

Ananya A. Joshi

Assistant Professor of Psychiatry and Behavioral Sciences and Computer Science
Johns Hopkins University

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ACADEMIC APPOINTMENTS

Johns Hopkins University

Assistant Professor, Psychiatry and Behavioral Sciences, Computer Science

Baltimore, MD

Aug. 2025–Present

Affiliations

- Faculty, Star Precision Medicine Center for Mood Disorders
- Core Member, Hopkins Business of Health Initiative
- Affiliate Member, Malone Center for Engineering in Healthcare
- Member, Data Science and AI Institute

EDUCATION

Carnegie Mellon University

Ph.D. in Computer Science

M.S. in Computer Science Research

Committee: Roni Rosenfeld and Bryan Wilder (Advisors), Rayid Ghani, Matt Biggerstaff

Pittsburgh, PA

Aug. 2020–Mar. 2025

May 2023

Princeton University

B.S.E. in Computer Science

Certificates: Statistics and Machine Learning, Robotics and Intelligent Systems, Entrepreneurship

Princeton, NJ

Sep. 2015–May 2019

GRANTS, FELLOWSHIPS, AND RESEARCH SUPPORT

- Google Gemini Academic Award, Principal Investigator, 2026. \$20,000 in credits.
- Google Cloud Education Award, Principal Investigator, 2026.
- NVIDIA Academic Research Award, Principal Investigator, 2026. Two NVIDIA DGX Spark systems supporting behavioral-health AI research.
- Johns Hopkins Discovery Award, Co-PI, 2026–2027. “Tracing the Impact of AI Scribes on the Content of Mental Health-Related Clinical Notes,” with Roy Adams, Anjalie Field, and Kristina Gligorić: \$150,000.
- Johns Hopkins Data Science and AI Institute Event Award, Principal Investigator, 2026. \$3,000.
- Computing Research Association DREU Awards, Faculty Mentor, 2026. Two funded undergraduate summer researchers, approximately \$16,000.
- National Science Foundation Graduate Research Fellowship, 2019–2024. Approximately \$159,000.
- Fulbright U.S. Student Research Fellowship, Singapore / National University of Singapore, 2019–2020.

SELECTED HONORS AND RECOGNITION

- Invited Speaker for *The Future of Artificial Intelligence and Mental Health: A Distinguished Speaker Series*, from [NIH AIM-AHEAD](#)
- IAAI/AAAI Deployed Application Award, 2026.
- Rising Star in Machine Learning and Systems, MLCommons and Meta (2025).
- Rising Star in Computational and Data Sciences, University of Texas at Austin (2025).
- Rising Star in Computer Science, University of Iowa (2024).
- Carnegie Mellon University Graduate Student Service Award (group award).
- Multi-agent compliance research selected for the AI Venture Studio, Johns Hopkins Technology Ventures
- Sigma Xi Outstanding Research Award, Celebrate Princeton Innovation, Princeton Innovation “25 Under 25.”
- Selected Participant, Wellcome Broadening Horizons Programme.
- Finalist, Carnegie Mellon Three Minute Thesis competition, participant, CMU Future Faculty Program.
- Wilson and Friedland Senior Thesis Fund Awards, Princeton University, 2018–2019

PUBLICATIONS AND SCHOLARLY PRODUCTS

Refereed Journal and Conference Publications

1. **Joshi, A.**, Gormley, N., Gadgil, R., Vajiac, C., Townes, T., Rosenfeld, R., & Wilder, B. (2026). “Reducing Alert Fatigue Through AI Ranking: A Deployed Public Health Data Monitoring System.” *AI Magazine feature from AAAI*, 47(3). [doi:10.1002/aaai.70081](https://doi.org/10.1002/aaai.70081)
2. **Joshi, A.**, Franklin, C., Bray, M., Adams, R., Li, K., Taylor, J., Goes, F., Zandi, P., & Potash, J. (2026). “Precision Medicine for Mood Disorders in the Big Data Era.” *International Review of Psychiatry*.

