Zhengnan Ma

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EDUCATION

Northwestern University Sep 2024 – Dec 2025
Master of Science in Computer Science GPA: 3.91/4.00

University of California, Berkeley Aug 2022 – Aug 2023
Berkeley Global Access Program in Computer Science GPA: 3.90/4.00

Shanghai University of Finance and Economics Sep 2020 – Jun 2024
Bachelor of Science in Banking and International Finance GPA: 3.51/4.00

RESEARCH INTERESTS

Human–AI Collaboration; Computational Social Science; Science of Science

PUBLICATIONS & UNDER REVIEW

GraphICL: Unlocking Graph Learning Potential in LLMs through Structured Prompt Design
Yuanfu Sun,* ***Zhengnan Ma****, *Yi Fang, Jing Ma, Qiaoyu Tan* **(* Equal contribution)**
NAACL 2025

Peer Review and the Exposure and Adoption of New Ideas
Binglu Wang, ***Zhengnan Ma****, Dashun Wang, Brian Uzzi*
Revise and resubmit at **Nature Communications**

RESEARCH EXPERIENCE

Center for Science of Science & Innovation, Northwestern University Nov 2025 – Present
Predoctoral Research Fellow; Advisor: Prof. Dashun Wang Evanston, IL

Recovering Chemically Precise Molecular Structures from Scientific Literature
(Project Lead; in collaboration with Prof. Ted Sargent's group)

- Led the design and implementation of an AI pipeline that recovers chemically correct molecular structures from perovskite literature, linking them to photovoltaic metrics for materials in each functional layer.
- Worked closely with materials scientists to translate their extraction practices and quality criteria into executable AI workflows, integrating domain tools.
- Trained models on this dataset to predict the photovoltaic performance of devices with new molecules.

Human–AI Collaborative Systems for Reliable Scientific Data Curation

- Developed an AI-assisted system for materials scientists and innovation researchers to extract, visualize, and curate scientific data, used by Prof. Ted Sargent's and Prof. Mark Hersam's groups.
- Linked curated records to science-of-science databases to support exploratory analysis.
- Designed conversational and visual interfaces to support researchers in co-curating reliable scientific datasets with AI beyond their own domain expertise.

Technological Evolution and Innovation Dynamics

- Analyzed performance frontiers, learning curves, and cross-country collaboration in photovoltaics.
- Developed predictive models to identify early signals of promising perovskite research directions.

Northwestern Institute on Complex Systems Apr 2025 – Nov 2025
Research Assistant; Advisor: Prof. Brian Uzzi Evanston, IL

Peer Review and the Exposure and Adoption of New Ideas

- Conducted staggered difference-in-differences analyses to estimate how exposure through peer review affects the adoption of scientific ideas.
- Constructed author-level measures of collaboration-network embeddedness to examine whether the relationship between peer-review exposure and idea adoption varies with researchers' collaborative ties.

Department of Information Science, Cornell University Jul 2025 – Oct 2025
Research Intern; Advisor: Prof. Yian Yin Remote

Measuring Author Responses to AI-Generated Scientific Feedback

- Built an AI pipeline to automatically align each piece of LLM-generated feedback with the corresponding revisions in long manuscripts, a task infeasible to annotate manually at the scale of 31,000+ preprints.
- Quantified whether and how authors revised their manuscripts after receiving AI feedback.

Department of Computer Science, New York University Sep 2023 – Sep 2024
Research Assistant; Advisor: Prof. Qiaoyu Tan Shanghai, China

Benchmarking LLMs for Graph Reasoning

- Co-first-authored GraphICL (NAACL 2025), introducing a benchmark to evaluate large language models' in-context learning capabilities on graph tasks.
- Curated graph datasets using PyTorch Geometric and collected paper titles and abstracts through web scraping to construct textual inputs.
- Designed structured prompt templates and implemented Sentence-BERT-based semantic retrieval for neighbor and example selection.

WORKING PAPERS AND RESEARCH IN PROGRESS

Nanoscope: a general-purpose agentic pipeline to extract technology outcomes
*Giorgio Tripodi, **Zhengnan Ma**, Filipi Silva, Siddharth Patwardhan, Shreyash S. Hadke, Dominic P. Goronzy, Vinod K. Sangwan, Mark Hersam, Dashun Wang*
Manuscript in preparation

Quantifying progress along technological trajectories: evidence from perovskite solar cell research
*Giorgio Tripodi, Youwei He, **Zhengnan Ma**, Dashun Wang*
Manuscript in preparation

Competition at the frontier: redefining the U.S.–China technological race
*Renli Wu, Giorgio Tripodi, **Zhengnan Ma**, Yifan Qian, Dashun Wang*
Research in progress

TEACHING AND MENTORSHIP EXPERIENCE

Department of EECS, UC Berkeley Jan 2023 – May 2023
Academic Intern, CS 61A: Structure and Interpretation of Computer Programs Berkeley, CA

Association of Women in EE & CS, UC Berkeley Jan 2023 – May 2023
Student Mentor Berkeley, CA

PRESENTATIONS

Ryan Institute Summer Summit Aug 2026

HONORS AND AWARDS

People's Scholarship, Shanghai University of Finance and Economics Shanghai, China

ADDITIONAL INFORMATION

Programming and Data Analysis: Python, Stata, C, Java, MATLAB, HTML, SQL
Interests: Latte art, film photography