
Deep Learning Orientation

— Fall 2024 —

Welcome!

Organizers, Instructors, and Advisors



Lindsay Warrenburg

Associate Director of Erdős

Office Hours: as needed

Email: lindsay@erdosinstitute.org

Preferred Contact: Slack

Slack is the best way to contact me!



Marcos Ortiz

Lead Deep Learning TA

Office Hours: Fridays, 11:45-12 PM ET

Preferred Contact: Slack

Welcome!

- This is a hybrid instructor- / self-taught course focused on deep learning

Welcome!

- This is a hybrid instructor- / self-taught course focused on deep learning
 - The first few weeks will be more hands on
 - The rest of the course is structured, but largely self-taught
 - Meet regularly with teams to keep you on track

Welcome!

- This is a hybrid instructor- / self-taught course focused on deep learning
- **Required to have completed the data science bootcamp or passed the assessment**

Welcome!

- This is a self-paced course focused on deep learning
- Required to have completed the data science bootcamp or passed the assessment
- To get a certificate, you must complete a project by **December 13, 2024 at 5 PM**

Content

Deep Learning Fundamentals

Content

Deep Learning Fundamentals

- SGD
- Classification
- Regression
- Recommender Systems
- Tabular Modeling
- Computer Vision
- Natural Language Processing
- Productionization

Content

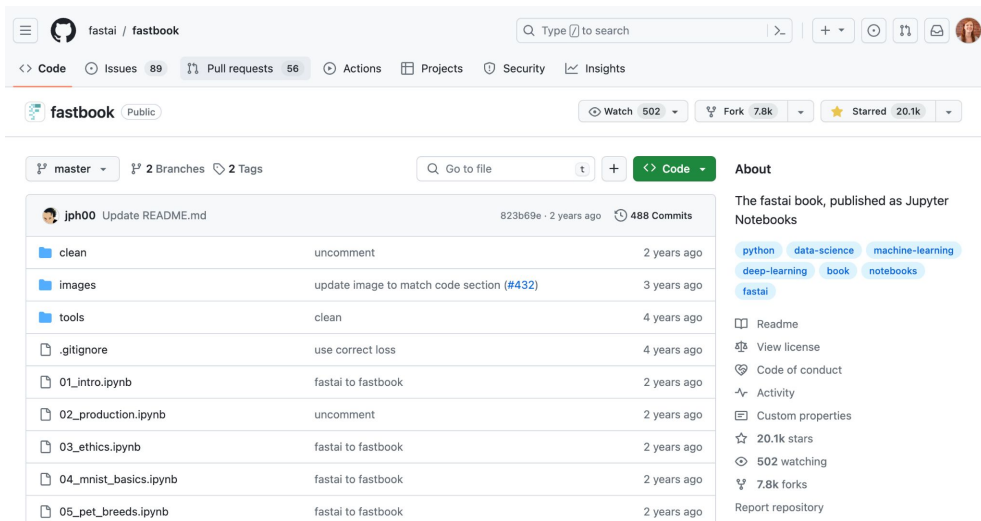
Deep Learning Fundamentals

PyTorch Implementation

Content

Deep Learning Fundamentals

- [fast.ai website](#)
- [fastbook](#)

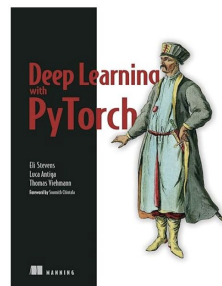


The screenshot shows the GitHub repository page for 'fastai / fastbook'. The repository is public and has 502 watches, 7.8k forks, and 20.1k stars. The commit history shows several updates to the README.md file and various notebooks (ipynb) over the last few years. The repository description states it is published as Jupyter Notebooks and includes tags for python, data-science, machine-learning, deep-learning, book, notebooks, and fastai.

Commit	Message	Author	Time	Commits
jph00	Update README.md	823b69e	2 years ago	488
	clean	uncomment	2 years ago	
	images	update image to match code section (#432)	3 years ago	
	tools	clean	4 years ago	
	.gitignore	use correct loss	4 years ago	
	01_intro.ipynb	fastai to fastbook	2 years ago	
	02_production.ipynb	uncomment	2 years ago	
	03_ethics.ipynb	fastai to fastbook	2 years ago	
	04_mnist_basics.ipynb	fastai to fastbook	2 years ago	
	05_pet_breeds.ipynb	fastai to fastbook	2 years ago	

PyTorch Implementation

- [PyTorch book](#)



Deep Learning with PyTorch: Build, train, and tune neural networks using Python tools

First Edition

by Eli Stevens (Author), Luca Antiga (Author), Thomas Viehmann (Author)

4.4 ★★★★★ 117 ratings

See all formats and editions

4.2 on Goodreads 132 ratings

“We finally have the definitive treatise on PyTorch! It covers the basics and abstractions in great detail. I hope this book becomes your extended reference document.” —Soumith Chintala, co-creator of PyTorch

Key Features

Written by PyTorch's creator and key contributors
Develop deep learning models in a familiar Pythonic way
Use PyTorch to build an image classifier for cancer detection
Diagnose problems with your neural network and improve training with data augmentation

Zoom Touchpoints

- **September 6** Orientation
- **September 13** Week 1 fastai Review
- **September 20** Week 2 fastai Review
- **September 27** Project Pitch Day – including our corporate sponsor
- **October 4** Class Networking Event (Team Formation)

Deadlines

- **October 11** Project Teams and Topic Due Date
- **December 13** Final Project Due



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Structure

Course Page

Deep Learning Boot Camp

Fall 2024

Sep 6, 2024 - Dec 13, 2024

Program Pricing: \$250 for Erdős Institute Alumni Club Members and \$500 for all other academics.

