

Contact Information	Salvatori Computer Science Center Los Angeles, CA, 90089	 ollieliu  me@ollieliu.com
Research Interests	I'm passionate about developing multimodal foundation models that facilitate scientific discovery. Towards this goal, I'm conducting research on foundation model pre-training, understanding and exploring their capabilities, as well as continual training to align them with human desiderata.	
Education	University of Southern California Ph.D in Computer Science <i>Advisors: Dani Yogatama, Willie Neiswanger</i>	08/2022 - present
	Carnegie Mellon University B.S + M.S in Machine Learning <i>Magna Cum Laude</i>	08/2013 - 08/2019
Publications	<p>★: equal contribution; α-β: equal contribution, alphabetical order</p> <p>IsoBench: Benchmarking Multimodal Foundation Models on Isomorphic Representations Deqing Fu$^{\alpha-\beta}$, Ruohao Guo$^{\alpha-\beta}$, Ghazal Khalighinejad$^{\alpha-\beta}$, Ollie Liu$^{\alpha-\beta}$, Bhuwan Dhingra, Dani Yogatama, Robin Jia, Willie Neiswanger In: <i>arXiv Preprint</i>. [pdf] [website]</p> <p>DeLLMa: A Framework for Decision Making Under Uncertainty with Large Language Models Ollie Liu★, Deqing Fu★, Dani Yogatama, Willie Neiswanger In: <i>arXiv Preprint</i>. [pdf] [website]</p> <p>On Retrieval Augmentation and the Limitations of Language Model Training Ting-Rui Chiang, Xinyan Velocity Yu, Joshua Robinson, Ollie Liu, Isabelle Lee, Dani Yogatama In: <i>Proceedings of NAACL 2024 (short)</i>. [pdf]</p> <p>Interpretable Diffusion via Information Decomposition Xianghao Kong★, Ollie Liu★, Han Li, Dani Yogatama, Greg Ver Steeg In: <i>Proceedings of ICLR 2024</i>. [pdf] [code]</p> <p>Approximating CKY with Transformers Ghazal Khalighinejad, Ollie Liu, Sam Wiseman In: <i>Proceedings of Findings of EMNLP 2023</i>. [pdf] [code]</p> <p>How Does GPT-2 Compute Greater-Than?: Interpreting Mathematical Abilities in a Pre-Trained Language Model Michael Hanna, Ollie Liu, Alexandre Variengien In: <i>Proceedings of NeurIPS 2023</i>. [pdf]</p>	
Positions	Microsoft Research , Research intern with Corby Rosset	Summer 2024
	Reka AI , Research intern with Qi Liu	Summer 2023
	Redwood Research , Research Resident with Alexandre Variengien	Winter 2023
	Meta Reality Labs , Applied Research Intern with Stan Peshterliev	Summer 2022
	You.com , Software Engineer Intern with Saahil Jain	Spring 2022

Amazon Web Services, Applied Scientist Intern with Mehdi Noori
Northwestern University, Research Associate with Jorge Nocedal

2021
2019 - 2021

Honors and
Awards

Provost's Fellowship, University of Southern California, 2022
Data Science Fellowship, Northwestern University, 2019
Royal E. Cabell Fellowship, Northwestern University, 2019
Senior Leadership Recognition, Carnegie Mellon University, 2018

Invited Talks

DeLLMa: A Framework for Decision Making Under Uncertainty with Large Language Models,
[USC Information Science Institute NLG Seminar](#).

Teaching
Experiences

TA, Machine Learning (Master), USC, Fall 2023
Co-Instructor and TA, Machine Learning (Ph.D Elective), NU, Fall 2021
Co-Instructor and TA, Mathematical Statistics (Ph.D Core), NU, Fall 2020
TA, Introduction to Machine Learning (Master), CMU, 2 Semesters.
TA, Principles of Computing (Undergraduate), CMU, 4 Semesters.

Doctoral
Courseworks

Machine Learning, Natural Language Processing, Computer Vision, Learning Theory, Scalable
Learning Systems, Theoretical Optimization

Activities

President of the [USC AI Safety Group](#).
Student organizer of the [Center for Optimization and Statistical Learning](#) at Northwestern
University.

Skills

Software: Python (JAX, PyTorch, Hugging Face), Linux, R, \LaTeX
Language: Chinese (*native*), English (*proficient*, GRE V169+Q168)