

Gaurav Jain

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Research Areas

Human-Computer Interaction, Human-Centered Machine Learning, AI-driven Interactive Systems, Multimodal LLMs, AI Agents, Computer Vision, & Accessibility.

Education

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| Ph.D. in Computer Science
Columbia University, USA
Advisor: Brian A. Smith | 2020 – 2025 |
| B.S. in Computer Science
Delhi Technological University, India | 2016 – 2020 |

Research Internships

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| AIML Research Intern, Apple , Seattle, USA
Mentors: Cole Gleason, Leah Findlater
Accessibility research with the Human-Centered Machine Intelligence (HCMi) team. | May 2024 – Aug 2024 |
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Selected Publications

- [C11] **G. Jain**, L. Findlater, C. Gleason. “SceneScout: Towards AI Agent-Driven Access to Street View Imagery for Blind Users” in arXiv preprint, 2025 (**Under Submission**). [PDF](#)
- [C10] **G. Jain**, B. Hindi, Z. Zhang, K. Srinivasula, M. Xie, M. Ghasemi, D. Weiner, S. Paris, X. Xu, M. Malcolm, M. Turkcan, J. Ghaderi, Z. Kostic, G. Zussman, B. A. Smith. “StreetNav: Leveraging Street Cameras to Support Precise Outdoor Navigation for Blind Pedestrians” in Proceedings of the Annual ACM Symposium on User Interface Software and Technology (**UIST 2024**). [PDF](#)
- [C9] **G. Jain**, B. Hindi, C. Courtien, C. Wyrick, X. Xu, M. Malcolm, B. A. Smith. “Front Row: Automatically Generating Immersive Audio Representations of Tennis Broadcasts for Blind Viewers” in Proceedings of the Annual ACM Symposium on User Interface Software and Technology (**UIST 2023**). [PDF](#)
- [C8] **G. Jain**, Y. Teng, D. Cho, Y. Xing, M. Aziz, B. A. Smith. “I Want to Figure Things Out: Supporting Exploration in Navigation for People with Visual Impairments” in Proceedings of the ACM on Human-Computer Interaction (**CSCW 2023**). [PDF](#)
 **Impact Recognition Award**
- [C7] **G. Jain**, B. Hindi, M. Xie, Z. Zhang, K. Srinivasula, M. Ghasemi, D. Weiner, X. Xu, S. Paris, C. Tedjo, J. Bassin, M. Malcolm, M. Turkcan, J. Ghaderi, Z. Kostic, G. Zussman, B. A. Smith. “Towards Street Camera-based Outdoor Navigation for Blind Pedestrians” in Proceedings of the 25th International ACM SIGACCESS Conference on Computers & Accessibility, Posters (**ASSETS 2023**). [PDF](#)
- [C6] **G. Jain**, B. Hindi, C. Courtien, C. Wyrick, X. Xu, M. Malcolm, B. A. Smith. “Towards Accessible Sports Broadcasts for Blind and Low-Vision Viewers” in Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Extended Abstracts (**CHI 2023**). [PDF](#)
- [C5] A. S. Parihar, **G. Jain***, S. Chopra*, S. Chopra*. “SketchFormer: Transformer-based Approach for Sketch Recognition using Vector Images” in Multimedia Tools and Applications, 2021. [PDF](#)
- [C4] **G. Jain***, S. Chopra*, S. Chopra*, A. S. Parihar. “Attention-Net: An Ensemble Sketch Recognition Approach using Vector Images” in IEEE Trans. on Cognitive and Developmental Systems, 2020. [PDF](#)

- [C3] **G. Jain***, N. Awasthi*, S. K. Kalva, M. Pramanik, P. K. Yalavarthy. “Deep Neural-Network Based Sinogram Super-resolution and Bandwidth Enhancement for Limited Data Photoacoustic Tomography” in IEEE Trans. on Ultrasonics, Ferroelectrics, and Frequency Control, 2020. [PDF](#)
- [C2] G. S. Walia, **G. Jain**, N. Bansal, K. Singh. “Adaptive Weighted Graph Approach to Generate Multimodal Cancelable Biometric Templates” in IEEE Trans. on Information Forensics and Security, 2020. [PDF](#)
- [C1] **G. Jain***, S. Chopra*, S. Chopra*, A. Parihar. “TransSketchNet: Attention-based Sketch Recognition using Transformers” in Proceedings of 24th European Conference on Artificial Intelligence (ECAI 2020). [PDF](#)

