ANUBHAV JAIN

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Hyperlinks in blue color at appropriate places

EDUCATION

New York University (NYU), NY *Sept 2021 - Present*
Ph.D in Computer Science *CGPA: 4.0/4.0*
Supervisors: Dr. Nasir Memon, Dr. Julian Togelius
Indraprastha Institute of Information Technology (IIIT), Delhi *Aug 2015 - Aug 2019*
B.Tech (Honors) in Electronics and Communication Engineering *CGPA: 8.36/10 (Top 10%)*

CURRENT RESEARCH

I am exploring problems in Responsible AI where I am trying to make generative models more secure, fair, and privacy preserving using little to no training data. More generally, I am interested in multi-modal generative models and controllable generation.

SELECTED PUBLICATIONS

[Google Scholar] * Denotes equal contribution

A. Jain, Y. Kobayashi, T. Shibuya, Y. Takida, N. Memon, J. Togelius, Y. Mitsufuji "Classifier-Free Guidance inside the Attraction Basin May Cause Memorization". In Conference on Computer Vision and Pattern Recognition (CVPR) 2025.

A. Jain, Y. Kobayashi, T. Shibuya, Y. Takida, N. Memon, J. Togelius, Y. Mitsufuji "TraSCE: Trajectory Steering for Concept Erasure". Preprint, 2024

A. Jain, R. Dholakia, N. Memon, J. Togelius, "Zero-shot demographically unbiased image generation from an existing biased StyleGAN". IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM), 2024

S. Banerjee **A. Jain**, Z. Jiang, N. Memon, J. Togelius, A. Ross, "Alpha-wolves and Alpha-mammals: Exploring Dictionary Attacks on Iris Recognition Systems". IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) Workshops, 2024

A. Jain, N. Memon, J. Togelius, "Fair GANs through model rebalancing using synthetic data". Preprint, 2023

A. Jain, N. Memon, J. Togelius, "Zero-shot racially balanced dataset generation using an existing biased StyleGAN2". In: International Joint Conference on Biometrics (IJCB) 2023 **(Oral, Best reviewed paper, Invited to Special Issue of IEEE Transactions on Biometrics.)**

A. Jain, N. Memon, J. Togelius, "A DataLess FaceSwap Detection Approach Using Synthetic Images". In: International Joint Conference on Biometrics (IJCB) 2022

P. Korshunov, **A. Jain**, S. Marcel. "Custom Attribution Loss for Improving Generalization and Interpretability of Deepfake Detection". In: IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2022

M. Marras, P. Korus, **A. Jain**, N. Memon "Dictionary Attacks on Speaker Verification" In. IEEE Transactions on Information Forensics and Security (TIFS) 2022.

A. Jain, P. Korshunov, S. Marcel. "Improving Generalization of Deepfake Detection by Using Attribution Models". In: IEEE Multi-Media Signal Processing (MMSP) 2021 **(Best paper nominee)**

A. Jain, K. Abedinpour, O. Polat, et al. "Voice Analysis for Distinguishing ON from OFF Motor State in People with Parkinson's Disease". In: Frontiers Journal in Human Neuroscience, section Speech and Language.

A. Jain*, P. Majumdar*, R. Singh, M. Vatsa. "Detecting GANs and Retouching based Digital Alterations via DAD-HCNN". In: Conference on Computer Vision and Pattern Recognition (CVPR) Workshop on Media Forensics, 2020.

A. Jain, R. Singh, and M. Vatsa. "On Detecting GANs and Retouching based Synthetic Alterations". In: 9th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS), 2018.

A. Kumar*, S. Balodi*, **A. Jain*** and P. Biyani. "Benchmark Dataset for Timetable Optimization of Bus Routes in the City of New Delhi". In: 23rd IEEE Intelligent Transportation Systems Conference (ITSC), 2020.

RELEVANT WORK EXPERIENCE / INTERNSHIPS

Sony AI *May 2024 - Dec 2024*
Research Intern *NY, USA*
· Research on mitigating memorization in diffusion models.
· Research on erasing concepts such as NSFW and violence from diffusion models.

