

# Gaurav Jain

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## Research Areas

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

## Education

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

## Research Internships

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<b>AIML Research Intern, Apple</b> , 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

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

## Selected Press Coverage

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

## Awards & Recognitions

<b>Impact Recognition Award</b> , ACM CSCW 2023 ( <a href="#">details</a> )	2023
<b>Professional Development Scholarship</b> , Columbia University ( <a href="#">details</a> )	2023
<b>Gary Marsden Travel Award</b> , ACM SIGCHI ( <a href="#">details</a> )	2023
<b>Greenwoods Fellowship</b> , Columbia University ( <a href="#">details</a> )	2020
<b>Research Excellence Award</b> , Delhi Technological University	2020, 2021
<b>Summer Research Fellowship</b> , Indian Academy of Sciences	2019

## Invited Talks & Lectures

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

## Community & Professional Services

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

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

## Teaching & Research Mentoring Experience

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<b>Teaching Assistant</b> , 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
<b>Amazon SURE Program Mentor</b> , Columbia University & Amazon Inc. <i>Mentored visiting undergraduates on research projects (<a href="#">details</a>).</i> Conrad Wyrick ( <i>University of Florida</i> ), Maryam Aziz ( <i>University of Connecticut</i> ) Dan Weiner ( <i>Lehman College, CUNY</i> )	2022/23
<b>XR Access REU Program Mentor</b> , National Science Foundation <i>Mentored visiting undergraduates on accessibility research (<a href="#">details</a>).</i> Xinyi Xu ( <i>Pomona College</i> ), Sophie Ana Paris ( <i>NYU</i> ), Chloe Tedjo ( <i>Texas A&amp;M University</i> ), Josh Bassin ( <i>Penn State University</i> )	2022/23
<b>Mentor, VISIONS</b> services for the blind and visually impaired <i>Co-designing solutions with and mentoring blind &amp; low-vision students (<a href="#">details</a>).</i> Michael Malcolm ( <i>SUNY at Albany</i> ), Connor Courtien ( <i>Hunter College</i> ) Sebastián Mercado Sáez ( <i>Fordham University</i> )	2020 – Present
<b>Research Lead</b> , 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

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**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.