Wajeeha Ahmad

Contact Information

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Education

Stanford University
PhD Candidate in *Management Science and Engineering*
Dissertation Committee: Charles Eesley, Erik Brynjolfsson, Eric Horvitz
Graduate Research Affiliate, Digital Economy Lab, Human-Centered AI (HAI)
Graduate Research Affiliate, Stanford Technology Ventures Program

Massachusetts Institute of Technology
Master of Science, *Technology and Policy Program*, Institute for Data, Systems and Society
Thesis: "The Anonymity-Accountability Trade-off in Communication Networks."
Graduate Research Assistant, MIT Computer Science and AI Lab (CSAIL)

Massachusetts Institute of Technology
Bachelor of Science in *Mathematics with Computer Science*
Minors in *Economics* and *Applied International Studies*

Research Interests

Artificial Intelligence and Digital Platforms, Technology strategy, Human-AI collaboration, Field experiments, Computational social science

Peer-reviewed Publications *(* denotes first author)*

Companies inadvertently fund online misinformation despite consumer backlash
Wajeeha Ahmad*, Ananya Sen, Chuck Eesley & Erik Brynjolfsson. *Nature*, 123-131 (2024).
Select Press: Nature Editorial, Stanford HAI, Adexchanger

Select Pre-PhD publications:
A Systems Approach Toward Addressing Anonymous Abuses: Technical and Policy Considerations. Wajeeha Ahmad* and David D. Clark.
IEEE Security & Privacy, Volume: 19, Issue: 2, March-April 2021, p. 38-47.
Best paper award.

Addressing Anonymous Abuses: Measuring the Effects of Technical Mechanisms on Reported User Behaviors. Wajeeha Ahmad* and Ilaria Liccardi.
Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems, p. 1-14, April 25-30, 2020, Honolulu, HI, USA.

Research In Progress

What drives platform growth? Evaluating content production using a randomized field experiment. (In the field)

AI agency and adoption in organizations: Evidence from a field experiment.
Wajeeha Ahmad, Eric Horvitz and Adam Fourney. (In the field)

How engagement-based platform business models amplify misinformation.
Wajeeha Ahmad, Uttara Ananthakrishnan, Ananya Sen and Vineeth Loganathan

Selected Coursework

Intermediate Econometrics I, Intermediate Econometrics II, Microeconomics I, II, and III, Economics of Digitization, Industrial Organization I, Strategy Doctoral Research Seminar, Innovation and Strategic Change, Entrepreneurship Research Seminar, Data Mining and Analysis, Machine Learning and Causal Inference, Natural Language Processing with Deep Learning, Computer Systems Engineering, Design and Analysis of Algorithms, Principles of Discrete Applied Math

Understanding the Impact of AI on the Content we Consume and Create

Online platforms can use AI to empower users and improve our collective, creative output in our professional and social lives. However, while AI offers unprecedented opportunities to improve discourse and spur creativity, its use could also have unintended outcomes depending on the incentives of the platforms deploying AI. In my ongoing research, I examine how we can improve the quality of the content we consume and create online using approaches from computational social science, causal inference and behavioral economics. I use AI to both 1) uncover the underlying incentives of online platforms and 2) examine how we can better integrate AI to improve outcomes with human-AI collaboration at scale.

1. Examining the incentives of digital platforms in promoting content

1a) Examining content categories that contribute to platform growth: To examine the types of content that can contribute to the growth of online communities and platforms hosting user-generated content, I am conducting field experiments in an online forum, including 1) an adaptive experiment to identify whether the types of content that is optimized for user engagement in the short term differs from content optimized for quality, and 2) a randomized field experiment to measure the downstream effects of such content on longer term user retention. These experiments involve automatically posting high quality AI-generated content and evaluating the downstream consequences of various types of content (e.g. informative vs engaging, etc.). To capture the utility of different content categories, I measure both short-term engagement metrics (e.g. likes, number of replies) and longer run user retention i.e. content production by treated users following the treatment. This research will reveal whether platforms face a trade-off between optimizing for user engagement in the short term and user retention in the longer run since short-term metrics have often been ineffective in capturing value (Milli, Belli, and Hardt, 2021). Additionally, it will identify the characteristics of content that can help maximize user retention and lead to the growth of online communities.

