

## Research Areas

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Human-Computer Interaction, Human-AI Interaction, Accessibility, Computer Vision, Deep Learning.

## Education


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<b>Ph.D. in Computer Science</b> Columbia University, USA Advisor: Brian A. Smith	Sep 2020 – May 2025 (expected)
<b>M.S. in Computer Science</b> Columbia University, USA	Sep 2020 – May 2022
<b>B.S. in Computer Science</b> Delhi Technological University, India	Aug 2016 – May 2020

## Publications

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### Full Conference and Journal Publications

- [6] **G. Jain**, B. Hindi, C. Courtien, C. Wyrick, X. Xu, M. Malcolm, B. Smith. “*Front Row: Automatically Generating Immersive Audio Representations of Sports Broadcasts for Blind Viewers*” in Proceedings of the Annual ACM Symposium on User Interface Software and Technology (UIST 2023). *Under Submission*
- [5] **G. Jain**, Y. Teng, D. Cho, Y. Xing, M. Aziz, B. 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](#)
- [4] **G. Jain\***, S. Chopra\*, S. Chopra\*, A. S. Parihar. “*SketchFormer: Transformer-based Approach for Sketch Recognition using Vector Images*” in Multimedia Tools and Applications, 2021. [PDF](#)
- [3] **G. Jain\***, S. Chopra\*, S. Chopra\*, A. S. Parihar. “*Attention-Net: An Ensemble Sketch Recognition Approach using Vector Images*” in IEEE Transactions on Cognitive and Developmental Systems, 2020. [PDF](#)
- [2] **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 Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, 2020. [PDF](#)  
 *Among Most Popular Articles: Top 10 in Mar 2020, Top 50 in Sep 2020, Top 30 in Dec 2020, and Top 40 in Feb 2021.*
- [1] G. S. Walia, **G. Jain**, N. Bansal, K. Singh. “*Adaptive Weighted Graph Approach to Generate Multimodal Cancelable Biometric Templates*” in IEEE Transactions on Information Forensics and Security, 2020. [PDF](#)

### Workshop Papers, Posters, and Demos

- [2] **G. Jain**, B. Hindi, C. Courtien, C. Wyrick, X. Xu, M. Malcolm, B. 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](#)

- [1] **G. Jain\***, S. Chopra\*, S. Chopra\*, A. S. Parihar. "TransSketchNet: Attention-based Sketch Recognition using Transformers" in Proceedings of 24th European Conference on Artificial Intelligence (ECAI 2020). [PDF](#)

\*Equal contribution

## Research Experience & Internships

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<b>Columbia University</b> , New York, USA Graduate Research Assistant <i>Led research projects and mentored 15+ graduate and undergraduate students.</i>	Sep 2020 – Present
<b>Université Clermont Auvergne</b> , Clermont-Ferrand, France Research Intern <i>Generated synthetic data for 2D/3D registration in laparoscopic surgery guidance.</i>	Jun 2020 – Jul 2020
<b>Delhi Technological University</b> , New Delhi, India Research Assistant <i>Designed and implemented a Transformer-based network for sketch recognition.</i>	Jan 2019 – May 2020
<b>Indian Institute of Technology</b> , New Delhi, India Research Intern <i>Developed a network for scale-invariant breast cancer detection from mammograms.</i>	Sep 2018 – Feb 2020
<b>Indian Institute of Sciences</b> , Bangalore, India Summer Research Fellow <i>Developed a network for sinogram super-resolution for photoacoustic tomography.</i>	May 2019 – Aug 2019
<b>Defense Research &amp; Development Organization</b> , New Delhi, India Research Assistant <i>Designed a graph fusion approach for a cancelable multimodal biometric system.</i>	Feb 2018 – Nov 2019

## Awards & Recognitions

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<b>Professional Development Scholarship</b> , Columbia University <i>Travel support to present paper at CHI 2023 (<a href="#">details</a>).</i>	2023
<b>Gary Marsden Travel Award</b> , ACM SIGCHI <i>Registration fee covered to present paper at CHI 2023 (<a href="#">details</a>).</i>	2023
<b>Greenwoods Fellowship</b> , Columbia University <i>Funding to cover tuition fee and research assistant stipend (<a href="#">details</a>).</i>	2020
<b>Research Excellence Award</b> , Delhi Technological University <i>Recognized for publishing research at journals with high impact factor.</i>	2020, 2021
<b>Summer Research Fellowship</b> , Indian Academy of Sciences <i>Funded summer internship at the Indian Institute of Science, Bangalore.</i>	2019

## Selected Press Coverage

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<b>Creating tools to help people with vision impairments navigate the world</b> Columbia University, <a href="#">Voices of CS: Gaurav Jain</a>	2023
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**Clearing the Way: Using AI to help blind and low vision users 'see'**  
Columbia University, [Columbia Engineering Magazine](#)

2021

## Community & Professional Services

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### External Reviewer

ACM CHI	2021-2023
ACM CHI LBW	2021-2023
ACM UIST	2023
ACM CSCW	2022

**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 & Mentoring Experience

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

**Research Lead**, Columbia University 2020 – Present  
Uttam Gurram (*M.S. student, Columbia University*)  
Aditi Patil (*M.S. student, Columbia University*)  
Lindsey Weiskopf (*M.S. student, Columbia University*)  
Arjun Nichani (*M.S. student, Columbia University*)  
Mingyu Xie (*M.S. student, Columbia University*)  
Basel Hindi (*M.S. student, Columbia University*)  
Michael Malcolm (*B.S. student, SUNY at Albany*)  
Conrad Wyrick (*B.S. student, University of Florida*)  
Xinyi Xu (*B.S. student, Pomona College*)  
Connor Courtien (*B.S. student, Hunter College*)  
Yuanyang Teng (*M.S. student, Columbia University*)  
David Cho (*M.S. student, Columbia University*)  
Yunhao Xing (*M.S. student, Columbia University*)  
Maryam Aziz (*B.S. student, University of Connecticut*)  
Jessica Peng (*B.S. student, Columbia University*)

## Skills

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*Proficient with C, C++, Python (TensorFlow, PyTorch, Keras, OpenCV), MATLAB, LATEX, Linux, Robot Operating System (ROS), Swift, Unity, Balsamiq, Figma, AWS Mechanical Turk, Affinity Photo.*  
*Familiar with R, Hive, Cloudera, Docker, Blender, Paraview, HTML, CSS, Javascript.*