[doi:10.1080/09540261.2026.2717216](https://doi.org/10.1080/09540261.2026.2717216)

3. **Joshi, A.**, Gormley, N., Townes, T., Gadgil, R., Vajiac, C., and Wilder, B. (2026). “Ranking Anomalous Subsequences in Large Scale Streaming Data for Efficient Triage.” *ACM SIGKDD Conference on Knowledge Discovery and Data Mining, Applied Data Science Track*. [doi:10.1145/3770855.3818465](https://doi.org/10.1145/3770855.3818465)
4. **Joshi, A.**, Gormley, N., Gadgil, R., Townes, T., Vajiac, C., Wilder, B., and Rosenfeld, R. (2026). “Reducing Alert Fatigue Through AI Ranking: A Deployed Public Health Data Monitoring System.” *Innovative Applications of Artificial Intelligence Conference (IAAI)*. **Deployed Application Award**.
5. Ren, K., Cortes-Gomez, S., Patiño, C. M., **Joshi, A.**, Lyu, R., Tang, J., Turcan, A., Yamin, K., Wu, S., and Wilder, B. (2025). “Predicting Language Models’ Success at Zero-Shot Probabilistic Prediction.” *Findings of the Association for Computational Linguistics: EMNLP 2025*, 18337–18363.
6. **Joshi, A.**, Townes, T., Gormley, N., Neureiter, L., Rosenfeld, R., and Wilder, B. (2024). “Outlier Ranking for Large-Scale Public Health Data.” *Proceedings of the AAAI Conference on Artificial Intelligence*, 38(20), 22176–22184.
7. **Joshi, A.**, Mazaitis, K., Rosenfeld, R., and Wilder, B. (2023). “Computationally Assisted Quality Control for Public Health Data Streams.” *Proceedings of the International Joint Conference on Artificial Intelligence*, 32, 6004–6012.
8. Flanagan, B., **Joshi, A.**, McAllister, S., and Vajiac, C. (2023). “CS-JEDI.” *Proceedings of the 54th ACM Technical Symposium on Computer Science Education*, 87–93. **Best Paper Award**
9. Reinhart, A., Brooks, L., Jahja, M., Rumack, A., Tang, J., Agrawal, S., Al Saeed, W., Arnold, T., Basu, A., Bien, J., Cabrera, Á. A., Chin, A., Chua, E. J., Clark, B., Colquhoun, S., DeFries, N., Farrow, D. C., Forlizzi, J., Grabman, J., Gratzl, S., Green, A., Haff, G., Han, R., Harwood, K., Hu, A. J., Hyde, R., Hyun, S., **Joshi, A.**, Kim, J., Kuznetsov, A., La Motte-Kerr, W., Lee, Y. J., Lee, K., Lipton, Z. C., Liu, M. X., Mackey, L., Mazaitis, K., McDonald, D. J., McGuinness, P., Narasimhan, B., O’Brien, M. P., Oliveira, N. L., Patil, P., Perer, A., Politsch, C. A., Rajanala, S., Rucker, D., Scott, C., Shah, N. H., Shankar, V., Sharpnack, J., Shemetov, D., Simon, N., Smith, B. Y., Srivastava, V., Tan, S., Tibshirani, R., Tuzhilina, E., Van Nortwick, A. K., Ventura, V., Wasserman, L., Weaver, B., Weiss, J. C., Williams, K., Rosenfeld, R., and Tibshirani, R. J. (2021). “An Open Repository of Real-Time COVID-19 Indicators.” *Proceedings of the National Academy of Sciences*, 118(51), e2111452118. Special Feature: “Beyond Cases and Deaths: The Benefits of Auxiliary Data Streams in Tracking the COVID-19 Pandemic.” [doi: 10.1073/pnas.2111452118](https://doi.org/10.1073/pnas.2111452118).
10. **Joshi, A.** and Miller, C. (2021). “Review of Machine Learning Techniques for Mosquito Control in Urban Environments.” *Ecological Informatics*, 61, 101241.
11. Rottenstreich, O., Kulik, A., **Joshi, A.**, Rexford, J., Rétvári, G., and Menasché, D. S. (2021). “Data Plane Cooperative Caching with Dependencies.” *IEEE Transactions on Network and Service Management*, 19(3), 2092–2106.
12. Rottenstreich, O., Kulik, A., **Joshi, A.**, Rexford, J., Rétvári, G., and Menasché, D. S. (2020). “Cooperative Rule Caching for SDN Switches.” *IEEE International Conference on Cloud Networking*.
13. Pavlo, A., Butrovich, M., **Joshi, A.**, Ma, L., Menon, P., Van Aken, D., Lee, L., and Salakhutdinov, R. (2019). “External vs. Internal: An Essay on Machine Learning Agents for Autonomous Database Management Systems.” *IEEE Data Engineering Bulletin*, 42(2).
14. **Joshi, A.** (2016). “The Effect of *Curcuma longa* Extract on the Rate of Aggregation and Concentration of Proteins in Albumen.” *International Journal of Pharmaceutical Excipients*, 5(4).

