Sumit Asthana

Human-centered AI, NLP, Adaptive AI systems

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EDUCATION

University of Michigan, Ann Arbor
PhD candidate, Computer Science And Engineering (GPA 4.0/4.0)   *2019 – 2025 (July)*
Thesis committee: Nikola Banovic, Kevyn Collins Thompson, Xu Wang, Rich Gonzalez, Eric Horvitz

Indian Institute of Technology, Patna
Bachelor of Technology, Computer Science And Engineering (GPA 9.09/10)   *2013 – 2017*

EXPERIENCE

Research Intern   08/2023 - 12/2023
Google Deepmind, NY
- Transformed an open-ended challenge of assisting lay readers with unfamiliar text into a well-defined NLP task, enabling systematic evaluation of LLMs for **personalized reading support**.
- Solved data sourcing and scaling challenges by mining TBs of Wikipedia dumps to build a corpus spanning 11 academic domains; ran experiments to evaluate open and proprietary LLMs on **personalized simplification** of complex concepts.

Research Intern   05/2022 - 08/2022
Microsoft, Office of Applied Research, Redmond
- Framed the challenge of summarizing meetings as a personalization problem **by applying cognitive science theories of interaction**, enabling tailored AI-generated recaps.
- **Engineered and fine-tuned LLM-based meeting summarization models**; conducted in-situ human evaluations and delivered insights that shaped recap features in Microsoft Teams.

Research Intern   05/2021 - 07/2021
Microsoft Research, Redmond
- Analyzed workflows of **11,000 developers** using AI in Microsoft's CI/CD pipeline for software engineering; triangulated findings using quantitative, and qualitative methods.
- Identified key levers to improve Human-AI interaction such as bot communication, developers' cognitive load, and managing Human-Bot teams to **improve developer productivity**.

Research Fellow   05/2018 - 07/2019
Microsoft Research, India
- Designed and deployed a scalable **developer recommendation system for code reviews**, addressing inefficiencies in reviewer selection across Microsoft's codebase.
- **Conducted systematic follow-up evaluations** to measure the system's impact on users; the system remains in active use across Azure's developer platform.

Software Engineer   07/2017 - 05/2018
Arista Networks, India
- Contributed the VXLAN feature to networkOS, an operating system for data-center routers, gaining significant software engineering skills through the resolution of scalability issues inherent in a production-grade, high-throughput environment.

Software Engineering Intern and contract developer   05/2015 - 07/2015, 2017-18
Wikimedia Foundation
- Created a Machine Learning pipeline to **classify topics on new Wikipedia drafts using Wikipedia categorization** that align with editor's preferences.

TECHNICAL SKILLS

Languages proficient: C/C++, Python, Java, Git, PyTorch, PyMC, LangChain, HTML, CSS, Javascript.
Tech stack: Git, Bash/Zsh, MySQL, Firebase, Flask, Jupyter, Latex, Redis.
Background: Machine Learning (ML), Human-Computer Interaction (HCI), Natural Language Processing (NLP), Artificial Intelligence (AI), Network Theory, Computational behavior modeling using structured models, fine-tuning, probabilistic graphical models.

Publications

Conference Full Papers

C.1 **Asthana S.**, Ghanate A., Ion M., Banovic N., Collins Thompson K. Understanding Admissions Processes to Inform the Design of Effective and Equitable Human-AI Collaborative Assessment Workflows in Higher Education - In preparation for CSCW 2026 (May 15th).

C.2 **Asthana**, S., Hilleli, S., He, P., & Halfaker, A. (2025). Summaries, Highlights, and Action items: Design, implementation, and evaluation of an LLM-powered meeting recap system. To appear at Proceedings of the ACM on Human-Computer Interaction, CSCW 2025. DOI: 10.48550/arXiv.2307.15793

C.3 **Asthana, S**., Rashkin, H., Clark, E., Huot, F., & Lapata, M. (2024). Evaluating LLMs for Targeted Concept Simplification for Domain-Specific Texts. In Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing. ACL. DOI: 10.18653/v1/2024.emnlp-main.357

C.4 **Asthana, S.**, Im, J., Chen, Z., & Banovic, N. (2024, May). " I know even if you don't tell me": Understanding Users' Privacy Preferences Regarding AI-based Inferences of Sensitive Information for Personalization. In Proceedings of the CHI Conference on Human Factors in Computing Systems (pp. 1-21). DOI: 10.1145/3613904.3642180

