

Lingfei Wu

CONTACT INFORMATION	School of Computing and Information The University of Pittsburgh Pittsburgh, PA 15260, USA	Mobile: (480) 435-2217 E-mail: wlf850927@gmail.com Homepage: lingfeiwu.github.io	
RESEARCH INTERESTS	My current research focuses on the <i>Science of Team Science and Innovation</i> , a new interdisciplinary field that leverages big data, complexity sciences, and artificial intelligence to understand how science and technology can advance through team collaboration.		
ACADEMIC POSITIONS	The University of Pittsburgh Assistant Professor, School of Computing and Information, 2019–present The University of Chicago Postdoctoral Fellow, Department of Sociology, 2016–19 Arizona State University Santa Fe Institute Postdoctoral Researcher, ASU-SFI Center for Biosocial Complex Systems, 2014–15		
EDUCATION	City University of Hong Kong Peking University China University of Political Science and Law	Communication Communication Political Science	Ph.D., 2013 M.A., 2009 B. A., 2006
REPRESENTATIVE RESEARCH PUBLICATIONS	<ul style="list-style-type: none">• Xu, F., Wu, L., & Evans, J. (2022). Flat Teams Drive Scientific Innovation. <i>Proceedings of the National Academy of Sciences (PNAS)</i>, 119(23), e2200927119.• Wu, L., Wang, D., & Evans, J. A. (2019). Large teams develop and small teams disrupt science and technology. <i>Nature</i>, 566(7744), 378-382. <p><i>The New York Times</i> Can Big Science Be Too Big? <i>The Atlantic</i> Small Teams of Scientists Have Fresher Ideas <i>Forbes</i> It Takes More Than Members to Make a Team <i>Harvard Business Review</i> When Small Teams Are Better Than Big Ones</p> <ul style="list-style-type: none">• Börner, K., Scrivner, O., Gallant, M., Ma, S., Liu, X., Chewning, K., Wu, L., Evans, J. A. (2018). Skill discrepancies between research, education, and jobs reveal the critical need to supply soft skills for the data economy. <i>Proceedings of the National Academy of Sciences (PNAS)</i>, 115(50), 12630-12637. <p><i>The Conversation</i> How to fix the gap between school and work in South Africa <i>Complexity Science</i> In an Age of Workplace Automation, Being Human Matters <i>Open Science</i> Learning as Part of a Community Is a Powerful Skill</p> <ul style="list-style-type: none">• Wu, L., & Zhang, J. (2011). Accelerating growth and size-dependent distribution of human online activities. <i>Physical Review E</i>, 84(2), 026113.• Wu, L. (2011), The accelerating growth of online tagging systems. <i>European Physical Journal B</i>, 83(2), 283. <p><i>New Scientist</i> Why Social Networks Are Sucking up More of Your Time</p>		

Science Daily Online Activity Grows in a Similar Pattern to Real-Life Networks
Springer Select Predicting Collective Online Behavior

GRANTS

PI, "CAREER: How Does Core Scientific Knowledge Advance? Understanding Team Innovation at the Foundations of Sciences," \$565,087, 2023–28.

PI, "Understanding Team Age Dynamics and Scientific Innovation," Alfred P. Sloan Foundation, \$250,000, 2023–26 (in Progress).

PI, "Sideline to Frontline: Data-driven Technologies to Reskill Displaced Workers for Healthcare Economy and Beyond," Richard King Mellon Foundation, \$100,000, 2020–21.

Co-PI, "Quantifying Hyperlocal Digital Disadvantage: A Path to Supporting Digital Participation," NSF RAPID, \$196,271, 2020–23.

PI, "Measuring Worldviews: A Map of Stubborn Social Skills," Institute for Cyber Law, Policy, and Security, University of Pittsburgh, \$6,500, 2020–21.

PI, "International Symposium on Complex Systems, Geometry, and Machine Learning," Kaifeng Foundation, \$442,930, 2016–26.

PI, "International Symposium on Artificial Intelligence and Public Policy," Tencent Research Institute, \$43,700, 2018–19.

Senior personnel, "Collaborative Research: Understanding Team Success and Failure," National Science Foundation (NSF) Award #1829344, \$592,772, 2018–21.

Senior personnel, "Understanding Online Attention and User-generated Content Creation," Australian Research Council (ARC) Discovery Grant #140103688, \$225,000, 2014–16.

AWARDS

NSF Career Award, 2023

Oxford Martin Fellowship, University of Oxford, 2021

Top 100 most-discussed papers across all sciences, Altmetric, 2019

Best Student Paper Award, Chinese Association for Journalism and Communication Annual Conference, 2009

Student Travel Award, Agricultural and Applied Economics Association Conference (AAEA), 2009

P&G Student Best Paper Award, China Marketing Research Association, 2008

China National Petroleum Corporation Scholarship, Peking University, 2006–09

National Scholarship, China University of Political Science and Law, 2002–06

BOOK

Wu, L. (2014). *Data Visualization*,
<https://lingfeiwu1.gitbooks.io/data-mining-in-social-science/>

UNDER REVIEW

Lin, Y., Frey, C. B., & Wu, L. (2022). Remote Collaboration Fuses Fewer Breakthrough Ideas. arXiv preprint arXiv:2206.01878. *Nature*.

