List of topics

* Deep learning frameworks
* Pytorch
* Data operations
* Create/run a model
* Train a model
* Common issues

Detailed list

Assumed previously seen : python, numpy (+ basis of pytorch for data operations ?)

Pytorch 4

**Deep learning frameworks** (~10 minutes)

-What they do : automatized backpropagation, data operations that are compatible with it and optimized for minibatch-level computations, CPU+GPU support, pre-implemented layers and solvers, more generally framework that compels you to code in a certain way.

-Brief description of some of them (Tensorflow, Pytorch, Keras, Dynet, ...) with advantages and drawbacks

-Justify the choice of Pytorch for 11-785 : dynamic, close to usual python syntax compared to Tensorflow, harder and more verbose than Keras but gives more freedom

**Pytorch brief overview** ( ~5 minutes)

-submodules of torch

-ressources : where to look for a question

**Operations in pytorch** (~10 minutes)

-Tensor class, operations (reminder?)

-Tensor/numpy compatibility

-backpropagate operations

-move to GPU

**Create and run a model in pytorch** (~10 minutes)

-perceptron (nn.Linear)

-create a personalized net : Overload Module or use Sequential

-activations

-overview of other layers

-forward pass for a Module

**Train in pytorch** (~10 minutes)

-Losses : use them in pytorch (crossEntropyLoss)

-backward pass for a Module

-Optimizers (only simple gradient descent seen so far, so use that)

-How to use an optimizer

-parameters of a model

**A full code** (~3 minutes)

**Common issues** (~5 minutes)

- Data size error

- Parameter error

- Cuda vs not cuda

- memory error

...

**Next week program**