DRAFT
Proposal for New Course

Course Name: AI in Context
Course Number: COMS W2702

Rationale *(ai assisted, of course)*

An interdisciplinary course on the history, application, and societal impacts of artificial intelligence offers students a unique opportunity to explore the transformative potential of this technology in a context that matters to them most. The structure of this team-taught interdisciplinary course allows content and instructional resources to adapt as the applications of AI and particularly generative AI evolve. Modules may be added and even offered in parallel as new impact areas emerge. Students are already using generative AI on a daily basis, it is critical that they learn how to use these tools effectively and responsibly.

Instructors

Adam Cannon (Computer Science)
Lydia Chilton (Computer Science)
Chris Wiggins (Applied Physics and Applied Mathematics)
Vishal Misra (Computer Science)
Katja Vogt (Philosophy)
Seth Cluett (Music)
Dennis Tenen (English and Comparative Literature)

Bulletin Description

Prerequisites: None
An interdisciplinary introduction to the history, development and modern application of artificial intelligence in a variety of contexts. Context subjects and teaching staff will vary by semester.

Syllabus

Date	Lecture	Topic	Instructor	Notes
9/4/24	Lecture 1	Introduction	Cannon/Chilton	What is this course? Why is this course?
9/9/24	Lecture 2	History of Intelligence	Wiggins	Reifying intelligence with statistics,

				1900s
9/11/24	Lecture 3	History of Intelligence	Wiggins	Can machines think? 1940s-1960s
9/16/24	Lecture 4	History of Intelligence	Wiggins	AI without data, 1950s-1990s
9/18/24	Lecture 5	History of Intelligence	Wiggins	From programming to learning, 1990s-2010s
9/23/24	Lecture 6	**External Speaker/Panel**	*TBA*	
9/25/24	Lecture 7	From NN to LLM: Rise of the Machines	Misra	Introduction to Neural Networks
9/30/24	Lecture 8	From NN to LLM: Rise of the Machines	Misra	Deep Learning Revolution
10/2/24	Lecture 9	From NN to LLM: Rise of the Machines	Misra	Transition to Transformer Architectures
10/7/24	Lecture 10	From NN to LLM: Rise of the Machines	Misra	The Era of Large Language Models and ChatGPT
10/9/24	Lecture 11	**External Speaker/Panel**	*TBA*	
10/14/24	Lecture 12	Philosophy and AI: Mental States?	Vogt	Can we ascribe beliefs and intentions to AI? Can LLMs speak? Can they lie?
10/16/24	Lecture 13	Philosophy and AI: Alignment	Vogt	Can AI be aligned with human values? What is explainable AI (XAI)?
10/21/24	Lecture 14	Philosophy and AI: Fairness and Accuracy	Vogt	What makes an AI “fair”? How does fairness relate to accuracy and other values?
10/23/24	Lecture 15	Philosophy and AI: Generics and Bias	Vogt	How should LLMs deal with generics? What about social generics and bias?
10/28/24	Lecture 16	**External Speaker/Panel**	*TBA*	
10/30/24	Lecture 17	Art and Music with AI: Tools, Assistance, and Collaboration in Creative Computation	Cluett	Deep learning and the generative shift in creative computation; a history of algorithmic art and music, creative labor replacement anxiety
11/4/24	No Class	**Fall Break**		
11/6/24	Lecture 18	Art and Music with AI: The Voice, the Face, the Object, and the Environment	Cluett	Worldmaking, subjecthood and objecthood; detection, comparison, completion, recommendation, and fabrication; Fakery
11/11/24	Lecture	Art and Music with AI: Methods and	Cluett	Media rich and time-based corpus

	19	Processes		development, training sets, extant tools and future directions; Creative mis-use
11/13/24	Lecture 20	Art and Music with AI: Copyright, Authorship, and Ownership	Cluett	How does deep learning and generative AI alter conceptions of authorship, how does the framing of intellectual property shift when machines (co)create works of art and music, how will creative labor evolve?
11/18/24	Lecture 21	**External Speaker/Panel**	*TBA*	
11/20/24	Lecture 22	Language and AI	Tenen	Grammars and Schemas: Chomskian grammars. Exercise: Remake Yngve's "English Sentence Generator"
11/25/24	Lecture 23	Language and AI	Tenen	Chains and Vectors.
11/2724	No Class	**Thanksgiving Break**		
12/2/24	Lecture 24	Language and AI	Tenen	Writing with AI. Prompt engineering and its impact on responses. Best practices.
12/4/24	Lecture 25	Language with AI	Tenen	Platform comparison. Gemini, Copilot, Meta AI and others.
12/9/24	Lecture 26	Epilogue	Cannon/Chilton	How will you use AI next?

