

# 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

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

## Research Internships

<b>AIML Research Intern, Apple</b> , Seattle, USA Mentors: Cole Gleason, Leah Findlater <i>Accessibility research with the Human-Centered Machine Intelligence (HCMI) team.</i>	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, <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>PhD Service Award</b> , Columbia University ( <a href="#">details</a> )	2025
<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> ) Leveraging street cameras to support precise outdoor navigation for blind pedestrians.	Mar. 2024
<b>Vision Zero Research on the Road Symposium</b> , New York City Government ( <a href="#">details</a> ) Leveraging street cameras to support precise outdoor navigation for blind pedestrians.	Nov. 2023
<b>Guest Lecture, COMS E6178: HCI Research Seminar</b> , Columbia University How to give effective research presentations?	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

**Women in Science (WISC) Mentoring Program**, Barnard University 2022  
*Mentored undergraduates to help prepare a roadmap toward their career goals.*

**Pre-Submission Application Review Program**, Columbia University 2020  
*Advised PhD applicants from underrepresented backgrounds.*

## Teaching & Research Mentoring Experience

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**Teaching Assistant**, Columbia University Fall 2021/22/23/24  
COMS W4170: *User Interface Design*  
COMS E6178: *Human-Computer Interaction (Research Seminar)* Spring 2021/22/23

**Amazon SURE Program Mentor**, Columbia University & Amazon Inc. 2022/23  
*Mentored visiting undergraduates on research projects ([details](#)).*  
Conrad Wyrick (*University of Florida*), Maryam Aziz (*University of Connecticut*)  
Dan Weiner (*Lehman College, CUNY*)

**XR Access REU Program Mentor**, National Science Foundation 2022/23  
*Mentored visiting undergraduates on accessibility research ([details](#)).*  
Xinyi Xu (*Pomona College*), Sophie Ana Paris (*NYU*),  
Chloe Tedjo (*Texas A&M University*), Josh Bassin (*Penn State University*)

**Mentor, VISIONS** services for the blind and visually impaired 2020 – Present  
*Co-designing solutions with and mentoring blind & low-vision students ([details](#)).*  
Michael Malcolm (*SUNY at Albany*), Connor Courtien (*Hunter College*)  
Sebastián Mercado Sáez (*Fordham University*)

**Research Lead**, Columbia University 2020 – Present  
*Managing research projects and mentoring students at the CEAL Lab.*  
*B.S. students:* David Rios, Ethan Chang, Jessica Peng, Thomas Gansa.  
*M.S. students:* Zihao Zhang, Koushik Srinivasula, Uttam Gurram, Aditi Patil, Lindsey Weiskopf, Mingyu Xie, Basel Hindi, David Cho, Yunhao Xing, Arjun Nichani, Yuanyang Teng.

## 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.