Ashudeep Singh

Principal Applied Scientist, Microsoft

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Research Interests

 $Machine \ Learning \cdot RecSys \ \& \ Information \ Retrieval \cdot Responsible \ AI \cdot AI \ Safety \ \& \ Alignment$

Industry Experience

Aug 2024 -Principal Applied Scientist, Bing Multimedia, Microsoft AI, Mountain View, CA.presentGenerative AI for Search and Recommender Systems: Applying Multimodal LLMs and learning
from human feedback to power user experiences such as Bing search and recommendations that
optimize for relevance and engagement.

Aug 2021 - Applied Scientist, Advanced Technologies Group, Pinterest, Inc., Palo Alto, CA.

- Aug 2024 **ML for Interactive systems**: Applying and exploring state-of-the-art machine learning algorithms that learn ranking & retrieval models and embeddings from sequential human feedback data to enhance Pinterest's search and recommendation systems, spanning Graph ML, Reinforcement Learning, and sequential models such as Transformers.
 - Responsible, Safe, and Inclusive AI
 - Driving responsible ML and inclusive AI frameworks to promote algorithmic fairness, diversity, and inclusive system design in Pinterest's production systems.
 - Leading efforts to rigorously evaluate LLMs and other GenAI models at Pinterest for bias, safety, and fairness through red-teaming and continuous measurement and monitoring systems.
 - Improving the trust and safety of production-scale AI systems across all user groups, content segments, and product surfaces.

This work has led to multiple successful product launches with user engagement wins, research papers at ACM FAccT 2023 and WISE 2023, and a tutorial at NeurIPS 2022.

Jan-May 2020 **Research Intern**, *Google Brain*, New York, NY. **Safe Reinforcement Learning for Sequential Recommender Systems** *Research Internship project mentored by Alex Beutel (Google Brain).*

- May-Aug Research Intern, Microsoft Research, Montreal, QC, Canada.
 - 2019 **Feedback Loops and Producer-side Fairness in Recommender Systems** Research Internship project working with **Fernando Diaz** (FATE Group).
- May-Aug **Research Intern**, *Facebook*, Menlo Park, CA.
 - 2017 Active Learning for Multilabel Classification on Newsfeed Research internship project working with Khalid El-Arini (Facebook Newsfeed).

 May–Aug Research Intern, Microsoft Research Lab, New York City, NY.
 2016 Contextual Bandits for Personalization of Notifications in Microsoft Health App Research internship project working with John Langford (MSR NYC) and Ryen White (Microsoft Health and MSR Redmond).

Education

- 2015-2021 Ph.D. Computer Science, Cornell University, Ithaca, NY.
 Title: Fairness of Exposure for Ranking Systems.
 Advisor: Thorsten Joachims
 Thesis Committee: Solon Barocas, Karthik Sridharan, David Mimno.
 GPA- 4.0
- 2010–2015 B.Tech.-M.Tech. Dual Degree, Indian Institute of Technology (IIT) Kanpur, India. Major: Computer Science and Engineering. M.Tech. GPA- 10.0/10.0, BTech. GPA- 9.6/10.0 (Academic Excellence Award – all years)

Selected Publications

Ashudeep Singh, Yoni Halpern, Nithum Thain, Konstantina Christakopoulou, Ed H. Chi, Jilin Chen, Alex Beutel. **"Building Healthy Recommendation Sequences for Everyone: A Safe Reinforcement Learning Approach"**. In FAccTRec Workshop at ACM RecSyS, 2020.

Ashudeep Singh, David Kempe, Thorsten Joachims. **"Fairness in Ranking under Uncertainty"**. In Proceedings of Advances in Neural Information Processing Systems (NeurIPS) 2021. □

Marco Morik*, Ashudeep Singh*, Jessica Hong, Thorsten Joachims. **"Controlling Fairness and Bias in Dynamic Learning-to-Rank"**. In Proceedings of 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval 2020. (*equal contribution)

Ashudeep Singh, Thorsten Joachims. **"Policy Learning for Fairness in Ranking"**. In Proceedings of Advances in Neural Information Processing Systems (NeurIPS) 2019, Vancouver, BC, Canada.

Ashudeep Singh, Thorsten Joachims. **"Fairness of Exposure in Rankings"**. In KDD '18: The 24th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD), 2018, London, UK.

Tobias Schnabel, Adith Swaminathan, Ashudeep Singh, Navin Chandak, Thorsten Joachims. **"Recommendations** as **Treatments: Debiasing Learning and Evaluation"** In Proceedings of The International Conference on Machine Learning (ICML), 2016, New York, NY. □?

Complete list on the homepage \square and Google Scholar \square .

Awards and Achievements

- 2024 Outstanding Reviewer Award at The Web Conference.
- 2020 Awarded the Best Paper Award at ACM SIGIR 2020.
- 2019 Outstanding Teaching Assistant Award by the Department of Computer Science for CS6780: Advanced Machine Learning class.
- 2015 **Ranked first** in the M.Tech. class of 108 students graduating in 2015 at IIT Kanpur.
- 2011–2015 Awarded **Academic Excellence Award** for outstanding academic achievements at IIT Kanpur for each academic year.
- 2010–2014 Awarded **CBSE Merit Scholarship for Professional Studies** by Central Board of Secondary Education, India.
 - 2012 Recipient of **Summer Undergraduate Research Grant for Excellence (SURGE)**, granted by Dean Resource Planning and Generation, IIT Kanpur.

Professional Service

- Area Chair/Meta-Reviewer for NeurIPS 2023, ICML 2022.
- Reviewer for ICML 2019-2023, NeurIPS 2019-2022, AAAI 2020, ICLR 2021-2022.
- Senior Program Committee member for ACM EAAMO 2022.
- Ethics Reviewer for NeurIPS 2022-2023 and Datasets and Benchmarks Reviewer for NeurIPS 2022.
- Program Committee member for TheWebConf 2022-2023, ACM FAccT 2021-2024, ACM RecSys 2021.

Tutorials and Teaching

- **Tutorial** at Neural Information Processing Systems (NeurIPS) 2022 on Fair and Socially Responsible ML for Recommendations, co-taught with Manish Raghavan (MIT) and Hannah Korevaar (Meta). □
- **Teaching Assistant** for CS6780: Advanced Machine Learning (2019), CS4786: Machine Learning for Data Science (2016), CS4780/5780: Machine Learning for Intelligent Systems (2015) at Cornell University.