Snehal Prabhudesai

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Research Interests

I investigate the design of systems to support informed decision-making in high-stakes environments such as Healthcare, Education and Disaster Management. My research focuses on improving the communication of AI uncertainty to decision-makers who may lack technical expertise, ensuring they can appropriately rely on AI. By bridging the gap between technical AI models and local context, my work combines empirical studies, human-centered design, and policy analysis to create culturally-sensitive, transparent mechanisms for communicating uncertainty.

keywords: AI Uncertainty, Cognitive Psychology and Decision-making, Sense-making with AI

Education

Ph.D. in Computer Science and Engineering 2026 (expected)
University of Michigan, Ann Arbor, Michigan

M.S. in Electrical and Computer Engineering 2020
University of Michigan, Ann Arbor, Michigan

B.Tech in Electronics Engineering 2018
K. J. Somaiya College of Engineering, Mumbai, India

Experience

CompHCI Lab, University of Michigan, Ann Arbor 01/2012-present
Graduate Student Research Assistant
Designing for contingencies as a boundary object to communicate statistical AI uncertainty to policy makers for Flood Resilience Climate Change Planning.

Microsoft Research, New York 05/2023-08/2023
Research Intern, Computational Social Science
Mentors: David Rothschild, Jake Hofman, Daniel Goldstein
Conducted statistical experiments and conceptualized a taxonomy of input, model and response errors for LLM-assisted information seeking with Bing Chat.

UQSciML Group, University of Michigan, Ann Arbor 08/2019-12/2019
Research Assistant, Scientific Machine Learning
Developed computational framework to communicate Bayesian AI uncertainty to clinical decision-makers for brain tumor segmentation

Rao Lab, University of Michigan,Ann Arbor 08/2019-12/2019
Research Assistant, Michigan Medicine
Studied radiologists' workflows in Michigan Medicine to investigate breakdowns and opportunities for AI-assisted decision-support systems.

Awards and Grants

Rackham Graduate Student Research Grant ($3000)	2025
Rackham Conference Travel Grants ($2550)	IUI 2023, SIAM 2024
Society of Industrial and Applied Mathematics Travel Award ($1000)	2023
CSE Service Award for Excellence ($1000)	2023

Publications

Conference Proceedings and Journal Articles

[C.7] **Prabhudesai, S.**, Kasi, A., Mansingh, A., Das Antar, A., Shen, H., Banovic, N., 2025. "here the gpt made a choice, and every choice can be biased": how students critically engage with llms through end-user auditing activity. In *Proceedings of the CHI Conference on Human Factors in Computing Systems* (CHI '25). Association for Computing Machinery, Yokohama, Japan. DOI: 10.1145/3706598.3713714.

[C.6] **Prabhudesai, S.**, Yang, L., Asthana, S., Huan, X., Liao, Q. V., Banovic, N., 2023. Understanding uncertainty: how lay decision-makers perceive and interpret uncertainty in human-ai decision making. In *Proceedings of the 28th International Conference on Intelligent User Interfaces* (IUI '23). Association for Computing Machinery, Sydney, NSW, Australia, 379–396. DOI: 10.1145/3581641.3584033.

[C.5] **Prabhudesai, S.**, Hauth, J., Guo, D., Rao, A., Banovic, N., Huan, X., 2023. Lowering the computational barrier: partially bayesian neural networks for transparency in medical imaging ai. *Frontiers in Computer Science*, 5, (Feb. 2023). DOI: 10.3389/fcomp.2023.1071174.

[C.4] **Prabhudesai, S.**, Goldstein, D. G., Hofman, J., Rothschild, D. M., 2024. A taxonomy for understanding and identifying uncertainty in ai-generated responses. *SSRN Electronic Journal*. DOI: 10.2139/ssrn.4836380.

[C.3] Hossain, T., Shen, W., Antar, A., **Prabhudesai, S.**, Inoue, S., Huan, X., Banovic, N., 2023. A bayesian approach for quantifying data scarcity when modeling human behavior via inverse reinforcement learning. *ACM Trans. Comput.-Hum. Interact.*, 30, 1, (Mar. 2023). DOI: 10.1145/3551388.

[C.2] Pati, S. 2022. Federated learning enables big data for rare cancer boundary detection. *Nature Communications*, 13, 1, (Dec. 2022). DOI: 10.1038/s41467-022-33407-5.