*Equal contribution

Research Experience

Graduate Research Assistant, Columbia University , New York, USA	Sep 2020 – Present
Research Fellow, Université Clermont Auvergne , Clermont-Ferrand, France	Jun 2020 – Jul 2020
Undergraduate Research Assistant, Delhi Technological University , Delhi, India	Jan 2019 – May 2020
Research Assistant, Indian Institute of Technology , Delhi, India	Sep 2018 – Feb 2020
Summer Research Fellow, Indian Institute of Sciences , Bangalore, India	May 2019 – Aug 2019
Research Assistant, Defense Research & Development Organization , Delhi, India	Feb 2018 – Nov 2019

Selected Press Coverage

CEAL Lab wins Impact Recognition Award at CSCW 2023 Columbia Engineering	2023
Creating tools to help people with vision impairments navigate the world Voices of CS	2023
Using AI to help blind and low vision users ‘see’ Columbia Engineering Magazine	2021

Awards & Recognitions

PhD Service Award , Columbia University (details)	2025
Impact Recognition Award , ACM CSCW 2023 (details)	2023
Professional Development Scholarship , Columbia University (details)	2023
Gary Marsden Travel Award , ACM SIGCHI (details)	2023
Greenwoods Fellowship , Columbia University (details)	2020
Research Excellence Award , Delhi Technological University	2020, 2021
Summer Research Fellowship , Indian Academy of Sciences	2019

Invited Talks & Lectures

NSF Center for Smart Streetscapes (CS3) Research Exchange (details) <i>Leveraging street cameras to support precise outdoor navigation for blind pedestrians.</i>	Mar. 2024
Vision Zero Research on the Road Symposium , New York City Government (details) <i>Leveraging street cameras to support precise outdoor navigation for blind pedestrians.</i>	Nov. 2023
Guest Lecture, COMS E6178: HCI Research Seminar , Columbia University <i>How to give effective research presentations?</i>	Feb. 2023

Community & Professional Services

Organizing Committee Publicity Chair, UIST 2025 Publicity Co-chair, UIST 2024	2024 – Present
Student Volunteer CHI 2024, ASSETS 2023	2023 – Present
External Reviewer CHI 2021-25, ASSETS 2023, CSCW 2022-24, UIST 2023-25, IMWUT 2024	2021 – Present

Women in Science (WISC) Mentoring Program , Barnard University <i>Mentored undergraduates to help prepare a roadmap toward their career goals.</i>	2022
Pre-Submission Application Review Program , Columbia University <i>Advised PhD applicants from underrepresented backgrounds.</i>	2020

Teaching & Research Mentoring Experience

Teaching Assistant , Columbia University COMS W4170: <i>User Interface Design</i> COMS E6178: <i>Human-Computer Interaction (Research Seminar)</i>	Fall 2021/22/23/24 Spring 2021/22/23
Amazon SURE Program Mentor , Columbia University & Amazon Inc. <i>Mentored visiting undergraduates on research projects (details).</i> Conrad Wyrick (<i>University of Florida</i>), Maryam Aziz (<i>University of Connecticut</i>) Dan Weiner (<i>Lehman College, CUNY</i>)	2022/23
XR Access REU Program Mentor , National Science Foundation <i>Mentored visiting undergraduates on accessibility research (details).</i> Xinyi Xu (<i>Pomona College</i>), Sophie Ana Paris (<i>NYU</i>), Chloe Tedjo (<i>Texas A&M University</i>), Josh Bassin (<i>Penn State University</i>)	2022/23
Mentor, VISIONS services for the blind and visually impaired <i>Co-designing solutions with and mentoring blind & low-vision students (details).</i> Michael Malcolm (<i>SUNY at Albany</i>), Connor Courtien (<i>Hunter College</i>) Sebastián Mercado Sáez (<i>Fordham University</i>)	2020 – Present
Research Lead , Columbia University <i>Managing research projects and mentoring students at the CEAL Lab.</i> <i>B.S. students:</i> David Rios, Ethan Chang, Jessica Peng, Thomas Gansa. <i>M.S. students:</i> Zihao Zhang, Koushik Srinivasula, Uttam Gurram, Aditi Patil, Lindsey Weiskopf, Mingyu Xie, Basel Hindi, David Cho, Yunhao Xing, Arjun Nichani, Yuanyang Teng.	2020 – Present

Skills

Research: Human-Centered Machine Learning, System Development & Prototyping, User Interface Design, User Experience Design, User Evaluations (Study design, Statistical analysis), Qualitative Research (Thematic analysis, Grounded theory approach, Critical incident technique), Co-design.

Languages & Frameworks: C, C++, Python, MATLAB, Swift (iOS development), TensorFlow, PyTorch, Keras, OpenCV, Robot Operating System (ROS), Linux, Unity, AWS Mechanical Turk, HTML, CSS, Javascript, R, Hive, Cloudera, Docker, Blender, Paraview, Multimodal LLMs, AI Agents.

Design: Balsamiq, Figma, Affinity Photo, Adobe Photoshop, Adobe Premiere Pro, MS Office.