

Harmanpreet Kaur

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Computer Science & Engineering
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Research Interests

I study human-AI interaction: designing approaches that support people and AI in building shared mental models and understanding each other. To do so, I design interfaces that help people with information discovery about AI, while accounting for intrinsic and extrinsic factors that affect human cognition; and study affordances to identify more context-friendly representations of people's interests for AI.

Areas: Human-Computer Interaction, Artificial Intelligence, Computer-Supported Cooperative Work, Cognitive Psychology, Organizational Science, Crowdsourcing

Education

09/2016 – present **University of Michigan** PhD Student in Computer Science and Information

Ann Arbor, MI Advisors: Cliff Lampe and Eric Gilbert

Committee: Mark Ackerman, Eytan Adar, Shamsi Iqbal, Jenn Wortman Vaughan

09/2017 – 12/2019 **University of Michigan** MS in Computer Science and Engineering

Ann Arbor, MI

08/2013 – 05/2016 **University of Minnesota-Twin Cities** BS in Computer Science (*summa cum laude*)

Minneapolis, MN Thesis Advisors: Loren Terveen and Brent Hecht

08/2012 – 05/2013 **Indiana University-Purdue University Indianapolis** BS in Computer Engineering

Indianapolis, IN (transferred out after 1st year)

Professional Experience

11/2019 – present **Interactive Systems Lab (CSE) and comp.social Lab (SI),**

Ann Arbor, MI **University of Michigan** Graduate Student and Researcher

05/2020 – 08/2020 **Semantic Scholar Team, Allen Institute for AI** Research Intern

Ann Arbor, MI Mentors: Jonathan Bragg, Doug Downey, Dan Weld

- 05/2019 – 08/2019 **Fairness, Accountability, Transparency and Ethics in AI (FATE) Team**,
New York City, NY **Microsoft Research** Research Intern
Mentors: Jenn Wortman Vaughan, Hanna Wallach, Rich Caruana
- 05/2018 – 08/2018 **Information and Data Sciences Group, Microsoft Research** Research Intern
Redmond, WA Mentors: Shamsi Iqbal, Jaime Teevan
- 05/2017 – 08/2017 **Productivity Team, Microsoft Research** Research Intern
Redmond, WA Mentors: Shamsi Iqbal, Jaime Teevan
- 09/2016 – 10/2019 **CROMA (Crowds+Machines) Lab, University of Michigan**
Ann Arbor, MI Graduate Student and Researcher
- 08/2014 – 08/2016 **GroupLens Research Lab, University of Minnesota** Undergraduate Researcher
Minneapolis, MN Recommender Systems research using the MovieLens platform (a movie recommender system), and Social Computing research on social media ecology.
Advisors: Loren Terveen, Brent Hecht, Max Harper
- 05/2015 – 08/2015 **Epic Systems Corporation** Software Development Intern
Verona, WI Added infrastructure and UI for new widgets in their iPad Application. Code moved into production cycle, being used by doctors to check reports for patients in the ICU.
- 01/2014 – 07/2014 **GroupLens Research Lab, University of Minnesota** Software Developer
Minneapolis, MN Designed new features for MovieLens website such as *movie tuner* (a tag-based filter for similar movies), *user ratings profile page* (used nvd3 library for graphical representation), *tag and genre + tag based searches* (using Elasticsearch); *email service API*, etc.
Mentor: Max Harper

Publications

Conference and Journal Papers

- C.15 **H. Kaur**, D. Downey, A. Singh, E. Cheng, D. Weld, and J. Bragg. FeedLens: Polymorphic Lenses for Personalizing Exploratory Search over Knowledge Graphs. *In Proceedings of the ACM Conference on User Interface Software and Technology (UIST 2022)*
- C.14 **H. Kaur**, E. Adar, E. Gilbert, and C. Lampe. Sensible AI: Re-imagining Interpretability and Explainability using Sensemaking Theory. *In Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT 2022)*
- C.13 **H. Kaur**, D. McDuff, A.C. Williams, J. Teevan, and S.T. Iqbal. “I Didn’t Know I Looked Angry”: Characterizing Observed Emotion and Reported Affect at Work. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2022)*
- C.12 O. Inel, T. Duricic, **H. Kaur**, E. Lex, and N. Tintarev. Design Implications for Explanations: Supporting Reflective Assessment of Videos on Controversial Topics. *Frontiers in Artificial Intelligence 2021*