[C.1] **Prabhudesai, S.**, Wang, N. C., Ahluwalia, V., Huan, X., Bapuraj, J. R., Banovic, N., Rao, A., 2021. Stratification by tumor grade groups in a holistic evaluation of machine learning for brain tumor segmentation. *Frontiers in Neuroscience*, 15, (Oct. 2021). DOI: 10.3389/fnins.2021.740353.

In Preparation

[C.3] **Prabhudesai, S.**, Krishnan, S., Colak, E., Gaube, S., Banovic, N., 2025. Learning from medical practice to address breakdowns in algorithmic deployment. *targetting CSCW 2025.*

[C.2] **Prabhudesai, S.**, Banovic, N., Huan, X., 2025. Bridging statistical uncertainty and decision-making needs: contingencies as a boundary object to communicate uncertainty. *targetting CHI 2026.*

[C.1] Kasi, A., **Prabhudesai, S.**, Ramesh, D., 2025. To restore public trust in higher education, we must think about innovation differently. *targetting Issues in Science and Technology.*

Dissertation

[D.1] **Prabhudesai, S.** 2026 (expected). Computing and Communicating AI Uncertainty for Appropriate Reliance in High-stakes Human-AI Decision-making.

Doctoral Consortium

[DC.1] **Prabhudesai, S.** 2025. Communicating uncertainty for appropriate reliance on flood decision support systems. In *Proceedings of the 2025 COMPASS Doctoral Consortium (COMPASS '25)*. ACM, New York, NY, USA, 1–6.

Invited Talks and Panels

Computing and Communicating Uncertainty in Human-AI Decision-making 02/2024
Invited Talk, Society of Industrial and Applied Mathematics Conference on Uncertainty Quantification, Trieste, Italy

Transparency via Uncertainty in Medical AI 02/2023
Invited Talk, Society of Industrial and Applied Mathematics Conference on Computer Science and Engineering, Amsterdam, The Netherlands

Partially Bayesian Neural Networks 04/2022
Invited Talk, Society of Industrial and Applied Mathematics Conference on Uncertainty Quantification, Atlanta, Georgia, USA

The Potential of Algorithmic Handoffs 12/2022
Invited Talk, Human Machine Collaboration in a changing world (HMC) 2022, Paris, France

Panel on Human-Machine Collaboration in Healthcare 12/2022
Algorithmic Futures Policy Lab Series 2022, Paris, France

Panel on Introduction to Graduate Studies 11/2021
In EECS 598: Intro to CSE Graduate Studies

Teaching

University of Michigan, Ann Arbor, USA

Graduate Student Instructor, User Interface Development	Winter '23
Co-mentor and Teaching Assistant, Big Data Summer Institute	Summer '22

Mentoring

Ananya Kasi, University of Michigan (Undergraduate)	2024
Anmol Mansingh, University of Michigan (Masters)	2023
Rui Nie, University of Michigan (Undergraduate)	2022
Leyao (Hannah) Yang, University of Michigan (Undergraduate)	2021
Vinayak Ahluwalia, University of Michigan (Undergraduate)	2020
Dingkun Guo, University of Michigan (Undergraduate)	2019

Skills

UX Methods: Usability Testing, Sketching and Prototyping, Think-aloud, User Interviews, Wizard-of-Oz
Quantitative: Field Experiments, Surveys, Data Analysis, Statistical Modeling
Computational: Machine Learning, Bayesian Statistics, Uncertainty Quantification
Computer Languages: Python, R, Javascript
Libraries and Packages: Tensorflow, Pytorch, OpenCV, MATLAB, LaTeX

Service

Co-ordinator, Friday Night AI at Ann Arbor District Library	2025
Co-ordinator, Michigan Science Centre with CSE AI	2025
Board Member, ECSEL+, University of Michigan	2021-2022
Accessibility Student Volunteer, ACM SIGCHI	2022
Member, CSE Outreach and Program Evaluation Committee	2021 - 2023
Founder, CSE@OUTDoors	2021 - Present

Reviewer, ACM FAccT, CHI, CSCW, IDC, IMX 2020 - Present

Media Coverage

[M.4] 2023. Cse graduate students celebrated at recognition reception, (Apr. 2023).

[M.3] Dolata, B. 2024. Um-gpt, one year later. *Michigan Daily*, (Nov. 2024).

[M.2] Hullman, J. 2023. Defining decisions in studies of visualization and human centered ai. *Statistical Modeling, Causal Inference, and Social Science, Columbia University*, (June 2023).

[M.1] CSE, M. 2025. Bridging the ai literacy gap in higher education. *Michigan CSE News*, (Apr. 2025).