The Erdős Institute

2024 Spring Data Science Boot Camp

Introduction

Welcome!

- Welcome to the Spring 2024 Data Science Boot Camp!
- In this boot camp we will:
  - Learn some python
  - Learn some data science
  - Complete a data science project

Top two resources

- Boot Camp Website, https://www.erdosinstitute.org/programs/spring-2024/data-science-boot-camp/
- Erdős Institute Slack
  - spring-2024-cohort is a private channel.
    - You should already be a member!
  - spring-2024-data-science is a public channel you should join.

Lecturer

- Steven Gubkin, PhD
  - Head of Training and Assessment at Erdős since 01/01/24
  - First time lecturing this bootcamp!
- Graduated from OSU Math in 2016
- Taught math at Cleveland State from 2016 - 2023

Group Project Coordinator

- Alec Clott, PhD
  - Head of Data Science Projects
  - Sr. Principal, Quantitative Analytics and Data Science at Gartner
- Graduated from OSU Political Science in 2021

Alumni Advisor

- Matthew Osborne, PhD
  - Boot Camp Lecturer from 2020 to 2023
  - Senior Operational Analyst at NetJets
- Graduated from OSU Math in 2020

Your contact for access

- Amalya Lehmann, PhD
  - PhD in Music History, Literature, and Theory from UC Berkeley
- Your top contact for:
  - Slack channel access
  - GitHub repository access

The Erdős Institute Projects

Spring 2024

Goals

- An opportunity to work with real-world data and produce findings in a short time-span
- Focus on substantive areas (environment, health, health, finance, etc.) using techniques from the bootcamp.
    - Note that the focus should be on using what we learn.
    - Okay to use more advanced methods. Just make sure to compare their performance to the best model you could make using methods covered in the bootcamp.
- Building your portfolio is crucial in the data science market, provides a framework for job interviews

Projects

- Portfolio-worthy data science project/product
- Includes:
  - 5-minute overview video and presentation
  - Annotated GitHub
  - Executive Summary
- Reviewed by project judges
- Top 5 projects will present to all participants in our closing ceremony for the Spring 2024 Bootcamp

Team Formation

Background of Bootcamp attendees

- Hundreds of students from all over the world
- Some of you may know other attendees, others of you won’t
- Many different backgrounds (subject areas, experience with coding)*
- Various types of data science career goals
- Various goals for the bootcamp
- Various goals for the projects

*And that is totally fine and expected!

Read these documents

https://www.erdosinstitute.org/programs/spring-2024/data-science-boot-camp/

(Project Information at Bottom)

Project Expectations

Overall Structure

- **Team size:** 3-4 people
  - Can choose group or…
  - Can be matched with others based on your job goals or data science interests
- **Goals:** “portfolio” project
  - Can be used in job interviews (when the time comes)
  - Results have business value
  - Communicate to lay-people **and** team of data scientists
- **Structure**
  - Group meetings -- each group decides how much time they want to spend
  - Weekly office hour w/ Alec (open to all)
    - Weekly 12:00 - 12:30 ET and by appointment
  - Check-in with project mentor on a regular basis (15-30 min)

Project Requirements

- **Instructions at the bottom of the Spring 2024 Data Science Bootcamp Page**

- **In order to get an Erdős certificate, you must complete a data science project start to finish**
  - Project must be coded in Python
  - Have an annotated GitHub repository
  - Executive summary of your project results and implications
  - ***For presentation day:***
    - **5-min** pre-recorded PowerPoint presentation detailing project process from start to finish
    - Judges will vote on winners!
    - More info will be given closer to project day

Your To-Do List

First Important Dates:

Schedule

Click on any date for more details

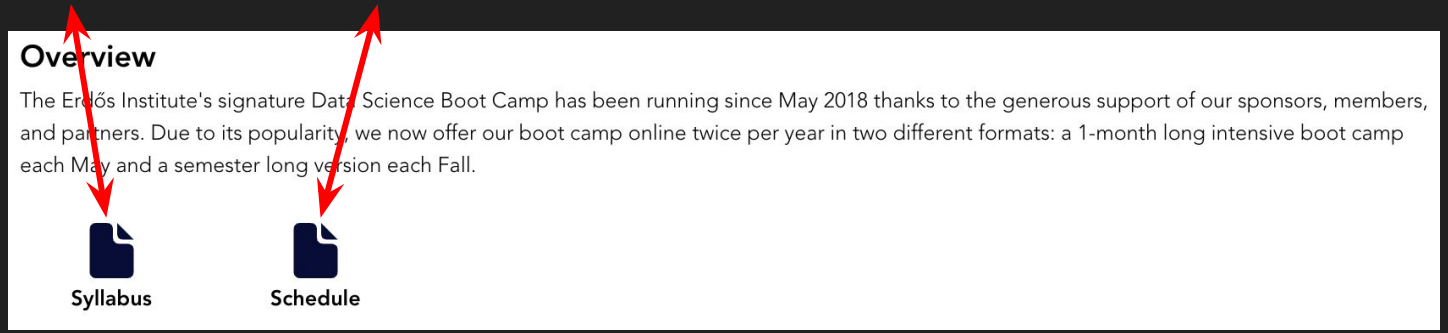
Lecture 1: Introduction February 5, 2024 at 3:00:00 PM EVENT	**Math Hour (at 10) / Office Hour (at 11)** February 6, 2024 at 10:00:00 AM EVENT	**Problem Solving Session 1** February 8, 2024 at 3:00:00 PM EVENT
Lecture 2: Data Collection February 12, 2024 at 3:00:00 PM EVENT	**Math Hour (at 10) / Office Hour (at 11)** February 13, 2024 at 10:00:00 AM EVENT	**Problem Solving Session 2** February 15, 2024 at 3:00:00 PM EVENT

Feb 19, 2024 11:59 PM	**Watch 3 Previous Top Projects** Consult the project database, and watch at least 3 previous top projects from Erdos Alumni.
Feb 29, 2024 11:59 PM	**Watch video about Project Formation** This should help answer any Q's you may have going into project formation
Mar 1, 2024 4:30 PM	**Project Pitch Hour** Opportunity to meet with other Erdos Fellows and form teams and propose topics.
Mar 8, 2024 11:59 PM	**Submit Team Proposal or Idea to Project Formation Page** If you want to propose a project, or have an idea for a project, submit it by this date.

Note: You can find these dates at the bottom of the course website

Boot Camp Format: Non-Project Portion

- 12 Live Lectures
- 12 Math Hours
- 12 Problem Solving Sessions
- All Zoom links can be found in your Erdős profile or on the course website
- Syllabus and Schedule can be found on the course website



Lectures

- Live lectures 3:00 - 4:30 PM ET every Monday until 04/22/2024
  - Will be recorded and uploaded to the website
- Every lecture jupyter notebook already has a pre-recorded lectures on the website.
  - I will be updating these with newer versions the week before each lecture.

Problem Sessions

- One hour to work on problem sets in small groups
- Every Thursday 3:00 PM - 4:00 PM ET
  - Will not be recorded
- TAs will rotate between groups to assist and observe
- Each problem session also has a “prep notebook” with prerequisite practice.
- First one 02/08/2024 will make sure you are set up:
  - Github access, pulling the repo
  - Ability to run notebooks
  - Review of basic python