C.5 Prabhudesai, S., Yang, L., **Asthana, S.**, Huan, X., Liao, Q. V., & Banovic, N. (2023, March). 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 (pp. 379-396). DOI: 10.1145/3581641.3584033

C.6 Arif, T., **Asthana, S.**, & Collins-Thompson, K. (2024, July). Generation and assessment of multiple-choice questions from video transcripts using large language models. In Proceedings of the Eleventh ACM Conference on Learning@ Scale (pp. 530-534). DOI: 10.1145/3657604.3664714

C.7 **Asthana, S.**, Sajnani, H., Voyloshnikova, E., Acharya, B., & Herzig, K. (2023, November). A case study of developer bots: motivations, perceptions, and challenges. In Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (pp. 1268-1280). DOI: 10.1145/3611643.3616248

C.8 **Asthana, S.**, Tobar Thommel, S., Halfaker, A. L., & Banovic, N. (2021). Automatically labeling low-quality content on Wikipedia by leveraging patterns in editing behaviors. Proceedings of the ACM on Human-Computer Interaction, 5(CSCW2), 1-23. DOI: 10.1145/3479503

C.9 **Asthana, S.**, Kumar, R., Bhagwan, R., Bird, C., Bansal, C., Maddila, C., ... & Ashok, B. (2019, August). Whodo: Automating reviewer suggestions at scale. In Proceedings of the 2019 27th ACM joint meeting on European Software Engineering Conference and Symposium on the Foundations of Software Engineering (pp. 937-945). DOI: 10.1145/3338906.3340449

C.10 Mehta, S., Bhagwan, R., Kumar, R., Bansal, C., Maddila, C., Ashok, B., **Asthana S**... & Kumar, A. (2020). Rex: Preventing bugs and misconfiguration in large services using correlated change analysis. In 17th USENIX Symposium on Networked Systems Design and Implementation (NSDI 20) (pp. 435-448).   ISBN: 9781939133137

C.11 **Asthana, S.**, & Halfaker, A. (2018). With few eyes, all hoaxes are deep. Proceedings of the ACM on Human-Computer Interaction, 2(CSCW), 1-18. DOI: 10.1145/3274290

Workshop papers

W.1 **Asthana, S.**, & Thompson, K. C. Towards Educational Theory of Mind for Generative AI: A Review of Related Literature and Future Opportunities - CHI 2024 Theory of Mind Workshop. DOI: link

W.2 **Asthana, S.**, Arif, T., & Thompson, K. C. (2023). Field experiences and reflections on using LLMs to generate comprehensive lecture metadata. In NeurIPS'23 Workshop on Generative AI for Education (GAIED). DOI: link

W.3 Ion, M. **Asthana, S.**, Jiao F., Wang T., & Thompson, K. C. (2024). Adaptive Knowledge Assessment in Simulated Coding Interviews. In AAAI 24' Workshop on Innovation and Responsibility in Education (iRAISE). DOI: link

Professional Services

Associate Chair (AC) / Program Committee (PC) Member

CSCW 2025	2024-25
CHI 2025 Late Breaking Work Committee	2025
ICLR Worksop on Bi-directional Human-AI alignment	2025

Organizing committees

The 7th Summer School on Computational Interaction (CIX2023)	2023
Org-admin, Google Summer of Code internship, Wikimedia Foundation	2017
Mentor, Google Code-In internship, Wikimedia Foundation	2016

External reviewer

CHI (2022-24), CSCW (2021-24), IMWUT (2024), JDIQ (2024)

Departmental services

New PhD application reviewer, University of Michigan	2023
Social chair, Human-Centered Computing group, University of Michigan,	2022-24
Towner Prize committee for Engineering Research Symposium at University of Michigan	2022

Awards and honors

Tau Beta Pi Rising Star	2025
Rackham travel award	2022, 2023
FSE travel award	2022
Google summer of code travel scholarship	2017
Wikimedia travel scholarship	2016
ACM ICPC regional finalist	2016
Regional mathematics olympiad finalist	2011

Invited talks

Cognitive models of behavior for effective Human-AI interaction Linguistic Diversity PhD programme guest speaker, Penn State	2024
Automatically Labeling Low Quality Content on Wikipedia Wikimedia Research Showcase	2022
Applications of Human-Computer Interaction Intro to Computer Science, CSC101	2022

Teaching

Graduate Student Instructor, Human-Computer Interaction	2022
Women in Science and Engineering (WiSE) instructor and lecture development	2023-24
Women in Science and Engineering (WiSE)	2023-24