1b) Examining the incentives of AI-powered platforms in monetizing misinformation: Anecdotal evidence suggests that publishing misinformation can generate more views, clicks and ad revenue for news producers and platforms than publishing credible news (Higgins et al., 2016). However, the presence of a bias towards publishing misinformation lacks empirical investigation despite concerns that the ad business model inherently amplifies such content. Economic theory predicts that different business models bias the creation of different types of content (Spence and Owen, 1977). Thus, if misinformation websites generate greater engagement, they may be cheaper to advertise on. Consequently, AI algorithms optimizing for cost-effectiveness may direct more ads towards misinformation sites than other sites. To uncover how algorithmic ad targeting shapes the incentives for producing misinformation, we are conducting field tests with an ad agency that involves placing ads via their ad platform and measuring outcomes such as clicks and impressions.

2. How should digital platforms deploy AI to improve online interactions?

2a) Measuring the impact of generative AI on online creative output: Given the potential of generative AI in providing quality content, I am developing a browser extension that people can use to access new ideas as they are creating content on online social communities. A growing literature has explored how generative AI can improve the productivity of employees and entrepreneurs (Otis

et al., 2024; Brynjolfsson, Li and Raymond, 2023). Recent work has also shown that availability of LLMs for content generation can lead people to rely on them rather than contributing to open collective commons, resulting in a decline in participation on online communities that crowdsource knowledge from the public (Burtch, Lee and Chen, 2024). The extent to which AI tools such as the one I'm building can stimulate creativity at scale and lower the barrier to contribute for users remains an open question. To investigate this, I will randomly assign users to a treatment group that receives AI suggestions while writing comments online or a control group that receives a grammar check, and measure the effects on user engagement and the quality of content produced.

2b) Examining the role of AI in co-creation: While AI has the potential to amplify creativity and make conversations more productive, people's perceptions of AI could substantially impede or increase their willingness to adopt AI-generated suggestions or feedback. While there is an ongoing debate on the role of AI in automating or augmenting work for humans (Agarwal et al., 2023; Brynjolfsson, 2022), the degree to which each of these roles can be helpful to people remains to be seen. To systematically study which roles taken by AI are most preferred by people as part of their everyday work, I am conducting a randomized field experiment in collaboration with a company that is rolling out a general purpose AI coaching tool for improving communication quality via emails. While AI Coach is aimed at helping people craft higher quality emails, it can do so in different ways, e.g. by offering specific feedback on clarity and tone to allow the user to revise their email or by completely rewriting an email on behalf of the user. Our experiment involves introducing the AI coaching tool via nudges within the email product to all users in a randomized manner such that some users perceive it as an assistant that provides suggestions whereas others perceive it as an entity that can automate their work. We then measure the adoption of the technology tool across the entire user base and evaluate whether the way AI is introduced affects its adoption. This research will examine the barriers that may currently prevent individuals and organizations from adopting AI feedback and help us determine how best to deploy AI products for the maximum benefit of employees, organizations and society.

References

Ajay Agrawal et al. Do we want less automation?.Science 381, 155-158 (2023). DOI:10.1126/science.adh9429

Brynjolfsson, E. The Turing Trap: The Promise & Peril of Human-Like Artificial Intelligence. Dædalus, Spring 2022.

Brynjolfsson, E., Li, D. and Raymond, L. Generative AI at Work. NBER Working Paper No. 31161 (2023). https://www.nber.org/system/files/working_papers/w31161/w31161.pdf

Burtch, G., Lee, D. & Chen, Z. The consequences of generative AI for online knowledge communities. Sci Rep 14, 10413 (2024). https://doi.org/10.1038/s41598-024-61221-0

Higgins, A., McIntire, M. and Dance, G. J., 2016. Inside a Fake News Sausage Factory: 'This Is All About Income'. The New York Times. Nov. 25, 2016. (web link)

Milli, S., Belli, L. and Hardt, M. (2021). From Optimizing Engagement to Measuring Value. In Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (FAccT '21). Association for Computing Machinery, New York, NY, USA, 714–722. https://doi.org/10.1145/3442188.3445933

Otis, N., Clarke, R., Delecourt, S., Holtz, D. and Koning, R. The Uneven Impact of Generative AI on Entrepreneurial Performance (February 27, 2024). http://dx.doi.org/10.2139/ssrn.4671369

Spence, M. and Owen, B., 1977. Television programming, monopolistic competition, and welfare. The Quarterly Journal of Economics, 91(1), pp.103-126.