Cui, H., **Wu, L.**, & Evans, J. A. (2022). Aging Scientists and Slowed Advance. arXiv preprint arXiv:2202.04044. *Nature*.

Tong, D., Wu, L., & Evans, J. A. (2021). Low-skilled Occupations Face the Highest Re-skilling Pressure. arXiv preprint arXiv:2101.11505. *PNAS*.

IN PREPARATION Xu, F., Wu, L., & Evans, J. A. (2022). Quantifying Hierarchy in Scientific Teams. arXiv preprint arXiv:2210.05852.

Risha, Z., Lin, Y., Leahey, E., & Wu, L. How Can Interdisciplinary Collaboration Be Disruptive?

PUBLICATIONS
(FULL LIST)

1. Xu, F., Wu, L., & Evans, J. (2022). Flat Teams Drive Scientific Innovation. *Proceedings of the National Academy of Sciences (PNAS)*, 119(23), e2200927119.
2. Wu, L., Kittur, A., Youn, H., Milojević, S., Leahey, E., Fiore, S. M., & Ahn, Y. Y. (2022). Metrics and Mechanisms: Measuring the Unmeasurable in the Science of Science. *Journal of Informetrics*, 16(2), 101290.
3. Lin, Y., Evans, J. A., & Wu, L. (2022). New directions in science emerge from disconnection and discord. *Journal of Informetrics*, 16(1), 101234.
4. Li, L., Wu, L., & Evans, J. A. (2020). Social centralization and semantic collapse: Hyperbolic embeddings of networks and text. *Poetics*, 101428.
5. Xu, H., Zhang, Z., Wu, L., & Wang, C. J. (2019). The Cinderella Complex: Word embeddings reveal gender stereotypes in movies and books. *PLOS ONE*, 14(11).
6. Wu, L., Wang, D., & Evans, J. A. (2019). Large teams develop and small teams disrupt science and technology. *Nature*, 566(7744), 378-382.
7. Börner, K., Scrivner, O., Gallant, M., Ma, S., Liu, X., Chewning, K., Wu, L., Evans, J. A. (2018). Skill discrepancies between research, education, and jobs reveal the critical need to supply soft skills for the data economy. *Proceedings of the National Academy of Sciences (PNAS)*, 115(50), 12630-12637.
8. Wu, L., & Wang, C. J. (2016). Tracing the attention of moving citizens. *Scientific Reports*, 6, 33103.
9. Wang, C. J., Wu, L., Zhang, J., & Janssen, M. A. (2016). The collective direction of attention diffusion. *Scientific Reports*, 6, 34059.
10. Wang, C. J., & Wu, L. (2016). The scaling of attention networks. *Physica A: Statistical Mechanics and its Applications*, 448, 196-204.
11. Wu, L., Baggio, J. A., & Janssen, M. A. (2016). The role of diverse strategies in sustainable knowledge production. *PLOS ONE*, 11(3), e0149151.
12. Zhang, J., Li, X., Wang, X., Wang, W. X., & Wu, L. (2015). Scaling behaviours in the growth of networked systems and their geometric origins. *Scientific reports*, 5, 9767.
13. Li, X., Wang, X., Zhang, J., & Wu, L. (2015). Allometric scaling, size distribution and pattern formation of natural cities. *Palgrave Communications*, 1, 15017.
14. Wu, L., Zhang, J., & Zhao, M. (2014). The metabolism and growth of Web forums. *PLOS ONE*, 9(8), e102646.
15. Wu, L., & Ackland, R. (2014). How Web 1.0 fails: The mismatch between hyperlinks and clickstreams. *Social Network Analysis and Mining*, 4(1), 202.

16. Zhang J. and Wu, L. (2013), Allometry and dissipation of ecological networks. *PLOS ONE*, 8(9), e72525.
17. Wu, L. and Zhang, J. (2013), The decentralized structure of collective attention on the Web. *European Physical Journal B*, 86(6), 266.
18. Wu, L., & Zhang, J. (2011). Accelerating growth and size-dependent distribution of human online activities. *Physical Review E*, 84(2), 026113.
19. Wu, L. (2011), The accelerating growth of online tagging systems. *European Physical Journal B*, 83(2), 283.
20. Wu, L., Cai, Y., and Liu, D. (2011), Online shopping among Chinese consumers: An exploratory investigation of demographics and value orientation. *International Journal of Consumer Studies*, 35(4), 458.