Peer-Reviewed Workshops, Tutorials, and Consortia

15. Gui, G., Zandi, P., Taylor, J., and **Joshi, A.** (2026). “Optimal Question Selection from a Large Question Bank for Clinical Field Recovery in Conversational Psychiatric Intake.” *International Workshop on AI for Cognitive and Mental Health Support (AI4Mental) at KDD 2026*.
16. Panda, S., Bose, S., and **Joshi, A.** (2026). “Reliability Auditing for Downstream LLM Tasks in Psychiatry: LLM-Generated Hospitalization Risk Scores.” *International Workshop on AI for Cognitive and Mental Health Support (AI4Mental) at KDD 2026*.
17. Karnam, M. and **Joshi, A.** (2026). “Reliable Self-Harm Risk Screening via Adaptive Multi-Agent LLM Systems.” *International Workshop on AI for Cognitive and Mental Health Support (AI4Mental) at KDD 2026*.
18. Makkuni, R. and **Joshi, A.** (2026). “Context-Aware Hospitalization Forecasting Evaluations for Decision Support Using LLMs.” *epiDAMIK Workshop at KDD 2026*, *MILETS Workshop at KDD 2026*, *SciSoc Agents & LLMs Workshop at KDD 2026*, and the *KDD 2026 Undergraduate Consortium*. **Best Presentation Award, KDD Undergraduate Consortium**.
19. **Joshi, A.** and Rudow, M. (2026). “Constrained Process Maps for Multi-Agent Generative AI Workflows.”

Foundations of Agentic Systems Theory Workshop at AAAI 2026, Agentic AI Benchmarks and Applications for Enterprise Tasks Workshop at AAAI 2026.

20. Chulo, I. and **Joshi, A.** (2026). “Decomposing Theory of Mind: How Emotional Processing Mediates ToM Abilities in LLMs.” *Advancing AI through Theory of Mind Workshop at AAAI 2026*.
21. Wang, K., Rodriguez, A., **Joshi, A.**, and Taneja, A. (2026). “Generative AI in Healthcare: Causality, Decision, and Real-World Case Studies.” Tutorial at the *AAAI Conference on Artificial Intelligence*.
22. Wang, K., Rodriguez, A., **Joshi, A.**, and Taneja, A. (2026). “Generative AI in Healthcare: Causality, Decision, and Real-World Case Studies.” Tutorial at the *ACM SIGKDD Conference on Knowledge Discovery and Data Mining*. doi:10.1145/3770855.3816465
23. Wang, K., Rodriguez, A., **Joshi, A.**, and Taneja, A. (2025). “Data-Driven Decision-Making in Public Health and Its Real-World Applications.” Tutorial at the *AAAI Conference on Artificial Intelligence*.
24. Piangerelli, M., Prenkaj, B., Rotalinti, Y., **Joshi, A.**, and Stilo, G. (2024). “Workshop on Discovering Drift Phenomena in Evolving Data Landscapes (DELTA).” *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, 6731–6732.
25. **Joshi, A.**, Wilder, B., and Rosenfeld, R. (2024). “Actionable Data Monitoring in Modern Data Streams.” *ACM SIGKDD Doctoral Consortium*.
26. **Joshi, A.** (2025). “Data Monitoring for Large-Scale Public Health Data.” *AAAI Doctoral Consortium*.
27. **Joshi, A.**, Townes, T., Gormley, N., Neureiter, L., Rosenfeld, R., and Wilder, B. “Outlier Ranking for Large-Scale Public Health Data.” *ASEA Workshop at AAAI*.

