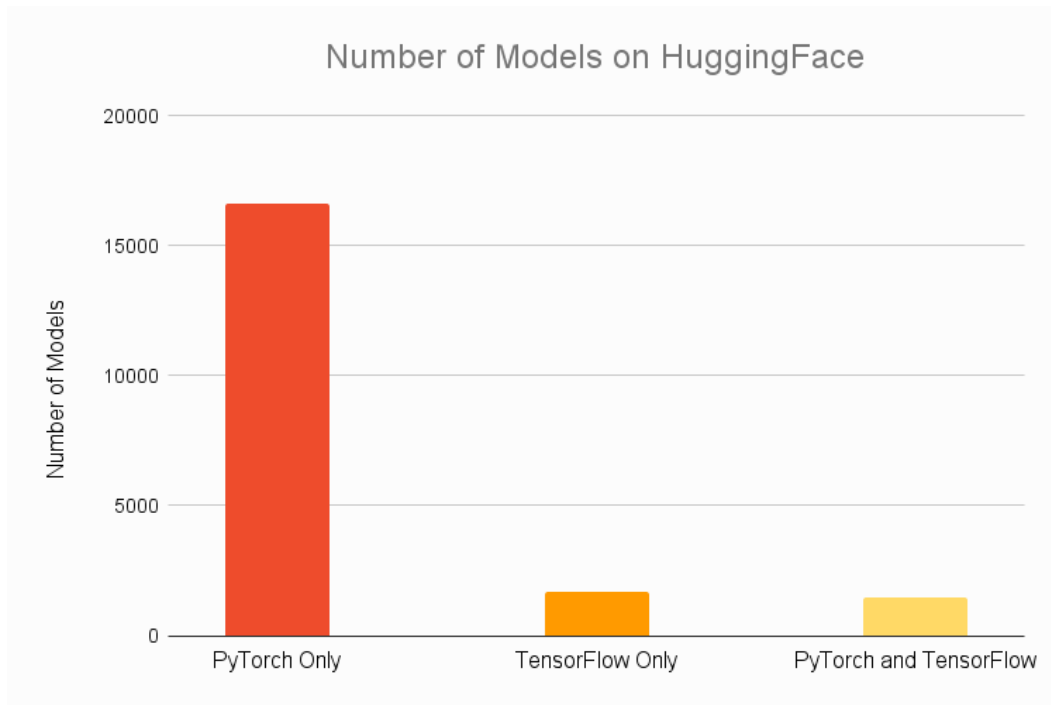


## Papers with Code - [paperswithcode.com](https://paperswithcode.com)





## Large Models - [huggingface.co](https://huggingface.co)



# 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/Ulk0MgOsa6c>

Code: <https://bit.ly/3pDnHR4>



## 3. Backpropagation

Video: <https://youtu.be/mLc78Vcqy-g>

Code: <https://bit.ly/3AKznYu>



## 4. Classification

Video:

<https://youtu.be/Yvwm3w3jLfg>

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