

**Digital Currents - Training Large Language Models**

**COD 2012, Spring 2024 (CRN 11855)**

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**Friday 02/02/2024 from 12:00 - 15:00**

**Friday 02/09/2024 from 12:00 - 15:00**

**Friday 02/23/2024 from 12:00 - 15:00**

**Friday 03/01/2024 from 12:00 - 15:00**

**6 East 16th Street, Room: 1108**

**Office hours: By appointment — email me to schedule!**

**Course Description**

This course provides a basic introduction to: using and training Large Language Models (LLMs), prompt engineering, and basics of Generative AI. Access to a working laptop, the course GitHub and Google Colab will be expected throughout the semester. The course also dives in the ethics of training Large Language Models and AI.

**Learning Outcomes**

After successful completion of this course, students will:

- have gained a deep understanding of the fundamental concepts of Generative AI and Machine learning
- have gained deep insight into precisely how Generative AI and Machine learning operates when it mediates the socio-cultural patterns of life today
- understand software elements such as data types and data structures, including the difference between the two, examples of each, and how to determine which examples to use in a specific situation
- understand the computer science principle of abstraction, including how to use certain program structures to create modular, reusable code that reduces complexity by hiding implementation details
- have learned the principles of interactive computer programming, including how write code that is triggered by and responds to user actions and events
- have learned how digital software can be arranged into a system or separate and discrete components or independent processes, which can interact with each other through network protocols, and client/server architectures
- develop critical computer science skills, understanding how all the above concepts are situated within a political and socio-cultural landscape
- have gained a set of skills that may be applied to other parts of their liberal arts education as quantitative research methods, data investigation and visualization, and algorithmic analysis
- have read a lot, learned a lot, made a lot of stuff, and had a lot of fun

## **Assignments**

### **Weekly homework exercises**

You will have weekly reading and coding assignments. Each week you will write a little bit of code to assemble your dataset or train your model.

### **Weekly readings and reading responses**

We also have readings. These are indicated in the course schedule below and will be posted to the class github. You will be asked to submit a short reading response of about 250 words that mainly consists of quotes from the text that you wish to highlight and some questions or comments based on those passages. These will be submitted in a shared Google Doc that you will create right now and send to me via email.

### **Projects**

There will be one project to be completed: a 20 page book made with Machine Learning.

You will create a 20 page book using Machine Learning and you will create a 10+ page slide deck telling us your process, design choices, prompts, etc.

Projects will be graded based on how well they fulfill the formal requirements stated in the project assignment, and the degree to which they engage with theoretical concepts from readings and discussion. In other words, while the reading discussions are a way to process, digest, and comprehend the readings, the projects are a way to demonstrate an understanding of those readings, and will be graded as such. We won't have any essays or written assignments in this class, in place of this, I would like your project work and write-ups to be a product of your engagement with course concepts both technical and theoretical.

### **Final Grade Calculation**

- Homework assignments 30%
- Readings and reading discussions 15%
- Book project 45%
- Participation 10%

Your participation grade is based on class & discord discussions, contributions to student work sharing, and questions via office hours and email.

If you challenge yourself and turn in the homeworks you will get an A.

### **Community Agreements**

We will develop an agreement for class participation and how to carry yourself inside and outside of the classroom. You will be responsible for following the community agreement and if you violate it you will be called out, asked to leave the room, or kicked out of the discord server.

- **No Trolls**

### **Content Warnings/Trigger Warnings**

A content warning is a stated warning that the content of the immediately following text, video, etc., may upset or offend some people. A trigger warning is a statement at the start of a piece of writing, video, etc., alerting the reader or viewer to the fact that it contains potentially distressing material.

***Trigger warnings will be given at the beginning of any section that contains content that might upset or offend some people.***

## Course Outline

An outline of our course schedule for the semester will be provided on the class website, reviewed on the first day, and is included below.