TEACHING

- **Information Visualization**
Information Visualization (INSCI2415), The Master of Science in Information Science Program, University of Pittsburgh, 2019–present
- **Computational Social Science**
Science for Team Science and Innovation (INFSCI 3350), Doctoral Seminar, University of Pittsburgh, 2020–present
Computational Social Science, Research Seminar, University of Pittsburgh, 2021–present
Computational Communication Methods, Summer Program, Nanjing University, 2016, 2017, 2018
Complex Network and Machine Learning, Workshop, Arizona State University, 2014
- **Quantitative Research Methods**
Communication Research Methods, City University of Hong Kong, 2012
Market Research and Analysis, Peking University, 2008

TALKS & VISITS

Research Institutions | Government Agencies | Think Tanks | Art Museums
 Complexity Science Hub Vienna, Austria, 2022
 National Bureau of Economic Research (NBER), DC, 2022
 Zhejiang University, Department of Sociology, 2022
 Wuhan University, School of Information Management, 2021, 2022
 Monash University, Department of Economics, 2021
 The University of Texas at Austin, School of Information, 2021
 Carnegie Mellon University, Institute for Software Research, 2020, 2021, 2022
 MIT Sloan, Future of Work Program, 2021
 Peking University, The Office of Scientific Research, 2021
 UC Davis, Computational Communication Research Lab, 2020
 Pew Research Center, 2019
 Harvard Kennedy School, Center for International Development. 2018
 National Opinion Research Center (NORC), 2018
 Tencent Research Institute, 2018, 2019
 National Natural Science Foundation of China (NSFC), 2018
 Nanjing University, School of Journalism & Communication, 2017, 2018, 2019
 GESIS Leibniz Institute for the Social Sciences, 2016
 Volkswagen Foundation, 2016
 Santa Fe Institute, 2015
 Arizona State University, Global Biosocial Complexity Initiative, 2014

C5ART Institute, 2013
Swarma Club, 2013, 2014, 2015
Baidu Inc., Department of Personal Recommendation, 2012
Nanyang Tech. University. School of Comm. and Information, 2011
The Commonwealth Scientific and Industrial Research Organisation, 2011
Australian National University, Demographic & Social Research Inst, 2011
Wolfram Research, 2010

Academic Conferences

Int. Conf on the Science of Science and Innovation (ICSSI), DC, 2022
Int. Conf on Computational Social Science (IC2S2), 2015, 2018, 2020, 2021
Network Science Society Annual Conference (NetSci), 2012, 2017, 2019
Science of Team Science Conference (SciTS), 2017, 2018
Chinese National Conference on Social Media Processing (SMP), 2016, 2018
Int. Conf on Social Informatics (SocInfo), 2014
Int. Conf on the Simulation and Synthesis of Living Systems (ALIFE), 2012
International Communication Association Conference (ICA), 2012
Agricultural and Applied Economics Association Conference (AAEA), 2009
ACM Web Science Conference, 2009

MEDIA COVERAGE

China Science Daily [Fresh Team Members for New Ideas](#)
SAGE Research Methods [Ask a Researcher: Lingfei Wu on Networks and Computational Social Science](#)
SAGE [Big Data & Data Visualization in the Study of the Science of Science](#)
The New York Times [Can Big Science Be Too Big?](#)
The Atlantic [Small Teams of Scientists Have Fresher Ideas](#)
Forbes [It Takes More Than Members to Make a Team](#)
Harvard Business Review [When Small Teams Are Better Than Big Ones](#)
New Scientist [Why Social Networks Are Sucking up More of Your Time](#)
Science Daily [Online Activity Grows in a Similar Pattern to Real-Life Networks](#)
Springer Select [Predicting Collective Online Behavior](#)
The Conversation [How to fix the gap between school and work in South Africa](#)
Complexity Science [In an Age of Workplace Automation, Being Human Matters](#)
Open Science [Learning as Part of a Community Is a Powerful Skill](#)

SERVICE

Invited Reviewer for Federal Funding Agencies

National Science Foundation
U.S. Department of Energy

Research Consultant for Private Funding Agencies

Novo Nordisk Fonden
John Templeton Foundation

Invited Reviewer for Academic Journals

American Journal of Sociology | Quantitative Science Studies | Scientometrics
Journal of the Association for Information Science and Technology
Nature Human Behavior | PLOS One | Physica A

Conference/Workshop Co-Chair/Organizer

International Society for Scientometrics and Informetrics (ISSI) 2023
International Conference on Computational Social Science (IC2S2) 2022
International Science of Team Science Conference (SciTS) 2022
Network Science Society Annual Conference (NetSci) 2017, 2019, 2021, 2022
The Web Conference (WWW) 2020
Duke Forest Conference 2016
Conference on Complex Systems (CCS) 2015

**MENTORING &
ADVISING**

Ph.D. Mentees

Yiling Lin, Information Science, University of Pittsburgh, 2021–*present*

Ph.D. Dissertation Advising

Zak Risha, Information Science, University of Pittsburgh, estimated 2024
Rongqian Ma, Library and Information Science, University of Pittsburgh, 2022
Assistant Professor, Indiana University Bloomington
Linzhuo Li, Sociology, The University of Chicago, 2020
Assistant Professor, Zhejiang University

Master Thesis Advising

Masters in Computational Social Science, The University of Chicago
Yiling Lin | Di Tong | Yuanhao Liu
Masters in Communication, Nanjing University
Huiming Xu

SKILLS

Python, R, Mathematica, STATA, SPSS, SQL, Adobe Illustrator, Processing