Dataminr *May 2022 - Aug 2022*
Research Scientist Intern *NY, USA*
· Research on multi-modal deepfake detection.

Biometrics Security & Privacy Group, Idiap Research Institute *Oct 2020 - Aug 2021*
Research Trainee, Supervisor: Dr. Sébastien Marcel *Martigny, Switzerland*
· Research on improving generalization of deepfake detectors.

Pixxel *Sept 2020 - Oct 2020*
Data Scientist *Bangalore, India*
· Proposed novel patch-based hierarchical clustering algorithm for segmentation of low-resolution remote sensing imagery.

Digital Product School, Center for Business Creation and Innovation at Technical University of Munich *Jan 2020 - March 2020*
Artificial Intelligence Engineer *Munich, Germany*
· Worked in a cross-functional team to ideate and develop digital products to help immigrants in Munich. Amongst the 8 students selected worldwide (acceptance rate $< 10\%$). We built an gamified AI-application to learn German.

Telstra *July 2019 - Dec 2019*
Software Engineer *Bangalore, India*
· Worked on NLP applications - video calling with transcription, email classification and chatbots.

Indian Institute of Technology, Bombay May 2017 - July 2017
Research Intern, Supervisor: Dr. Vikram M. Gadre *Mumbai, India*
· Worked on removing motion blur in Synthetic Aperture Radar (SAR) imagery through parameter estimation (acceleration and velocity) of moving targets.

TECHNICAL SKILLS

Programming Skills	Python, C, MATLAB, PyTorch, Tensorflow, Git
Relevant Coursework	Machine Learning (ML), Foundations of ML, Statistical ML, Algorithmic ML and Data Science, Deep Learning, Computer Vision, Digital Image Processing, Linear Optimization, Robotics, Probability and Statistics, Data Structures and Algorithms, Advanced Programming

ACADEMIC ACHIEVEMENTS

Nokia Bell Labs Scholarship *2025*

NYU SOE Ph.D Fellowship *2021-2022*

Dean's Innovation, Research and Development Award - IIIT, Delhi *2018*
Awarded for my research work on detecting synthetic alterations.

AICTE-INAE Travel Grant - Indian National Academy of Engineering (INAE) *2019*
Awarded 1400 USD to present my research paper at IEEE ITSC.

Certificate of Merit - Central Board of Secondary Education (CBSE) *2015*
Awarded for outstanding academic performance and for being among the top 0.1 percent of successful candidates in class XII All India Senior Secondary Examinations.

Master Dheeraj Ghai Memorial Award - The Mother's International School *2015*
Awarded for being the School Topper in Mathematics in class XII examinations.

OTHER PROJECTS

Forget and Relearn Paradigm in Deep Neural Network *2022*
Guide: Dr. Chinmay Hegde, Dr. Julian Togelius, Dr. Nasir Memon

Improving GANs using pre-trained Discriminators *2021*
Guide: Dr. Rob Fergus

Voice Analysis to Differentiate the Dopaminergic Response in Parkinson's Patients *2020*
Guide: Dr. Milos Cernak, Dr. Afsaneh Asaei

Face recognition at a distance *2019*
Guide: Dr. Mayank Vatsa

REVIEWER

Conferences

· CVPR 2024, 2025; AAAI 2025; ICLR 2025; ICCV 2025; WACV 2025; IJCNN 2025; ReFIP @ FG 2024

Journals

· Springer Computer Vision and Image Understanding

TEACHING/ MENTORING EXPERIENCE

STEM-Away *June 2020 - Present*
Machine Learning Mentor *California, USA (Remote)*

· Conducting technical sessions and training to guide and support ML interns at Stem-Away.

IIIT-Delhi *Jan 2018 - April 2018*
Teaching Assistant: Introduction to Engineering Design (DES130) *Delhi, India*

· Supervised 16 students for their course project. Conducted lab and tutorial sessions for 30 students.

IIIT-Delhi *Jan 2019 - April 2019*
Teaching Assistant: Differential Equations (MTH204 - Maths IV) *Delhi, India*

· Conducted tutorial sessions for over 30 students. Graded and conducted weekly in-class tests.