Other Scholarly Outputs

28. **Joshi, A.** “Event Monitoring in Modern Public Health Data Streams.” Ph.D. thesis, Carnegie Mellon University, 2025.
29. **Joshi, A.** “Alerting Systems Are Incompatible with Modern Public Health Data Monitoring.” Carnegie Mellon University Delphi Research Group, 2024.
30. **Joshi, A.**, Rosenfeld, R., and Scott, C. “Cases2Beds: A Case Study in Actionable Intelligence.” Carnegie Mellon University Delphi Research Group.
31. Lakadwala, T. and **Joshi, A.** “Identifying Changing Variant Behavior During a Pandemic.” Carnegie Mellon University Delphi Research Group.
32. **Joshi, A.** “Enabling New Applications with Today’s Mechanistic Interpretability Toolkit.” *LessWrong*, front page, 2024.
33. **Joshi, A.** “A Bite Worse Than the Bark.” In *Fulbright in a Time of COVID: Essays by U.S. Fulbrighters in Asia, 2019–20*.
34. **Joshi, A.**, Speakman, S., Cintas, C., and Ramamurthy, K. “Steering Models Proportionally Based on Relevance Scoring.” Patent application, 2025.

INVITED TALKS, PANELS, AND PRESENTATIONS

Selected External and National/International Presentations

1. **Joshi, A.** (2026). “AI in Psychiatry and Learning Health Systems: Translational Research.” Invited speaker, *The Future of Artificial Intelligence and Mental Health: A Distinguished Speaker Series*, AIM-AHEAD / Georgetown University and MedStar Health Research Institute Data Science Training Core, virtual, July 1, 2026.
2. Leow, E. and **Joshi, A.** (2026). “When LLMs Validate Distorted Thinking.” NVIDIA Safety Group, 2026.
3. **Joshi, A.** (2024). “Sparse Autoencoders for Steering LLMs.” Meta Central Data Science Team, Sep. 2024.
4. **Joshi, A.** (2025). “Data Overwhelm: Monitoring Digital Health Informatics Data for Critical Events.” AI x Health Collaborative, Georgia Tech, 2025.
5. **Joshi, A.** (2026). “Reducing Alert Fatigue Through AI Ranking.” Oral presentation, Innovative Applications of Artificial Intelligence Conference, 2026.
6. **Joshi, A.** (2024). “Data Quality Monitoring for Modern Public Health Surveillance.” Presentation to the CDC Center for Forecasting Analytics / Influenza Division, 2024.
7. **Joshi, A.** (2024). “Monitoring for Health Events: Opportunities Between Medical and Public Health Approaches.” Invited presentation, MLCommons, Jun. 2024.
8. **Joshi, A.** (2026). “The Business of AI Companions: A Case for Innovative Research.” Invited speaker, DSAI/HBHI AI and Healthcare Workgroup, Johns Hopkins University, 2026.
9. **Joshi, A.** (2026). Speaker for Data Science for Social Good, Johns Hopkins University, Jul. 2026.
10. **Joshi, A.** (2026). “Expanding Access Through Innovative Care Models and Digital Mental Health.” invited panelist, Healthcare Business Conference, Johns Hopkins University, 2026.