### Week 1

- Tokenizers : It's all about the tokens
- Transformers
- Prompt Engineering 101
- Setting Up a Development Environment an introduction to Google Collab
- Training a Tokenizer and a Transformer

### Week 2

- Ethics of Data Collection :: What is really is Fair Use?
- Data Collection and Scraping Techniques
- Scraping as Art
- Beautiful Soup
- Open(ish) Data Sources
- Identifying Bias in your Data
- Formatting: Writing the Proto-Prompts
- Evaluating your data

### Week 3

- Creating with LLMs
- Llama2
- Uncensored Networks
- Llama + LoRas
- Tokenizer Poetry
- Evaluating your Custom LLMs
- Making ART with AI

### Week 4

- Ethical Issues in AI
- Bias: Implicit or Explicit
- Privacy
- Transparency and Explainability
- Accountability
- Security
- Data Quality and Collection
- Job Displacement
- Environmental Impact

### ***Academic Integrity***

Compromising your academic integrity may lead to serious consequences, including (but not limited to) one or more of the following: failure of the assignment, failure of the course, academic warning, disciplinary probation, suspension from the university, or dismissal from the university.

Students are responsible for understanding the University's policy on academic honesty and integrity and must make use of proper citations of sources for writing papers, creating, presenting, and performing their work, taking examinations, and doing research. It is the responsibility of students to learn the procedures specific to their discipline for correctly and appropriately differentiating their own work from that of others. Visit the [TNS University Policies A-Z webpage](#) for the full text of the policy.

For resources regarding what plagiarism is and how to avoid it visit the [TNS Learning Center website](#)

*Intellectual Property Rights:* <https://www.newschool.edu/provost/faculty-policies/>

*Grading Policies:* <http://www.newschool.edu/registrar/academic-policies/>

*Student Code of Conduct:* <https://www.newschool.edu/student-conduct/>

### **Course Policies**

#### **Responsibility**

Students are responsible for all assignments, even if they are absent. Late papers, failure to complete the readings assigned for class discussion, and lack of preparedness for in-class discussions and presentations will jeopardize your successful completion of this course.

#### **Participation**

Class participation is an essential part of class and includes: keeping up with reading, contributing meaningfully to class discussions, active participation in group work, and coming to class regularly and on time.

#### **Delays**

In rare instances, I may be delayed arriving to class. If I have not arrived by the time class is scheduled to start, you must wait a minimum of thirty minutes for my arrival. In the event that I will miss class entirely, a sign will be posted at the classroom indicating your assignment for the next class meeting.

### **Lang College Policies:**

#### **Attendance**

At Lang College, students maximize their learning with peers and faculty when all members of the class are present and engaged in the regular collective work of the course. Attendance and participation lay the foundation for thriving in the classroom, whether in seminar, lecture, lab, studio, or practice-based classes.

Though there can be many justifiable reasons for absence from class, multiple absences impact the learning environment for all students and warrant some grade reduction in an environment where learning is both individual and collective.

Absences will be counted from the first day a student is enrolled in the class. Thus, after three (3) absences in a class that meets twice per week, the instructor will initiate a discussion between the student, the instructor, and Student Success Advisor (SSA) to devise a plan for attending class and meeting expectations for the remainder of the semester. This discussion can take place in person, via Zoom, or via email correspondence. For classes that meet once per week, this discussion will take place after two (2) absences.

For classes meeting twice per week, more than four (4) absences normally mandate withdrawal or a failing grade for the course. For classes meeting once per week, more than three (3) absences normally mandate withdrawal or a failing grade for the course. Any exception to this threshold is dependent upon the above mentioned plan of attendance with the instructor and SSA.

Attendance and participation are required. Failing to show up and take part may result in a lowered grade, and excessive lack of engagement may result in being dropped from the course. Of course, we find ourselves in strange and challenging times! Safety protocols this semester dictate that we all must get tested frequently and positive test results of ourselves or our personal contacts may result in quarantine or isolation.

If students or I are unable to attend class, we may need to use Zoom either to record classes for others to watch later (asynchronously), or to conduct class discussions or lessons together (synchronously). It may happen that some of us may be live in person, while others are connecting over the internet. Please be flexible, compassionate, generous, and kind as we navigate these difficult arrangements.