- C.11 D.A. Melis, **H. Kaur**, H. Daumé, H. Wallach, and J.W. Vaughan. A Human-Centered Approach to Interpretability Using Weight of Evidence. *In Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2021)*
- C.10 **H. Kaur**, C. Lampe, and W.S. Lasecki. Using Affordances to Improve AI Support of Social Media Posting Decisions. *In Proceedings of the 25th ACM International Conference on Intelligent User Interfaces (IUI 2020)* [IUI Best Paper Honorable Mention]
- C.09 **H. Kaur**, H. Nori, S. Jenkins, R. Caruana, H. Wallach, and J.W. Vaughan. Interpreting Interpretability: Understanding Data Scientists' Use of Interpretability Tools for Machine Learning. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2020)* [CHI Best Paper Honorable Mention]
- C.08 **H. Kaur**, A.C. Williams, D. McDuff, M. Czerwinski, J. Teevan, and S.T. Iqbal. Optimizing for Happiness and Productivity: Modeling Opportune Moments for Task Transitions and Breaks at Work. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2020)*
- C.07 A.C. Williams, **H. Kaur**, J. Teevan, R. White, S.T. Iqbal, and A. Fourney. Mercury: Empowering Programmers' Mobile Work Practices with Microproductivity. *In Proceedings of the 32nd ACM User Interface Software and Technology Symposium (UIST 2019)*
- C.06 **H. Kaur**, A.C. Williams, A.L. Thompson, W.S. Lasecki, S.T. Iqbal, and J. Teevan. Creating Better Action Plans for Writing Tasks via Vocabulary-Based Planning. *In Proceedings of the International ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2018)*
- C.05 R. Fok, **H. Kaur**, S. Palani, M. Mott, and W.S. Lasecki. Towards More Robust Speech Interactions for Deaf and Hard of Hearing Users. *In Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS 2018)*
- C.04 A. Rao, **H. Kaur**, W.S. Lasecki. Plexiglass: Multiplexing Passive and Active Tasks for More Efficient Crowdsourcing. *In Proceedings of the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2018)*.
- C.03 A. Williams, **H. Kaur**, G. Mark, A.L. Thompson, S. Iqbal, J. Teevan. Supporting Workplace Detachment and Reattachment with Conversational Intelligence. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2018)*
- C.02 **H. Kaur**, M. Gordon, Y. Yang, J. Bigham, J. Teevan, E. Kamar, W.S. Lasecki. Crowd-Mask: Using Crowds to Preserve Privacy in Crowd-Powered Systems via Progressive Filtering. *In Proceedings of the 5th AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2017)*
- C.01 F.M. Harper, F. Xu, **H. Kaur**, K. Condiff, S. Chang, L. Terveen. Putting users in control of their recommendations. *In Proceedings of the 9th ACM Conference on Recommender Systems (RecSys 2015)*

Posters and Abstracts

- P.06 **H. Kaur**. Designing to Support Cognitive and Social Heuristics in Human-AI Interaction. *Microsoft Research AI Breakthroughs Workshop*, Redmond WA, 2020
- P.05 **H. Kaur**. Characterizing Shared Mental Models for Human-AI Collaboration. *Microsoft Research AI Breakthroughs Workshop*, Redmond WA, 2019
- P.04 **H. Kaur**, A.C. Williams, A.L. Thompson, W.S. Lasecki, S. Iqbal, and J. Teevan. Using Vocabularies to Collaboratively Create Better Plans for Writing Tasks. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2018)*
- P.03 **H. Kaur**, I. Johnson, H.J. Miller, L.G. Terveen, C. Lampe, B. Hecht, W.S. Lasecki. Oh The Places You'll Share: An Affordances-Based Model of Social Media Posting Behaviors. *In Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2018)*
- P.02 **H. Kaur**, B. Hecht, C. Lampe, W. Lasecki. To Share or Not to Share: An Affordances-Based Modeling of Social Media Usage For Posting Content. *CRA-W Grad Cohort Workshop*, Washington DC, 2017
- P.01 **H. Kaur**, H. Miller, L. Terveen. Building Feeds Without Friends. *University of Minnesota Undergraduate Research Symposium*, Minneapolis, MN. April 2016