Math Hour and Office Hour

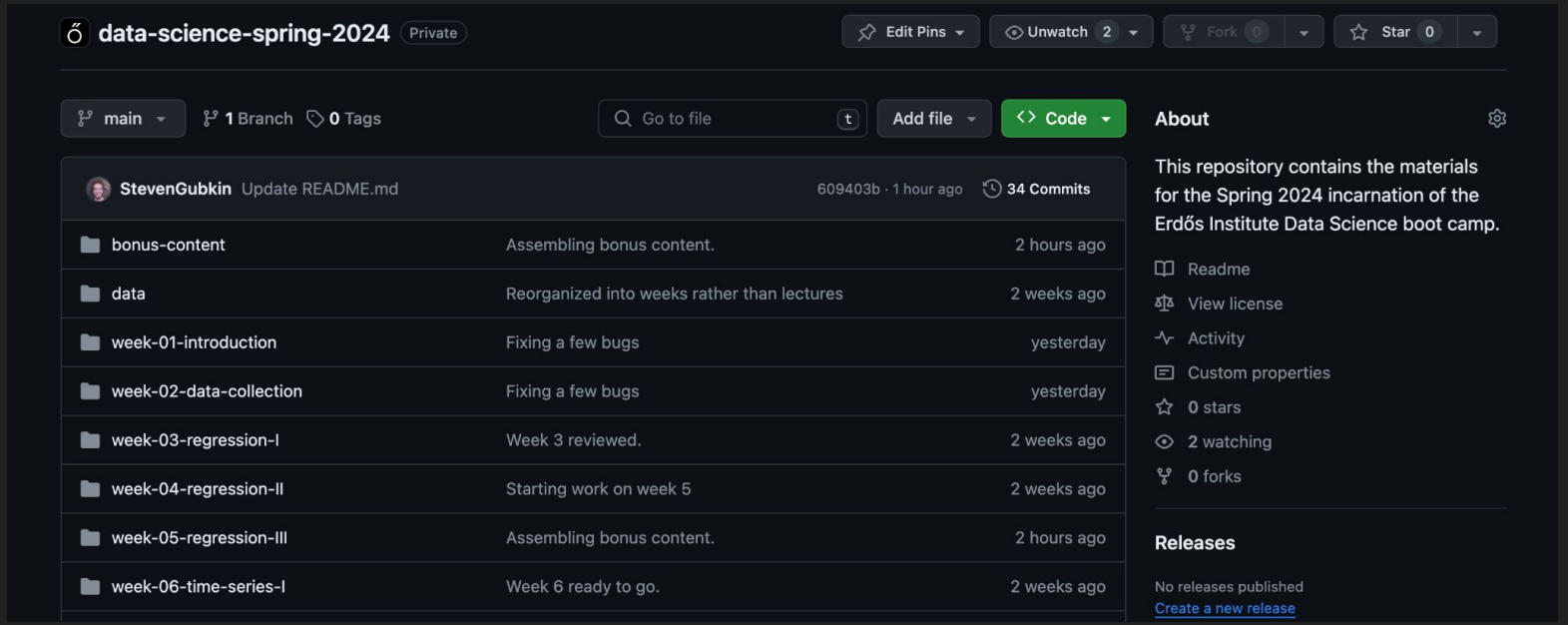
- Math hour is every Tuesday 10:00 to 11:00
  - This is *optional* extra content.
  - Check out the self-assessment in “week 0”. Try crash course if you need to brush up.
  - Will usually cover the mathematical underpinnings of techniques covered the following week.
- Office Hour is every Tuesday 11:00 to 12:00 and by appointment.
  - Ask anything about course content, projects, debugging, etc.

Getting Set Up

- Clone the repository
- Be able to open a jupyter notebook

The GitHub Repository

- Link can be found on the course website
- Contains all of the educational content for the boot camp



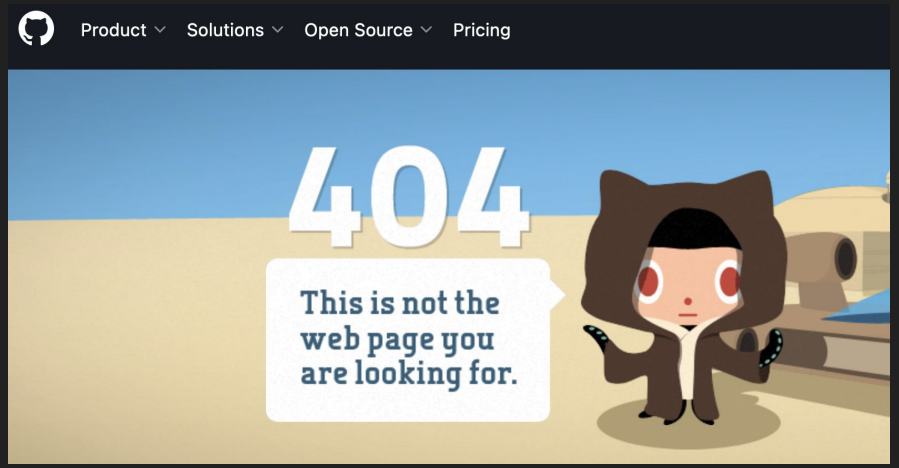
The GitHub Repository - Steps

- Sign into your GitHub account
- Clone the repository onto your computer
  - Can find instructions in the “First Steps” section of the website
- Everyday of the boot camp you will need to “pull” the updates to the repository
  - Look for “Giting Started with GitHub” in the “First Steps” section of the website
- Can be useful to make a copy of the folder in your computer for your edits

The GitHub Repository - 404 Issue

If you receive the 404 Error when clicking repo link:

- Check you are signed in
- Check that you have added your GitHub link to your Erdős profile
- Message Amalya about being added to the repository



Jupyter Notebooks

- All educational content contained in jupyter notebooks
- Allows combination of Word document style text and python code
- Let’s look at an example

Jupyter Notebooks - Getting Set Up

- Follow Step 3 Under “First Steps” on website
- Lots of options:
  - Visual Studio Code: I use this one
  - Jupyter Notebook
  - Anaconda Navigator
  - Many other options

Questions & Concerns?