Yiling Lin

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RESEARCH SUMMARY

I am a computational social scientist who investigates how science and technology advance and how collaboration reshapes this process. Using large-scale data, network analysis, and AI, I develop quantitative and computational methods and new datasets as testbeds for rethinking theories of innovation and collaboration. My research has been published in *Nature* and in domain-specific journals such as the *Journal of Informetrics* and *Quantitative Science Studies*.

KEYWORDS

Innovation, Team, Science of Science, Computational Social Science, AI for Science, Network Science, Data Science

EDUCATION

PhD - Information Science	2021 - Present
University of Pittsburgh	
MA - Computational Social Sciences	2019 - 2021
University of Chicago	
BA - Management Science	2014 - 2018
Beijing Normal University	

JOURNAL ARTICLES

Lin, Y., Frey, C. B., & Wu, L. (2023). Remote Collaboration Fuses Fewer Breakthrough Ideas. *Nature*, 623(7989), 987-991. doi:`10.1038/s41586-023-06767-1`
Impact Factor: 55.0
Onsite teams fuse ideas while remote teams diffuse them.
Repository link

Lin, Y., Li, L., & Wu, L. (2025). The disruption index measures displacement between a paper and its most cited reference. *Accepted at Quantitative Social Sciences*
Impact Factor: 6.6
A paper is disruptive not because of how many references it cites, but because it challenges a dominant idea and drives that idea into obsolescence.
Repository link

Lin, Y., Li, L., & Wu, L. (2025). Team size and its negative impact on the disruption index. *Journal of Informetrics*, 19(3), 101678. doi:`10.1016/j.joi.2025.101678`
Impact Factor: 4.0
Small teams need a decade or more to reveal their transformative contributions to science.
Repository link

Lin, Y., Evans, J. A., & Wu, L.(2022). New Directions in Science Emerge from Disconnection and Discord. *Journal of Informetrics*, 16(1), 101234. doi:`10.1016/j.joi.2021.101234`
Impact Factor: 4.0
Disruptive papers are "sleeping beauties," accumulating impact over the long run.
Repository link

WORKING PAPERS	Cui, H., **Lin, Y.**, Wu, L., & Evans, J. A. (2025). Aging and the Narrowing of Scientific Innovation. *Under Review (Second Round) at Science* *As scientists advance in academic age, their recombinant innovation increases, whereas their disruptive innovation declines.* Repository link
	Risha, Z.[†], **Lin, Y.**[†], Leahey, E., & Wu, L. (2025). The Decline and Power of Generalists in Science. *Resubmit to Proceedings of the National Academy of Sciences (PNAS)* [†]Equal contribution *The decline of generalists has led to innovation losses unmatched by specialist teams.* Repository link
	Li, L., **Lin, Y.**, & Wu, L. (2025). Innovation by Displacement. *Under Review at American Sociological Review* *Scientific breakthroughs stem from displacing dominant knowledge, rather than simply recombining distant ideas.* Repository link

TALKS	**Conference Presentations** "The Decline of Renaissance Thinkers and Its Cost to Innovation" 2025 International Conference on the Science of Science & Innovation (**ICSSI**), University of Copenhagen 2024, National Bureau of Economic Research (**NBER**), Science of Science Funding Workshop, Boston 2024, **ICSSI**, Washington, DC
	"Why Are Breakthroughs Rare? Measuring Competition Between Ideas" 2025 **ICSSI**, University of Copenhagen 2024, **ICSSI**, Washington, DC
	"Atypicality and Disruption Are Negatively Correlated" 2025 **ICSSI**, University of Copenhagen
	"Quantifying Paradigm Shifts Through Graduate Course Readings" 2025, **ICSSI**, University of Copenhagen
	"Lab Dynamics Behind Paper Retraction" 2025 IEEE Pittsburgh Technical Symposium, University of Pittsburgh
	"Engaged Thinkers and New Ideas" 2023 **ICSSI**, Northwestern University
	"Remote Collaboration Fuses Fewer Breakthrough Ideas" 2023 **ICSSI**, Northwestern University 2022 **ICSSI**, Washington, DC 2022 Women in Data Science (**WIDS**), Boston
	"Measuring the Moving Frontiers in Science" 2021 Workshop on Natural Language Processing for Scientific Text (**SciNLP**), Irvine
	"The Delayed Recognition of Scientific Novelty" 2021 International Conference on Computational Social Science (**IC^{2}S^2**), ETH 2021 The Annual Interdisciplinary Graduate Conference, MAPSS and MACSS, University of Chicago.

