Jack Sanderson

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Education

University of Chicago Chicago, IL
B.A., Computer Science & B.A., Statistics *September 2023 – June 2027*

Experience & Leadership

UChicago Data Science Institute Chicago, IL
Research Assistant *June 2024 – August 2024*

- Utilized PyTorch and Transformers libraries to fine-tune transformer-based large language models for summarization of convoluted and lengthy (1500+ word) legal documents pertaining to international bank finances
- Created multiple bespoke models capable of creating summaries of documents with 90% of relevant information at 10% of the original length.

UChicago XLab AI Safety Group Chicago, IL
Research Assistant *October 2024 – Present*

- Developing the first benchmark to evaluate memory in computer-using agents.
- Previously, analyzed the relationship between compute and algorithmic progress across AI architectures.
- Designed a framework for assessing whether algorithmic improvements at low compute scales generalize to large-scale systems; conducted experiments with PyTorch confirming key assumptions
- Researched AI alignment challenges and security vulnerabilities in large language models, analyzing deceptive behavior, adversarial examples, and mitigation techniques such as RLHF.

UChicago Data Science Institute Chicago, IL
Teaching Assistant *January 2025 – Present*

- Mentoring and providing code reviews for teams of undergraduate and graduate students in a project-based course where students act as data scientists, collaborating with real-world clients.

Illinois Science and Technology Coalition, Horizon Therapeutics Chicago, IL
Student Intern *June 2022 – August 2022*

- Reviewed literature on healthcare-access disparities within the Chicagoland area.
- Constructed prototype of healthcare access awareness website to address inequality; pitched website to local stakeholders.

Technial Projects

Shell with LZW Compression Algorithm Chicago, IL
Academic Project *February 2024 – March 2024*

- Implemented an LZW-based file compression utility within a custom C shell, achieving up to 50% lossless file size reduction; optimized performance through variable encoding sizes and dynamic code pruning.

Interactive UChicago Crime Map Chicago, IL
Independent Project *December 2023*

- Utilized Pandas and R's sf and leaflet to web scrape, clean, geocode, and map over 1000 UChicago-areacrimes from the UChicago Police Department's website
- Deployed map as a website to serve as a safety resource for the student body (uchicago-crime.github.io/map).

Presentations

- ***eLLMinating Clutter: Fine-Tuning Transformers for Text Summarization***. Jack Sanderson, Jonathan Garcia, Zaina Khalil, Diego Sarria. Poster presented at the ADSA Annual Summit, Ann Arbor, Michigan, October 2024.
- ***Rethinking LLM Advancement: Compute-Dependent and Independent Paths to Progress***. Jack Sanderson, Teddy Foley, Spencer Guo, Anqi Qu, Henry Josephson. Poster presented at the Midwest Machine Learning Symposium, Chicago, Illinois, June 2025. Featured in Epoch AI's Gradient Updates.

Skills

- Python, pytest, NumPy, pandas, scikit-learn, PyTorch, DeepSpeed, Transformers, Docker, R, tidyverse, sf, Leaflet
- C, gdb, lldb, Assembly, make, Git, Linux command line, Google Sheets, Excel