**Gaurav Jain**

gaurav@cs.columbia.edu

<https://gaurav1302.github.io/>

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| **Research Areas** |

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

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| **Education** |

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

**Full Conference and Journal Publications**

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| [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](https://dl.acm.org/doi/10.1145/3579496) |
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| [4] | 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](https://link.springer.com/article/10.1007/s11042-020-09837-y) |
|  |  |
| [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](https://gaurav1302.github.io/files/TIFS2020.pdf) |
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| [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](https://doi.org/10.1109/TUFFC.2020.2977210) |
|  | Ribbon with solid fill *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.* |
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| [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](https://ieeexplore.ieee.org/document/9018129) |
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**Workshop Papers, Posters, and Demos**

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| [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](https://dl.acm.org/doi/10.1145/3544549.3585610) |
|  |  |
| [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](https://ecai2020.eu/papers/1090_paper.pdf) |
|  | *\*Equal contribution* |

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| **Research Experience & Internships** |

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

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| **Professional Development Scholarship**,Columbia University *Travel support to present paper at CHI 2023 (*[*details*](https://egsc.engineering.columbia.edu/content/pds-winners-spring-2023)*).* | 2023 |
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| **Gary Marsden Travel Award**,ACM SIGCHI  *Registration fee covered to present paper at CHI 2023 (*[*details*](https://sigchi.org/gary-marsden-travel-award-recipients/)*).* | 2023 |
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| **Greenwoods Fellowship,** Columbia University  *Funding to cover tuition fee and research assistant stipend (*[*details*](https://www.cs.columbia.edu/2020/students-with-fellowships-2020/)*).* | 2020 |
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| **Research Excellence Award,** Delhi Technological University  *Recognized for publishing research at journals with high impact factors.* | 2020, 2021 |
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| **Summer Research Fellowship,** Indian Academy of Sciences  *Funded summer internship at the Indian Institute of Science, Bangalore.* | 2019 |

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| **Selected Press Coverage** |

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| **Creating tools to help people with vision impairments navigate the world**  Columbia University, [*Voices of CS: Gaurav Jain*](https://www.cs.columbia.edu/2023/voices-of-cs-gaurav-jain/) | 2023 |
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| **Clearing the Way: Using AI to help blind and low vision users ‘see’**  Columbia University, [*Columbia Engineering Magazine*](https://magazine.engineering.columbia.edu/focus/ai/social-good-and-communication/clearing-the-way) | 2021 |

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| **Community & Professional Services** |

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| **External Reviewer**  ACM CHI ACM CHI LBW ACM UIST ACM CSCW | 2021-2023 2021-2023 2023 2022 |
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| **Women in Science (WISC) Mentoring Program**, Barnard University  *Mentored undergraduates to help prepare a roadmap toward their career goals.* | 2022 |
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| **Pre-Submission Application Review Program**, Columbia University  *Advised PhD applicants from underrepresented backgrounds.* | 2020 |

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| **Teaching & Research Mentoring Experience** |

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

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| **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. |
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