Notes: You must have previously completed the Erdős Institute Data Science Boot Camp in order to register. You do **NOT** need to be a Fall 2024 Launch Cohort member.

Withdraw

You are registered for this program.

Registration Deadlines

Sep 6, 2024 - Erdős members / alumni who have successfully completed a prior Erdős Data Science Boot Camp Project

Category

Advance, Supplemental, Self-Directed, Project-Based, Boot Camp

Overview

Welcome to deep learning! Each week, you'll complete assigned readings from 2 deep learning books. During the first few weeks, there will be weekly meetings with the instructors and all attendees on Zoom. As you progress more into the material and your projects, you will meet according to your group schedule.

In order to receive a deep learning certificate, you must submit a (team-based) final project by ****December 13, 2024****.



Schedule



Syllabus

Deep Learning

Fall 2024 Schedule

Structure

<u>Week</u>	<u>Deep Learning Fundamentals</u>	<u>Learning PyTorch</u>		
Sept. 6 12-1 PM ET	Live Zoom Deep Learning Orientation			
Week 1 Before Sept. 13	What is Deep Learning? fastbook ch. 1	PyTorch Overview & Tensors PyTorch ch. 1-4		
Sept 13 12-1 PM ET	Live Zoom Week 1 Review			
Week 2 Before Sept. 20	Deep Learning Basics fastbook ch. 4	Deep Learning Basics PyTorch ch. 5	Week 9 Before Nov. 8	NLP 1: Text Preprocessing fastbook ch. 10 <i>n/a</i>
Sept. 20 12-1 PM ET	Live Zoom Week 2 Review			
Week 3 Before Sept. 27	<i>n/a</i>	Neural Networks PyTorch ch. 6	Week 10 Before Nov. 15	NLP 2: RNNs fastbook ch. 12 <i>n/a</i>
Sept. 27 12-1 PM ET	Project Pitch Day		Week 11 Before Nov. 22	NLP 3: Transformers details in GitHub <i>n/a</i>
Week 4 Before Oct. 4	Classification & Regression fastbook ch. 5 & 6	<i>n/a</i>	Week 12 Before Dec. 6	Productionization fastbook ch. 2 & 3 Deployment PyTorch ch. 15
Oct. 4 12-1 PM ET	Class Networking Event		Dec. 13 5 PM ET	Final Project Due
Week 5 Before Oct. 11	Recommender Systems & Tabular Modeling fastbook ch. 8 & 9	<i>n/a</i>		
Oct. 11 5PM	Project Teams and Topic Due Date			
Week 6 Before Oct. 18	Computer Vision 1: Image Preprocessing fastbook ch. 7	Computer Vision 1: Images PyTorch ch. 7		
Week 7 Before Oct. 25	Computer Vision 2: CNNs fastbook ch. 13	Computer Vision 2: CNNs PyTorch ch. 8		
Week 8 Before Nov. 1	Computer Vision 3: ResNet fastbook ch. 14	Computer Vision 3: CT scans PyTorch ch. 9		

Structure

- Read through each week's lesson on your own

Structure

- **Read through each week's lesson on your own**
 - The fast.ai and PyTorch book chapters
 - Github study guides

Aside about our GitHub

These notebooks are study guides I made of the fast.ai chapters when I first learned deep learning to help consolidate the material in my brain

The Erdős Institute: Deep Learning

Welcome! This is the repo we will be using for the asynchronous deep learning course.

Please note that **all of the lessons are based on the content in Jeremy Howard and Sylvain Gugger's [fastai course](#) and corresponding [fastai book](#).**

The copyright of the fastai material is:

```
@book{
  howard2020deep,
  title={Deep Learning for Coders with Fastai and Pyto
  author={Howard, J. and Gugger, S.},
  isbn={9781492045526},
  url={https://books.google.no/books?id=xd6LxgECAAJ},
  year={2020},
  publisher={O'Reilly Media, Incorporated}
}
```



The notebooks in this repo contain summaries I created of the fastai content in order to consolidate the material and serve as a good review.

Aside about our GitHub

I uploaded these study guides simply to provide you with another way of looking at the material.

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Aside about our GitHub

You need to fork the original fast.ai data and use this as your main learning source

I suggest you create your own study guides

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ALL of the materials belong to
fast.ai

None of these materials belong to
me or to Erdős

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- **Read through each week's lesson on your own**
- **Meet with your group to have weekly discussions based on the readings**
 - Learn from each other
 - Create your team project for the deep learning certificate

Structure

- **Read through each week's lesson on your own**
- **Meet with your group to have weekly discussions based on the readings**
- **Submit team project at the end of the semester**

Questions?