Please keep in mind that you are responsible for any assignment deadlines even in the event of an absence. Please check with your peers, the class website, and me regarding anything you miss due to absence.

I warmly recognize that not everyone feels as comfortable vocally participating in class situations – and masks will likely make speaking even more difficult than usual. I implore you to keep in mind that your position and perspectives are unique and valuable, and that the class and I will always benefit from your voice and contributions. In short: I always want to hear what you have to say, and your classmates will benefit from it as well. Please speak up – and try your best to make yourself heard through your mask!

## **Resources**

The university provides many resources to help students achieve academic and artistic excellence. These resources include:

- **University Libraries:**  
The New School Libraries provide access to a vast array of print and electronic resources as well as personal research consultations, classroom instruction, and spaces for study and collaboration.

- **University Learning Center:** For assistance with coursework during the semester, I encourage you to schedule free tutoring sessions at the University Learning Center (ULC). Individual appointments in Writing, Software, Computer Programming, Oral Presentations, Math, Time Management and ADHD Coaching are available from 7am-midnight Monday-Friday and 12-5pm on Saturdays. Online appointments are scheduled via [WCONLINE](#) and in-person sessions or last minute virtual walk-ins can be requested by emailing [learningcenter@newschool.edu](mailto:learningcenter@newschool.edu). In-person sessions are held at 66 W. 12th St. on the 6th floor. The ULC also offers weekly and biweekly sessions. For a complete list of services and general information, please visit [www.newschool.edu/learning-center](http://www.newschool.edu/learning-center).
- **Student Disability Services:**  
[In an effort to promote awareness of Student Disability Services and to support inclusive practices, TNS strongly encourages faculty to add the following statement to all course syllabi and to read it on the first day of class]: If you are a student with a disability/disabled student, or believe you might have a disability that requires accommodations, please visit the [SDS website](#) and complete the Self ID form. Then, head to [Starfish](#) and find a time to meet with Nick Faranda, at a time of mutual convenience. If you have any questions or concerns, please contact Student Disability Services (SDS) at [studentdisability@newschool.edu](mailto:studentdisability@newschool.edu), or 212-229-5626.
- **Archives and Special Collections: Digital Archive Collections**  
The New School Archives and Special Collections holds a wide array of collections in many different formats that may be useful in your academic, artistic, and personal projects, including paper and digital records, audiovisual material, artist's books, zines, and records related to the histories of all divisions of the University. Archivists are available to help with your research and to offer guidance for locating resources specific to your topic. Contact [archivist@newschool.edu](mailto:archivist@newschool.edu) to get started.
- **Food Assistance:** All current TNS students are eligible to use The New School Food Pantry. Visit this webpage for more information on the food pantry and additional resources.
- **Health and Wellness:** Visit this webpage for information about medical, counseling, and other support services available to New School students.
- **The Student Ombuds Office:** This office provides assistance to students in resolving conflicts, disputes, or complaints on an informal basis. This office is independent, neutral, and confidential.
- **Office of Financial Aid:** Visit this webpage to set up a meeting with a FA counselor. Eligible students may be considered for different types of financial aid such as scholarships, federal grants, federal work study and federal student loans. To be considered for federal student aid, you will need to complete the Free Application for Federal Student Aid (FAFSA) available

online at [fafsa.gov](https://fafsa.gov). The New School's priority deadline to submit the FAFSA is February 15. The FAFSA needs to be submitted annually.

- **Student Bill of Rights**
- **Title IX**

### **Student Course Ratings**

During the last two weeks of the semester, students are asked to provide feedback for each of their courses through an online survey. They cannot view grades until providing feedback or officially declining to do so. Course evaluations are a vital space where students can speak about the learning experience. It is an important process which provides valuable data about the successful delivery and support of a course or topic to both the faculty and administrators. Instructors rely on course rating surveys for feedback on the course and teaching methods, so they can understand what aspects of the class are most successful in teaching students, and what aspects might be improved or changed in future. Without this information, it can be difficult for an instructor to reflect upon and improve teaching methods and course design. In addition, program/department chairs and other administrators review course surveys. See these [instructions](#) for completing your course evaluations online.