Getting started with PyTorch

Mo Patel @mopatel

O'REILLY®
Artificial Intelligence

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Slack Channel for Tutorial:
https://pytorchtutorial.slack.com
Invite Link: http://j.mp/pytorchtutorialslacksj

Tutorial Github Repo.:
http://j.mp/aiconfsj19pytorch

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Introductions & Networking

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Agenda

- PyTorch Overview
- PyTorch Basics
- Linear Modeling
- Working with Data
- Break
- Image Classification
- Transfer Learning
- Text Classification
- Models in Production
- Discussion: Q & A

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PyTorch Overview

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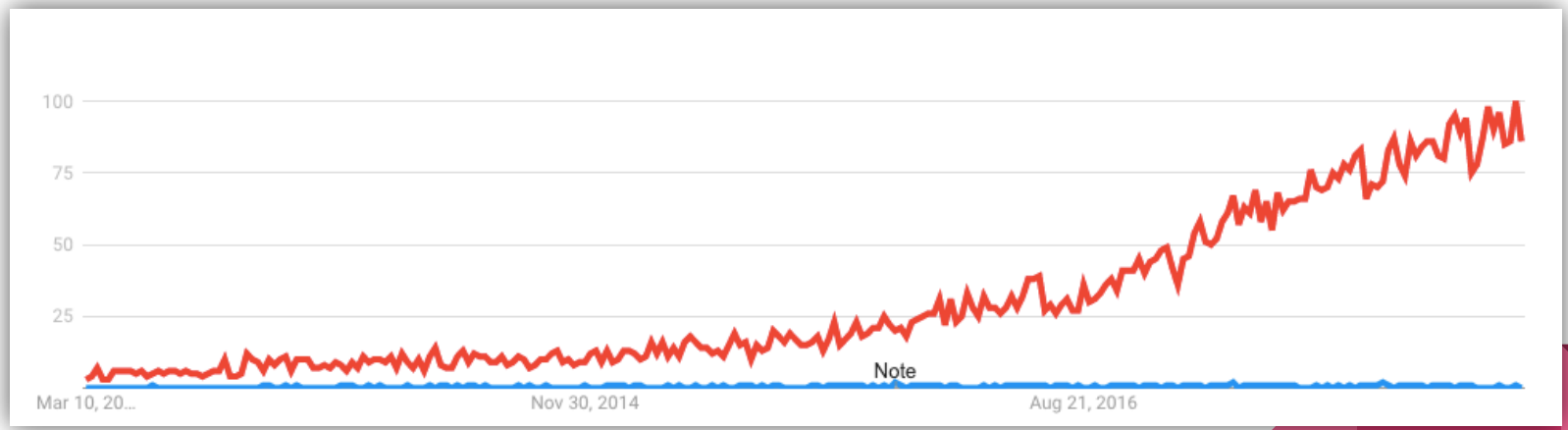
PyTorch Origins

- Torch – Lua
- Chainer
- HIPS Autograd

- Need for Dynamic execution library
- Popularity of Python in Machine Learning Community



Google Trends Last Five Years
Terms: Lua Machine Learning Python Machine Learning

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Tell me more about you:

http://etc.ch/NYJD

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Interactive Learning

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Google Colab Environment

- Log in to your Google Account
- Go to: https://colab.research.google.com
- Go to File -> Open Notebook
- Go to GitHub tab and search for datadynamo
- From the dropdown select aiconf_sj_2019_pytorch
- Open the 01-Basics.ipynb notebook

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Break

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Transfer Learning

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Why Transfer Learning?

Deep Learning Challenges

- Not enough data
- Not enough labeled data
- Not enough hardware
- Training time too long

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Transfer Learning

Domain to Domain Learning

- Learn Features, Weights, Biases in one domain
- Find domain with similar data characteristics and distribution
- Apply model in new domain

Retraining

- Freeze layers in a "good" model up to tunable depth of feature extraction but before final prediction layer
- Remove final layer(s)
- Relearn final and classification layers using your own data

Bonus: Combine Domain to Domain and Retraining

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Deploying PyTorch Models

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Deploying PyTorch Models: ONNX

- ONNX: Open Neural Network eXchange
  - Framework fragmentation: Project goal to allow researchers and developers to port models from one framework to another allowing interoperability
  - Currently supports some of Caffe2, PyTorch, Microsoft Cognitive Toolkit, Apache MXNet
- Currently PyTorch only supports model export not import
- Resources:
  - ONNX: https://onnx.ai/ & https://github.com/onnx/tutorials
  - PyTorch: http://pytorch.org/docs/master/onnx.html

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Getting started with PyTorch

Discussion

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