11. **Joshi, A.** (2025). “Data Monitoring and Reliable Decision-Making in Clinical Settings Based on Longitudinal Behavioral and Neural Data.” Johns Hopkins Applied Physics Laboratory, 2025.
Additional venues include IBM Research, InsightNet, the CSTE Informatics Track, Ohio State Human-AI Seminar, University of Utah, University of Iowa, TechConnect, NxtAI Conference, American Public Health Association Annual Meeting, and Spotlight on Innovative Teaching at Carnegie Mellon University, and AISDM at Carnegie Mellon University. Selected JHU seminars include a Biostatistics Seminar Series, Precision Medicine for All, and Hopkins Business of Health Initiative Lightning Talk, as well as student presentations at CHITA, DSAI, and Precision Medicine venues.

EVENT AND WORKSHOP LEADERSHIP

- **AI MINDS Series, Johns Hopkins University** (2026–Present), founded an interdisciplinary educational series connecting psychiatry, computer science, precision medicine, and responsible AI. The inaugural MINDS event for the Precision Medicine Center of Excellence for Mood Disorders, with pedagogical talks, an interdisciplinary panel, trainee presentations, and structured educational activities, supported by the Data Science and AI Institute and the Precision Medicine Center of Excellence on Mood Disorders.
- **Workshop organizer:** DELTA Workshop at KDD 2024, BISCUIT Workshop at ICCV 2025, epiDAMIK Workshop at KDD 2026.
- Established Psychiatry x AI office hours at Johns Hopkins and advised more than 13 psychiatry faculty, staff, and trainees on AI research proposals and projects. Organized interdisciplinary research engagements involving Johns Hopkins Psychiatry, the Applied Physics Laboratory, and external AI research organizations.

RESEARCH EXPERIENCE

Johns Hopkins University, PALS Research Lab **Baltimore, MD**
Director and Principal Investigator *Aug. 2025–Present*

Develop methods and systems for AI-supported psychiatric assessment, behavioral-health AI governance, and the evaluation and monitoring of high-stakes generative AI systems. Current projects include [PhippsBot](#), [NAVIGATOR](#), and behavioral-health AI governance infrastructure for learning health systems.

Carnegie Mellon University, Delphi Research Group **Pittsburgh, PA**
Postdoctoral Scientist, Graduate Researcher, Lead, FlaSH Project *Aug. 2020–Aug. 2025*

Developed and deployed human-in-the-loop machine-learning frameworks for monitoring large-scale public-health data streams. In an IRB-approved evaluation, data experts identified noteworthy issues approximately **200x faster**. Led deployment strategy and managed engineers and data experts who reviewed roughly 15 million new data points per week. Built hospital-resource forecasting tools used with the Allegheny County Health Department and contributed to open-source Delphi systems.

IBM Research **Nairobi, Kenya**
Ph.D. Research Intern, Mentor: Skyler Speakman *Jul. 2024–Sep. 2024*

Developed steering methods using sparse autoencoders to align language-model behavior with domain targets, with evaluations across medical, financial, and legal settings.

National University of Singapore **Singapore**
Fulbright Research Fellow, Mentor: Clayton Miller *Aug. 2019–May 2020*

Designed sensor-based and machine-learning methods using audio, visual, and spatiotemporal data to support mosquito-aware urban planning and dengue prevention.

Princeton University **Princeton, NJ**
Undergraduate Thesis Research, Mentors: Christiane Fellbaum and Michael Guerzhoy *Aug. 2018–May 2019*

Designed an automated ideological transformer using moral reframing and evaluated deep-learning models through human-subject studies. Thesis received university research recognition.

MIT Lincoln Laboratory, Group 38 **Lexington, MA**
Research Intern *Jun. 2018–Aug. 2018*

Enhanced a remote-sensing tool for estimating cloud-obstruction probabilities between sensors, improving workflow logic and accuracy.

Google **Sunnyvale, CA**
Engineering Practicum Intern, Mentor: Ron Minnich *Jun. 2017–Aug. 2017*

Contributed core code and system design to [NiChrome](#), enabling Chromebook use without a Gmail account through kernel-to-X11 integrations and a lightweight filesystem.

Princeton University

Cooperative Caching Research, Mentors: Jennifer Rexford and Ori Rottenstreich

Implemented and evaluated algorithms for cooperative caching in ternary content-addressable memory switches across single- and multi-switch configurations.

