ő The Erdős Institute

Deep Learning

Summer 2024 Syllabus

Instructor Information

Name: Lindsay Warrenburg, Ph.D.
Preferred Form of Contact: The Erdős Institute Slack

Course Aim

This is a self-paced deep learning course, using the [FastAI book](#) as the foundation. There are no lectures for this course. Instead, you will have weekly discussion groups according to your personal schedule. In order to receive a deep learning certificate, you must submit a (team-based) final project by **August 30, 2024**. To participate in this course, you must have completed the Data Science Boot Camp.

Brief Overview of Content

Every week, you will read chapters from two sources, which will allow you to learn the following content:

- Deep Learning Fundamentals ([FastAI book](#))
    - Deep Learning Basics
    - Classification and Regression
    - Recommender Systems and Tabular Modeling
    - Computer Vision
    - Natural Language Processing (NLP)
    - Transformers
    - Productionization
- PyTorch Implementation ([Deep Learning with PyTorch](#))
    - Tensors and Neural Networks
    - Computer Vision
    - Deployment

Course Information

Prerequisites

To participate in this course, you must have completed the Data Science Boot Camp. The reason for this is that deep learning is an advanced topic and requires basic data science knowledge. Similarly, understanding Python and GitHub is essential for deep learning mastery.

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Our GitHub Repository

The GitHub repo contains summary code for each of the FastAI book chapters in our syllabus. These notebooks can be used as study guides and will allow you to easily find reproducible FastAI code. You can find the link to this repository under the "Program Content" section of the course website.

In order to gain access to this repository you need to:
1. Add your GitHub profile information to your Erdős Institute profile and
2. Then be granted repository access by our community manager

Please note that all of the summary code in our GitHub is based on the content in Jeremy Howard and Sylvain Gugger's [FastAI](#) book. The copyright of the FastAI material is:

```
@book{
howard2020deep,
title={Deep Learning for Coders with Fastai and Pytorch: AI Applications Without a PhD},
author={Howard, J. and Gugger, S.},
isbn={9781492045526},
url={https://books.google.no/books?id=xd6LxgEACAAJ},
year={2020},
publisher={O'Reilly Media, Incorporated}
}
```

Course Format

This course is asynchronous and there are no video lectures.

Readings

There is a schedule on our course website with required readings for each week. Each week, you will:
1. Read through the corresponding [FastAI](#) and [Deep Learning with PyTorch](#) chapters on your own.
2. [Form your own group](#) to have weekly discussions based on the assigned readings. These meetings will be used to ask each other questions and to spark discussion about applications of deep learning in data science careers.

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Group Projects

In order to receive an Erdős Deep Learning certificate, you must complete a group project by the end of the program. Projects culminate in a five-minute pre-recorded project presentation video, annotated GitHub, and executive summary of your project.

We will provide you with additional details regarding projects closer to the project deadline.

Final Note

We look forward to having you participate in the Deep Learning course! If you have any questions or concerns, do not hesitate to contact us on Slack. We do our best to answer promptly.