THE UNIVERSITY OF CHICAGO

CMSC 19925

Understanding AI: Risks and Opportunities for Writing and Communication

*Note: The current version of the syllabus is **tentative** and **subject to change**.*

Summer Course
Monday through Friday 9 AM-3 PM
Classroom: Ryerson Phys Lab 177

Instructor: Grace Li
Office hours: Tuesdays and Thursdays 4-5 PM
TAs: Antrita Manduva and Maria Jose Reyes

1. Course Introduction

Generative AI, large language models (LLMs) -- these buzzwords have been popping up in newsrooms, classrooms, and dinner tables. Questions about safety, environmental impacts, economic impacts and educational effects make people wonder how AI works, how it might change the way we communicate and think, and what we should do about it.

This is a **seminar style, discussion-based** class that focuses on 3 core aspects of LLMs: (1) the technical aspect, (2) the social and ethical aspect, and (3) career development aspect. Over the course of the class, students will be able to explain how LLMs work, critically assess the impact of LLMs on society, and ideate on their future career options as it relates to LLMs.

See the weekly outline for specific topics that will be covered during each of the 3 weeks.

2. Course schedule

Day	Topic
Week 1: Understanding the Technical Aspect	
(Mon)	[Lecture] Introductions & What is AI?
(Tue)	[Lecture] Training Data, Embeddings, and Neural Networks
(Wed)	[Lecture] Training Neural Networks, Decoding Methods, and more
(Thu)	No Class - Juneteenth
(Fri)	[Lecture] Prompt Engineering, In-Context Learning [Student] Project Presentations
Week 2: Understanding the Social and Ethical Aspect	
(Mon)	[Lecture] Training Data • Bias, Discrimination, Stereotypes

	• Data Ownership, Intellectual Property, User Privacy
(Tue)	[Lecture] Generated Outputs • Misinformation • Hallucinations
(Wed)	[Lecture] Model Development and Access • Environmental Impact • Who has access? **Guest Speaker: Prof. Shaolei Ren** **Field Trip: UChicago Data Center**
(Thu)	[Lecture] Regulation and Governance • Governmental policies • Copyright Accountability, Attribution, Transparency • Company policies • Classroom policies
(Fri)	[Students] Project Presentations **Guest Speaker: Jessica He (IBM Researcher)** **Panel Discussion with Jingchao Fang (UChicago Postdoc Researcher)**
Week3: Understanding the Career Development Aspect	
(Mon)	[Lecture] STEM Careers • Technology & Engineering • Health Care • Financial Industries **Guest Speaker: Terrence Curd (Morgan Stanley, Managing Director)**
(Tue)	[Lecture] Social Science • Law & Public Policy • Education & Academia • Business & Entrepreneurship **Guest Speaker: Jonathan Liu (Can LLMs do CS Theory Education)**
(Wed)	[Lecture] Creative & Technical and Trade Professions
(Thu)	[Student] Project Presentations

3. Textbooks and Materials

You are *not required* to purchase a textbook for this course. All readings and materials will be provided for you. Class slides will be available after the class session for you to review.

4. Course work

Attendance and In-Class Participation: As per the Summer Session policy, attendance is mandatory and absences will be reported to the Summer Session office. Participating in the discussions during lecture is also required. In general, everyone should aim to ask, answer, or contribute to the discussion at least two times per session (morning and afternoon). Participation is graded upon:

- (1) Timely submission of in-class activities
- (2) Contributions to class discussions
- (3) Timely completion of in-class PollEverywhere questions
- (4) Timely submission of daily exit ticket

In-Class Activities: In-Class activities will consist of a variety of assignments that correspond to the day's lectures. In-Class activities will be graded on a scale of Satisfactory (2-points), Needs Improvement (1-point), Unsatisfactory (0-points). These assignments are for you to explore different ways to use LLMs. Assignments will vary in how they are structured, the type of activity you will be asked to complete, and will allow you to reflect on the day's lessons in different ways.

In-Class Knowledge Checks: These knowledge checks are **low-stakes** ways to measure your learning throughout the course. There is no need to study beforehand for the upcoming quizzes. All the information that you need will be covered during the in class lesson. These knowledge checks will be a combination of multiple choice, short answer, and free response questions. They will be administered via the Polleverywhere Platform

Due to the frequency of knowledge checks, each individual knowledge check makes up less than 1% of your final grade. Use these knowledge checks as an opportunity to assess your own learning. Be sure to ask clarifying questions you may have during the lesson to ensure that you are prepared for the quiz.

Projects: Mini Projects build upon the lecture and exercises during the week and align with the 3 core aspects of the class: technical, social/ethical, and career development aspects of LLMs. The mini projects provide flexibility and allow you to pursue independent projects in the areas that you are interested in as they relate to the course content. Each mini project will have corresponding checkpoints to ensure that you are on track to completing the project and a final project showcase at the end of each week for you to share your project with the larger class.

- Project 1: Develop your own Chatbot Preset
    - Currently, chatbots provide general purpose support from writing tasks to question answering. They have many limitations when it comes to providing personalized and specialized assistance. Using your knowledge of how LLMs work, design your own custom chatbot that will provide personalized and/or specialized assistance in your life (or someone else's life).
- Project 2: Community Impact Advocacy Project
    - You will create a public-facing media piece (e.g., a poster, zine, news article, or YouTube video) to encourage others to think critically about how they can enact change in their local communities. This project emphasizes knowledge mobilization, advocacy, and public engagement. This is your chance to share your own view of what ethical AI means. How can you teach others to critically evaluate, reflect, and critique AI systems?
- Project 3: Notes to Self
    - As this course comes to a close, we are ending by looking at the different ways that LLMs (and more generally AI and new technologies) are shaping different fields. The goal of this project is to help you reflect on what you learned during Week 1 and Week 2 and think about the different career options and how technology might change how that career looks in the future. This project will allow you to research different career options, identify potential role models in that domain, evaluate the skill sets needed to help you work in that career path, and negotiate the impacts that new technologies might have and how you will adapt.

5. Grading

- In-Class Participation: 20%
- In-Class Activities: 15%
- In-Class Knowledge Checks: 15%
- Projects: 50% (3 project total, 1 project per week)