Princeton, NJ

Jun. 2016–Mar. 2017

Princeton University

Protein Folding and Optimization Research

Combined direct optimization with molecular simulation to design peptide inhibitors targeting the KLVFF sequence in Alzheimer’s disease across 3.2 million candidate sequences.

Princeton, NJ

Jun. 2013–Jan. 2015

TEACHING AND MENTORING

- **Johns Hopkins:** AI and psychiatry educational sessions for Psychiatry residents and medical students (e.g. “AI in Psychiatry and Learning Health Systems: Translational Research” through the Psychiatry Interest Group), faculty research panelist for the Department of Computer Science, and AI MINDS interdisciplinary primer and related educational programming.
- **Public-health education:** Developed *Forecasting Basics*, a four-session interactive course for public-health professionals building forecasting pipelines.
- **Carnegie Mellon:** Completed the Eberly Center Future Faculty Program. Two-time co-instructor for CS-JEDI, teaching assistant for Machine Learning in Practice and Data Science for Construction, Architecture, and Engineering, developed active-learning lectures on time-series data and AI for social good in public health.
- **Postdoctoral mentoring:** Synthia Wang, postdoctoral researcher, 2026–Present.
- **Student Mentoring:** Ivan Chulo, Guan Gui, Minseo Choi, Rhea Makkuni, Ariel Kim, Jayanth Pratap, Abdukodir Djuraev, Raajameenakshi Alahapphan, Peiyong Lin, Elliott Leow, Jiayi Zhang, Meghana Karnam, Derek Barisas, Amanda Li, Shevya Panda, Aamna Lawrence, Rosa Jahanakkah, Richa Gadgil, Tara Lakadwala, and Ronald Deng. Mentor for HBHI Graduate Academy, 2026. Mentored middle- and high-school students through Pittsburgh Girls of Steel Robotics, 2016–2019 and 2022–2025.

PROFESSIONAL SERVICE AND LEADERSHIP

- Senior Program Committee, IJCAI 2026, AISI 2027, Area Chair, Machine Learning for Healthcare 2026.
- JAMA+AI Distinguished Reviewer program, 2026
- Session Chair, Machine Learning and Knowledge Discovery tracks at AAAI 2026, AI and Medicine at IAAI 2026.
- Program Committee/Reviewer for IJCAI Human-AI Interaction, IAAI, AAAI, IEEE VIS, AI for Social Good at AAAI, DELTA at KDD, ACL Rolling Review (ARR), AI Idea Tank at Johns Hopkins University
- Conversant: Johns Hopkins AI x Healthcare discussion with Dr. Nabile Safdar, Emory Chief AI Officer, 2025, Moderator: “Surveillance and Informatics II: Strengthening Public Health Surveillance,” Council of State and Territorial Epidemiologists National Conference.
- Assisted the Pennsylvania Department of Health and Santa Clara County Public Health Department through CSTE’s Peer-to-Peer technical-assistance program. Led the longest-running pod in the national program.
- Collaborated with the Allegheny County Health Department and Department of Human Services on aberration-detection, hospital-resource, and data-assurance tools.
- Led the Remote Wellness Group on Carnegie Mellon’s School of Computer Science Ph.D. Dean’s Committee, 2020–2022.
- Thesis committee member: Synthia Wang, University of Chicago Computer Science, 2026.

ADDITIONAL RECOGNITION AND PUBLIC IMPACT

Through my work with the Delphi Research Group, I contributed to large public-health infrastructure projects recognized with the Statistical Partnerships Among Academe, Industry, and Government Award, the AAPOR Policy Impact Award, the Warren J. Mitofsky Innovators Award, the Allen Newell Award for Research Excellence, and Carnegie Mellon’s designation as a CDC Center of Innovation in Outbreak Analytics and Disease Modeling. My research and public-facing work have also been highlighted through the AAAI AIHub newsletter, U.S. Embassy Singapore and National University of Singapore Fulbright features, Carnegie Mellon, and Johns Hopkins articles and posts on my research.