

# Yun Cheng

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## RESEARCH INTERESTS

Large Language Models, Vision-Language Models, Multimodal Machine Learning, Self-Improvement, Representation Learning, Robustness and Generalization, LLM Metacognition and Meta-Reasoning

## EDUCATION

Princeton University Princeton, NJ  
*Ph.D. in Computer Science* September 2023

- Advised by Prof. Sanjeev Arora

Carnegie Mellon University Pittsburgh, PA  
*M.S. in Machine Learning* December 2022

GPA 4.14/4.33

- Advised by Prof. Louis-Philippe Morency
- *Selected Coursework: Intermediate Deep Learning, Machine Learning in Practice, Probabilistic Graphical Models, Convex Optimization, Advanced Multimodal Machine Learning*

Carnegie Mellon University Pittsburgh, PA  
*B.S. in Computer Science (University Honors)* December 2021

*B.S. in Discrete Mathematics and Logic (University & College Honors)*

GPA 3.85/4.0

- *Selected Coursework: Intro to Deep Learning, Probability and Mathematical Statistics (PhD), Multimodal Machine Learning, Intro to Machine Learning (PhD), Design and Analysis of Algorithms, Distributed Systems, Graph Theory*

## PUBLICATIONS

1. **Yun Cheng**, Xingyu Zhu, Haoyu Zhao, Sanjeev Arora. “Contextual Drag: How Errors in the Context Affect LLM Reasoning.” RSI Workshop at ICLR 2026 (**Oral**).
2. Simon Park\*, Abhishek Panigrahi\*, **Yun Cheng**\*, Dingli Yu, Anirudh Goyal, Sanjeev Arora. “Generalizing from SIMPLE to HARD Visual Reasoning: Can We Mitigate Modality Imbalance in VLMs?” ICML 2025.
3. Paul Pu Liang, Chun Kai Ling, **Yun Cheng**, Alexander Obolenskiy, Yudong Liu, Rohan Pandey, Alex Wilf, Louis-Philippe Morency, Russ Salakhutdinov. “Multimodal Learning Without Labeled Multimodal Data: Guarantees and Applications.” ICLR 2024.
4. Paul Pu Liang, **Yun Cheng**, Xiang Fan, Chun Kai Ling, Suzanne Nie, Richard Chen, Zihao Deng, Nicholas Allen, Randy Auerbach, Faisal Mahmood, Ruslan Salakhutdinov, Louis-Philippe Morency. “Quantifying & modeling multimodal interactions: An information decomposition framework.” NeurIPS 2023.
5. Paul Pu Liang, Yiwei Lyu, Xiang Fan, Zetian Wu, **Yun Cheng**, Jason Wu, Leslie Chen, Peter Wu, Michelle A Lee, Yuke Zhu, Ruslan Salakhutdinov, Louis-Philippe Morency. “MultiBench: Multiscale Benchmarks for Multimodal Representation Learning.” NeurIPS Datasets and Benchmarks (2021).
6. **Yun Cheng**, Yixue Liu, Tomasz Tkocz, Albert Xu. “Typical Values of Extremal-Weight Combinatorial Structures with Independent Symmetric Weights”. *Electron. J. Combin.* 30 (2023), no. 1, Paper No. 1.12, 12 pp.
7. Paul Pu Liang, Yiwei Lyu, Xiang Fan, Arav Agarwal, **Yun Cheng**, Louis-Philippe Morency, Ruslan Salakhutdinov. “MultiZoo & MultiBench: A Standardized Toolkit for Multimodal Representation Learning.” *JMLR* (2023).

HONORS & AWARDS	<i>Francis Robbins Upton Fellowship</i>	2023-2028
	<i>Mathematics Prize</i>	2022
	<i>CMU SCS DEI Grace Hopper Sponsorship</i>	2022
	<i>Machine Learning TA Award</i>	2020-2021
	<i>Dean's List, High Honors</i>	2018-2022
TEACHING	Princeton University	Princeton, NJ
	<i>Teaching Assistant</i>	
	Natural Language Processing (Instructor: Danqi Chen, Tri Dao, Vikram Ramaswamy)	Spring 2025
	Introduction to Machine Learning (Instructor: Jia Deng, Adji Bousso Dieng)	Fall 2024
	Carnegie Mellon University	Pittsburgh, PA
	<i>Teaching Assistant</i>	
	Advanced Multimodal Machine Learning (Instructor: Louis-Philippe Morency)	Spring 2023
	Artificial Social Intelligence (Instructor: Louis-Philippe Morency)	Spring 2023
	Multimodal Machine Learning (Instructor: Louis-Philippe Morency, Yonatan Bisk, Daniel Fried)	Fall 2022, Spring 2023
	Intro to Machine Learning (Instructor: Matt Gormley)	Spring 2021, Fall 2021
Mathematical Concepts and Proofs (Instructor: John Mackey)	Fall 2019, Fall 2020	
Concepts of Mathematics	Summer 2020	
SKILLS	<i>Programming Languages:</i> Python (NumPy, PyTorch, Tensorflow, Scikit-Learn, CVXPY, Pandas, Matplotlib), C/C++, Java, Go, Standard ML	
	<i>Languages:</i> English, Mandarin (Native or Bilingual)	
PROFESSIONAL SERVICE	<i>Reviewer</i>	
	ICML, NeurIPS, ICLR, EMNLP	