Invited Talks

"Remote Collaboration Fuses Fewer Breakthrough Ideas"
2024, Northwestern Institute on Complex Systems (**NICO**), Northwestern University
2024, The Computational Culture Lab, Stanford and Berkeley
2024, Department of Information Science, Cornell University
2024, School of Economics and Management, University of Electronic Science and Technology of China
2023, School of International and Public Affairs, Shanghai Jiao Tong University
2023, Department of Statistics and Data Science, Southern University of Science and Technology

"The Influence of PhD Education on Long-Term Research Innovation"
2025, Copenhagen Center for Social Data Science (**SODAS**), University of Copenhagen

"The Delayed Recognition of Scientific Novelty"
2021, Department of Information Management, Peking University
2021, Institute for Software Research, Carnegie Mellon University
2020, School of Information, University of Texas at Austin

"Measuring the Expressive Power of Scientific Concept"
2020, Department of Communication, Michigan State University

GRANTS, HONORS, AWARDS

Grants

- **2025-2027, National Institute of General Medical Sciences (NIGMS), NIH**
  Senior personnel, "The Anatomy of Scientific Biomedical Open-Source Software—From Code to Communities" $450,000

- **2023-2028, National Science Foundation: Science of Science Program (CAREER)**
  Senior personnel, "How Does Core Scientific Knowledge Advance? Understanding Team Innovation at the Foundations of Sciences." $565,087

- **2025-, The Spencer Foundation (Round-2 Review)**
  Senior personnel, "The Lost Curie? Linking Doctoral Training to Scientific Innovation and Opportunity" Proposed budget: $375,000

Honors and Awards

- 2025, 3MT Presentation, University of Pittsburgh, Finalist, First Price at School of Computing and Information

- 2025, ICSSI, Travel Grant, $300

- 2020, UChicago Social Science Scholarship, $40,000

- 2019, UChicago Social Science Scholarship, $10,500

TEACHING & MENTORING

Co-Instructor

- Information Visualization, INFSCI 1520, University of Pittsburgh, Spring 2025

- Data Mining, INFSCI 2160, University of Pittsburgh, Spring 2026

Mentor

- Mentor, Vikram Nagarajan, High school student, lab research intern, 2021–2022, placement: University of Maryland

ACADEMIC SERVICE

Organizer
- 2021-2025, The Pitt Initiative on Computational Social Science (PittCSS), 27 faculty and students
- 2024, Pitt SCI Dean's Spotlight Lectured by Dr. Dashun Wang, "The Science of Science: Exciting Progress and Future Directions", 64 participants
- 2022, Thanksgiving Retreat, "The Science of Team Science and Innovation", 15 participants, across 6 universities

Academic Journal Reviewer and Sub-Reviewer
- General Audience: *Nature* (2025-), *Science* (2024-), *PNAS* (2024-), *Nature Human Behaviour* (2023-), *Scientific Reports* (2023-), *PLOS One* (2021-), *Frontiers in Big Data* (2024-), *Humanities and Social Sciences Communications* (2023-), *EPJ Data Science* (2023-)
- Science of Science: *Aslib Journal of Information Management* (2025-), *Journal of Informetrics* (2024-), *Applied Network Science* (2024-)
- Physics: *Physical Review X* (2024-)

Grant Sub-Reviewer
- Swiss National Science Foundation

Grant Technical Consultant
- John Templeton Foundation. "Evaluating the Impact of Forgiveness Research"

OPEN DATASETS

- Lin, Yiling; Frey, Carl Benedikt; Wu, Lingfei, (2025). Replication Data for: Remote collaboration fuses fewer breakthrough ideas. Harvard Dataverse
  doi: 10.7910/DVN/SNSIDH
  Repository link
- Li, Linzhuo; Lin, Yiling; Wu, Lingfei (2025). D-index Datasets and Code. Harvard Dataverse
  doi: 10.7910/DVN/VE3AFX
  Repository link
- Wu, Lingfei (2023). Remote Collaboration Fuses Fewer Breakthrough Ideas. Figshare. Dataset
  doi: 10.6084/m9.figshare.21295725.v1
  Repository link

PERSONAL INTERVIEW

- **Science News**: Research may be increasingly incremental—but studies making lasting paradigm shifts are on the rise. By Jeffrey Brainard.
- **Physics World**: Get offline and meet in person to make breakthroughs, claims study. By Laura Hiscott.

SELECTED MEDIA COVERAGE

Remote Collaboration Fuses Fewer Breakthrough Ideas
- **Scientific American**: Collaborating in Person May Spark More Innovative Research. By Simon Makin.
- **Forbes**: Remote Work Reduces Innovation. How To Increase Innovation Wherever You Work. By Tracy Brower.
- **Fortune**: The CEO of a major co-working company says bosses need to create a 'third place' for employees if they want a meaningful office culture. By Trey Williams.

- **The Hill**: Do we really need shared physical offices to collaborate at work? By Gleb Tsipursky.
- **Aviation Week**: Why Boeing Headquarters Should Move Back to Seattle. By Garrett Reim.
- **Nature News**: What science says about hybrid working—and how to make it a success. By David Adam.
- **Physics World**: Get offline and meet in person to make breakthroughs, claims study. By Laura Hiscott.
- **Physics Magazine**: Disruptive Discoveries More Likely between Scientists Who Meet Face to Face. By Katherine Wright.
- **University of Oxford News**: Remote collaborations deliver fewer scientific breakthroughs. By Amjad Parkar.
- **The Tribune (India)**: Scientists working remotely less likely to make breakthroughs than those onsite. By Press Trust of India.
- **Times Higher Education**: Remote collaboration leads to less innovative science. By Jack Grove.
- **Axios**: Remote collaborators don't generate as many breakthrough scientific ideas. By Alison Snyder.
- **New Things Under the Sun**: Remote breakthroughs. By Matt Clancy.

SKILLS	***Languages:*** English-proficient, Mandarin-native.
&	***Methodology:*** Data Science, Network Science, Natural language processing.
KNOWLEDGE	***Programming Languages:*** Python, Processing, Stata, Matlab, SQL.