Fast.ai Lesson 8b

Joseph Catanzarite
For TWiML study group
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Overview

- Normalization & initialization
- Forward pass – compute predictions
- Backward pass – compute gradients
- Construct functions needed for backward pass
  - mse_grad
  - relu_grad
  - lin_grad
  - forward_and_backward
- Refactoring, using classes

Backward pass

- In general, **gradients** measure the sensitivity of a function to changes in its parameters
- The **backward pass** computes the gradients that measure the sensitivity of the **loss function** to the neural network parameters (**weights** and **biases**)
- Gradients tell you how the parameters should be **updated** to make the loss function smaller.
- During **training**, you iterate through **forward** and **backward** passes, each time adjusting the weights and biases a bit, in order to **minimize** the loss function.

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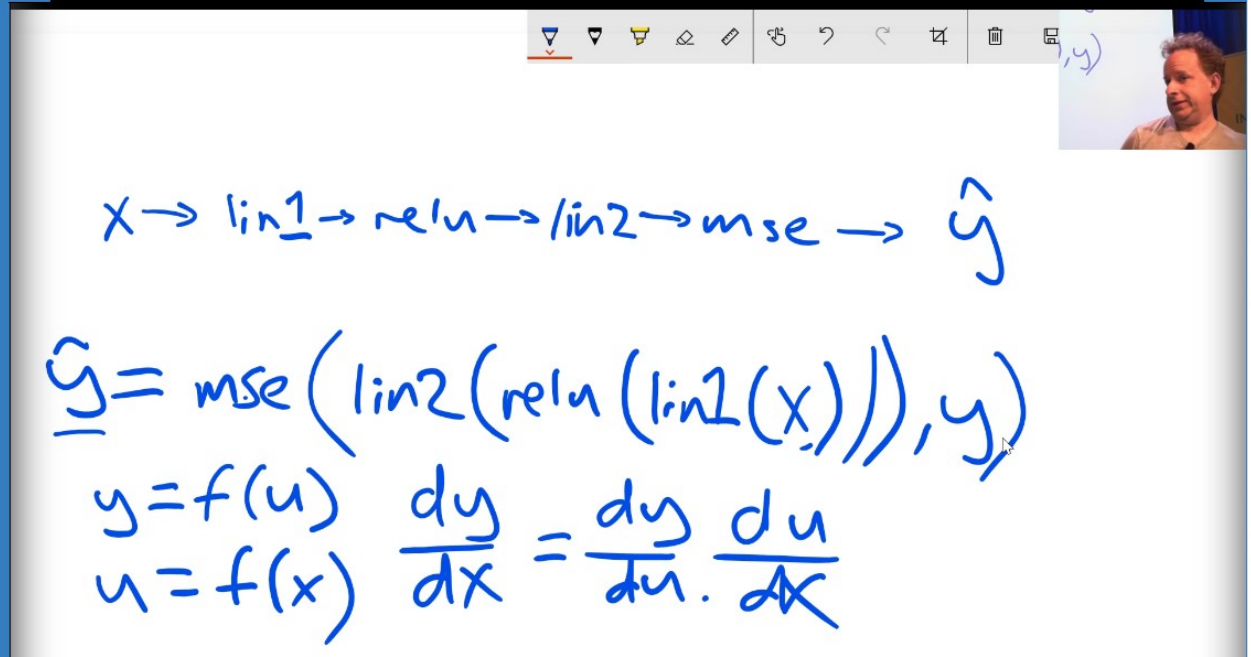
Lesson 8 (2019) - Deep Learning from the Foundations

Watch later Shar



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Lesson 8: Matrix multiplication; forward and backward passes

In this course, we will learn to implement many of the capabilities of Fastai and PyTorch that we could use to build our own deep learning libraries. Along the way, we will learn to implement research papers, which is an important skill to master when making state of the art models.

