

YU HE

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RESEARCH INTERESTS

Large language models, Algorithmic reasoning, Post-training, Benchmarking and evaluation, Interpretability, Combinatorial optimization, Graph neural networks

EDUCATION

Stanford University

PhD in Computer Science
Advised by Ellen Vitercik

Sep. 2023 - Jun. 2028 (expected)
United States

University of Cambridge

MEng in Computer Science (Distinction)
Advised by Pietro Liò

Oct. 2022 - Jun. 2023
United Kingdom

University of Cambridge

BA in Computer Science (First Class)
Department Prize for the Best Dissertation advised by Pietro Liò

Oct. 2019 - Jun. 2022
United Kingdom

PUBLICATIONS & PREPRINTS

(* indicates equal contribution)

Compositional Reasoning in Language Models under Reinforcement Learning Post-Training

Yu He, Yingxi Li, Yifei Wang, Ellen Vitercik
Under review, 2026

Neural Algorithmic Reasoning Must Explain When Neuralization Adds Value

Yu He, Robert R. Nerem, Timo Stoll, Semih Cantürk, Dobrik Georgiev, Chendi Qian, Solveig Wittig, Floris Geerts, Stefanie Jegelka, Ellen Vitercik, Yusu Wang, Nikolaos Karalias*, Christopher Morris*
AI for Math Workshop, ICML 2026

Can LLMs Reason Structurally? Benchmarking via the Lens of Data Structures

Yu He*, Yingxi Li*, Colin White, Ellen Vitercik
International Conference on Machine Learning (ICML), 2026.

Primal-Dual Neural Algorithmic Reasoning

Yu He, Ellen Vitercik
International Conference on Machine Learning (ICML), 2025, Spotlight (top 2.6%, 313/12107)

Overcoming Information Bottlenecks in Directed Graph Neural Networks through Rewiring

Yu He, Ishani Karmarkar, Ellen Vitercik
Learning on Graph Conference (LoG) 2025

Deep Equilibrium Models For Algorithmic Reasoning

Sophie Xhonneux, Yu He, Andreea Deac, Jian Tang, Gauthier Gidel
International Conference on Learning Representations (ICLR) 2024, Blogpost Track

Sheaf-based Positional Encodings for Graph Neural Networks

Yu He, Cristian Bodnar, Pietro Liò
NeurIPS 2023 Workshop: New Frontiers in Graph Learning, 2023

Higher-Order Expander Graph Propagation

Thomas Christie*, Yu He*
NeurIPS 2023 Workshop on Symmetry and Geometry in Neural Representations, 2023

Continuous Neural Algorithmic Planners

Yu He, Petar Veličković, Pietro Liò, Andreea Deac
Learning on Graphs (LoG) Conference 2022
Best Paper Finalist Award, GroundedML Workshop, ICLR 2022

AWARDS & FELLOWSHIPS

Silver Reviewer Award — International Conference on Machine Learning	2026
Cubist PhD Fellowship (\$100,000) — Cubist Systematic Strategies	2025-2026
School of Engineering Fellowship — Stanford University	2023-2024
Rosemary Murray Scholarship — Murray Edwards College, University of Cambridge	2023
Best Dissertation Award — Department of Computer Science and Technology, University of Cambridge	2022
Best Paper Finalist Award — GroundedML Workshop @ ICLR 2022	2022
Rosemary Murray Scholarship — Murray Edwards College, University of Cambridge	2022
Silver Medal & Top Female Medalist — Singapore National Olympiad in Informatics	2018

INVITED TALKS

Algorithmic and Compositional Reasoning in Large Language Models Cubist Research Seminar	Jun. 2026 New York, US
Panel Discussion on Neural Algorithmic Reasoning DiffCoALG Workshop @ NeurIPS 2025	Dec. 2025 San Diego, US

INDUSTRY EXPERIENCE

Meta Research Scientist Intern	Jun. 2025 - Sep. 2025 Menlo Park, US
Mila - Quebec Artificial Intelligence Institute Research Intern	Jul. 2022 - Sep. 2022 Montreal, Canada
Facebook Reality Labs Software Engineering Intern	Jun. 2021 - Sep. 2021 London, UK
Computer Laboratory, University of Cambridge Research Intern	Jun. 2020 - Aug. 2020 Cambridge, UK

TEACHING EXPERIENCE

Course Assistant CS221: Artificial Intelligence: Principles and Techniques	Spring 2025 Stanford University
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COMMUNITY-BUILDING AND OUTREACH

General Chair — Learning on Graphs Conference Organized two iterations of the largest global conference for graph and geometric deep learning	2024, 2025
Organizer — UK Local Learning on Graphs Meetup Gathered graph researchers from academia and industry in the UK	2022
Deputy Chair — Women@CL Supported the women and non-binary community at the CS department	2022
Publicity Officer — Cambridge University Education Development Trust Fundraised for children's education in underdeveloped areas	2021
Weekly Instructor — Code First Girls Led an Introduction to Python course for women-identifying students	2020
Weekly Instructor — Ulu Panda Stars Programme Taught coding to children of incarcerated parents in Singapore	2018