Assessments

Each of the five two-week modules will have one associated project worth 15% of the course grade. The remaining 25% of the course grade will be based on a semester-long team project in the form of a 10 minute video presentation. Students will view and evaluate all of the submitted presentations as part of their project grade.

Project 1: Intelligence

- Eliza (1967): designing a chatbot based on Rules
    - Compare with the goals and technology available to Weizenbaum
- Stochastic Token Prediction (1945): Construct a chatbot based on Markov Models
    - Compare with the goals and technology (including data) available to Claude Shannon

Project 2: Large Language Models

Project 3: Philosophy and AI
Write a 600-700 word paper on one of the following questions:
– What do we mean when we ascribe mental states such as beliefs or intentions to AIs?
– What is value alignment and how can it deal with pluralism about values?
Things to keep in mind:
– Be concise and clear, avoid redundancy, and explain technical terms.
– Your paper should have a visible structure: intro where you articulate the question in your own words and state your proposal, argument that supports your proposal, brief conclusion.
– Work with the readings that are assigned for class; cite at least one of the readings.
– For input on how to write a paper on a philosophical question, you can work with this playlist <https://www.youtube.com/playlist?list=PLWU9KpeO-5rJF-D3xyi4xmPIQgg9fgVrU>

Project 4: Art and Music with AI

Project 5: Language and AI

Team Project: To be proposed by each team and approved by Cannon/Chilton. Proposal will be due at the end of Module 3. Project will be due at the end of the semester

Reading

Required:

Note: All readings for Lectures 12-15 will be uploaded to Courseworks

Lecture 12: Murray Shanahan, “Talking about Large Language Models,” (2023); Bernard Williams, “Deciding to Believe” (1973).

Lecture 13: Peter Railton, “Ethical Learning: Natural and Artificial,” in Matthew Liao (2020).

Lecture 14: Richard Zemel et al, “Learning Fair Representations” (2013); Talia Gillis, Bryce McLaughlin, Jann Spiess “On the Fairness of Machine-Assisted Human Decisions” (2023).

Lecture 15: Emily Allaway et al, “Penguins Don’t Fly: Reasoning about Generics through Instantiations and Exceptions,” (2023); McKeever and Sterken, “Social and Political Aspects of Generic Language and Speech,” The Routledge Handbook on Social and Political Philosophy of Language (2021).

Lecture 18: Vinchon, Florent, Todd Lubart, Sabrina Bartolotta, Valentin Gironnay, Marion Botella, Samira Bourgeois-Bougrine, Jean-Marie Burkhardt, et al. “Artificial Intelligence & Creativity: A Manifesto for Collaboration.” The Journal of Creative Behavior 57, no. 4 (2023): 472–84. https://doi.org/10.1002/jocb.597

Lecture 19: Wang, Ge. “Humans in the Loop.” Artful Design (blog), October 28, 2019. https://medium.com/artful-design/humans-in-the-loop-b83e3bffa65e.

Lecture 20: Zylinska. The Artificial Intelligence in Artistic Creation: An Interview with Joanna Zylinska by José Vertedor.” Umática: Revista Sobre Creación y Análisis de La Imagen, no. 6 (2023): 173–90.

Recommended:

Lecture 12: Beba Cibralic and James Mattingly, “Machine agency and representation,” (2021).

Lecture 13: Ruth Chang, “Value Alignment,” in ed. David Edmonds, AI Morality (OUP 2024/forthcoming).

Lecture 15: Karen Lewis, “Gricean Pragmatics” <https://www.youtube.com/watch?v=we6uSVf4qss>

Lecture 18: Minsky, Marvin. “Music, Mind, and Meaning.” Computer Music Journal 5, no. 3 (1981): 28–44. https://doi.org/10.2307/3679983

Lecture 19: Born, Georgina. “Diversifying MIR: Knowledge and Real-World Challenges, and New Interdisciplinary Futures.” Transactions of the International Society for Music Information Retrieval 3, no. 1 (October 22, 2020). https://doi.org/10.5334/tismir.58.