Lesson resources

- Course notebooks
- Slides
- Excel spreadsheets (today's is called `broadcasting.xlsx`). There's also a Google Sheet version thanks to @Moody

Lesson overview

In today's lesson we'll discuss the purpose of this course, which is, in some ways, the opposite of part 1. This time, we're not learning practical things that we will use right away, but foundations that we can build on. This is particularly important nowadays because this field is moving so fast. We'll also talk about why the last two lessons of this course are about Swift, not Python (Chris Lattner, the original creator of Swift, and now lead of Swift for TensorFlow, will be joining Jeremy to co-teach these lessons).

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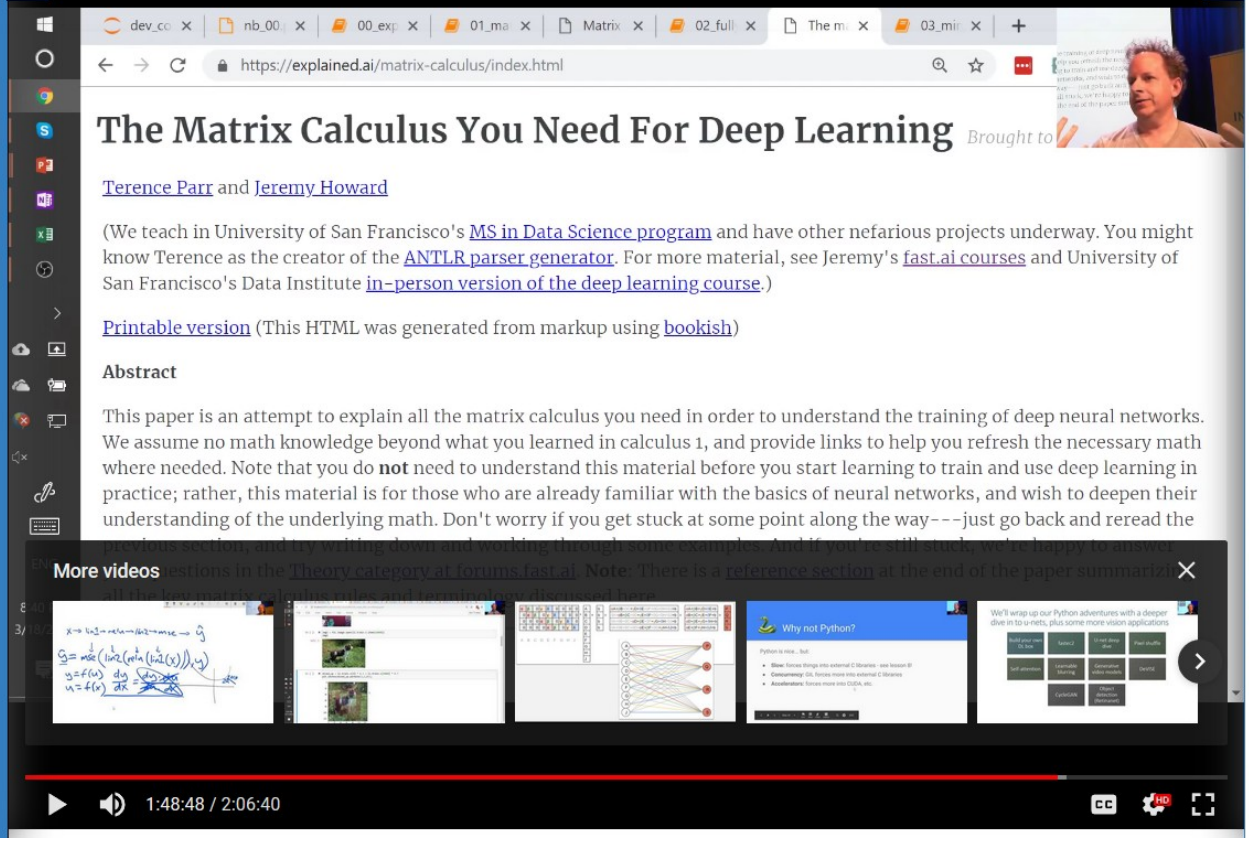

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Next up

- Lesson 9: build resnet