Workshop and Consortia Papers

- W.08 **H. Kaur**. The Role of Human Cognition in Interpretability and Explainability. *Doctoral Consortium at the ACM Conference on Fairness, Accountability, and Transparency (FAccT 2022)*
- W.07 **H. Kaur**, H. Nori, S. Jenkins, R. Caruana, H. Wallach, and J.W. Vaughan. Interpreting Interpretability: Understanding Data Scientists' Use of Interpretability Tools for Machine Learning. *In the Data Science with Human in the Loop Workshop at the ACM Conference on Knowledge Discovery and Data Mining (KDD 2021)*
- W.06 D.A. Melis, **H. Kaur**, H. Daumé, H. Wallach, and J.W. Vaughan. A Human-Centered Interpretability Framework Based on Weight of Evidence. *In Workshop at the ACM Conference on Human Factors in Computing Systems (CHI 2021)*
- W.05 **H. Kaur**, A.C. Williams and W.S. Lasecki. Building Shared Mental Models Between Humans and AI for Effective Collaboration. *In Workshop at the ACM Conference on Human Factors in Computing Systems (CHI 2019)*
- W.04 A.C. Williams, **H. Kaur**, E. Law, and E. Lank. Guiding Attention with Tasks and Emotions in Conversational Agents. *In Workshop at the ACM Conference on Human Factors in Computing Systems (CHI 2019)*
- W.03 S.R. Gouravajhala, **H. Kaur**, R. Fok, and W.S. Lasecki. Challenges in Making Situated Interactions Accessible to Motor-Impaired Users. *In Workshop at the International ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2018)*
- W.02 **H. Kaur**. Hybrid Intelligence Organizations. *Doctoral Consortium at the AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2018)*

W.01 H. Kaur, C. Lampe, and W.S. Lasecki. Crowdsourcing Law and Policy via Crowd-Civic Systems. *In Workshop at the International ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW 2017)*

Teaching

- 01/2019 – 04/2019 Graduate Student Instructor - Programs, Information, and People - Intro to Python Programming (SI 106)
University of Michigan
- 01/2018 – 04/2018 Graduate Student Instructor - Social Computing Systems (EECS 498/598)
University of Michigan Helped organize the class and plan course topics, provided feedback on student projects
- 09/2015 – 12/2015 Teaching Assistant - Intro to Programming for Honors students (CSCI 1133H)
University of Minnesota Led lab sections, held office hours, and helped plan assignments and lab exercises.
- 01/2013 – 05/2013 Peer-Led Team Learning Mentor - Principles of Chemistry I (CHEM C105)
IUPUI Led a weekly discussion section on lecture topics for 10 students.

Awards and Honors

- 09/2022 Rising Star in EECS, Hosted by EECS @ University of Texas at Austin
- 09/2021 – 05/2023 Google PhD Fellowship
- 05/2021 – 08/2021 University of Michigan Teh-Hsun Lee Award
- 09/2015 – 05/2016 University of Minnesota Hopper-Dean Scholarship
- 08/2012 – 05/2013 IUPUI Dean's Recognition Scholarship

Service

- 2020 HCOMP Publicity Co-Chair
- 2019-2020 UIST Documentation Chair
- 2019-2020 Michigan Interactive and Social Computing (MISC) Seminar Series – Student Organizer
- 2019 HCOMP CrowdCamp Co-Chair
- 2017 - 2018 CSE – School of Information Student Liaison
- 2017 - 2021 Reviewer for CHI 2018-2022, ToCHI 2021-2022, CSCW 2017-2021, DIS 2021, CIKM 2020, UIST 2019-2020, IMWUT 2019, HCOMP 2017-2019
- 2017-2018 Student Volunteer for CHI 2017, CHI 2018

Advising

2021-2022 **Davis Rule, Matthew Conrad**

2018-2019 **Anne Lin, Kayla Wiggins, Kayleigh Merz, Shaily Fozdar**

2017-2018 **Akshay Rao, Emmie Zhang, Raymond Fok, Spencer Hanson**

Press

MIT Tech Rev., 2020 “Why asking an AI to explain itself can make things worse.” January 29

Microsoft Research Blog, 2020 “Happy and productive at work: Predicting opportune moments to switch tasks and take breaks.” April 6

Invited Talks

08/2021 **Deep Learning Day at KDD 2021**

Interpreting Interpretability: Understanding Data Scientists’ Use of Interpretability Tools for Machine Learning

02/2021 **COMP_SCI 295 – Lifting the Black Box: Computation for Social Scientists, University of Minnesota**

Experimental Design Methods for Human-AI Interaction

12/2020 **Ohio State University AI Seminar**

Leveraging Human Cognition in AI Interaction

09/2020 **Microsoft Research AI Breakthroughs Workshop**

Designing to Support Cognitive and Social Heuristics in Human-AI Interaction

10/2019 **EECS 598 Human-AI Interaction Seminar**

Shared and Team Mental Models for Human-AI Collaboration