AATIF NISAR DAR

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aatifnisar01.github.io , Google Scholar , LinkedIn , Medium , GitHub

RESEARCH INTERESTS

ICTD (Information Communications Technology for Development), HCI (Human Computer Interaction), and FATE (Fairness, Accountability, Transparency, and Ethics).

EDUCATION

Master of Science in Computer Science *2020 - 2022*
South Asian University, New Delhi, India CGPA: 7.87/9.0 (Second Rank)

Bachelor of Science (Honours) in Computer Science *2017 - 2020*
University of Delhi, New Delhi, India CGPA: 7.70/10.0

EXPERIENCE

Research Experience

Project Scientist, Indian Institute of Technology (IIT), Delhi. *Jan '24 - Present*
ICTD Lab
PI: Prof. Aaditeshwar Seth

1. Addressing Equity in Agricultural Resources Under MGNREGA Scheme.

- Trained object detection and image segmentation models to identify agricultural assets (ponds, wells, crop fields, and plantation trees) from Google Maps. Applied entropy-based methods to these models to reduce false positive cases.
- Mapped each coordinate of the predicted bounding mask to real-world geographic locations to geotag these MGNREGA assets and to measure and study equity issues in natural resource management.
- Utilized contouring to count the number of plantation trees within predicted bounding masks and assessed tree health over the years using canopy density and tree height models.

2. Tracking Socioeconomic Development in Rural India Using Satellite Imagery.

- Aggregated census variables at the village level to create five socioeconomic indicators covering 75% of rural villages in India.
- Designed and trained a model that combines daytime satellite imagery and nightlight data to create a proxy for census, enabling the study of socioeconomic development trends and dynamics in rural villages across India.

Research Assistant, Ashoka University. *Sept '24 - Present*
PI: Prof. Anirban Sen and Prof. Debayan Gupta

1. Leveraging LLMs in Generating Stories Around Indian Policies.

- Collected longitudinal data from mass media sources on various Indian policy issues (Annual Budget, Farmers' Protest, Unlawful Activities (Prevention) Act, and Big Corporations) between 2014 to 2024.
- Fine-tuned open-source LLMs to enable question-answering on policy issues and generate engaging, factually accurate stories around them. Additionally, evaluated the effectiveness of storytelling with LLMs through a human-in-the-loop approach.

2. Design and Implementation of Best Practice Principles, Standards, and Ethical Frameworks for Social Media in the AI Era.

- Developing ethical frameworks for AI and social media, enhancing understanding of social media harms, and creating a comprehensive mapping and diagnosis of social media impacts to promote responsible technology use.

Project Scientist, IIT Delhi. *Jun '22 - Nov '23*
Vision Lab
PI: Prof. Chetan Arora and Prof. Nandana Sengupta
Assessing the Feasibility and Ethics of Economic Status Prediction using Deep Learning on Household Images.

- Investigated whether household images collected from remote tribal areas of four northeastern Indian states, could accurately predict their socioeconomic status thus allowing efficient allocation of resources at a granular level.
- Trained Transformer-Based vision models using metric learning based losses. Conducted two benchmarking analyses: with models trained only on the asset information of the households collected during the same survey and with human accuracy.

Master's Dissertation, South Asian University. *May '21 - May '22*
Machine Learning and Statistical Inference Lab
PI: Prof. Reshma Rastogi
Generative Adversarial Networks and its Applications.

- Executed GAN on MNIST Digit dataset and MNIST Fashion dataset with Self Attention Module and Spectral Normalization in both Generator and Discriminator. Added TTUR (Two Time Scale Update) to stabilize the training of the GAN.
- Outcome of my dissertation was a novel architecture called MLGAN (Multi-Label Generative Adversarial Network), which was designed to address the challenge of data imbalance in multilabel datasets.

Industry Experience

Prevent Gun and Gang Violence Internship, **Omdena-Iraq Local Chapter** *Sept '21 - Oct '21*
Business and Data Analytics Internship, **The Sparks Foundation** *Aug '21 - Sep '21*
Big Data and ML Internship, **Rani.ai** *Aug '21 - Oct '21*

PUBLICATIONS

Research Papers

Aatif Nisar Dar, et al. "A Methodology for Equity Assessment of Access to Water and Agroforestry Enhancement for Agricultural Income Enhancement." Manuscript in preparation, intended for submission to a peer-reviewed conference/journal.

Aatif Nisar Dar, Anirban Sen. "Leveraging Large Language Models for Learning Complex Concepts Around Policy Issues Related to Annual Union Budgets Through Storytelling." Intended for submission to the ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '25), 2025.

Aatif Nisar Dar, Nandana Sengupta, Chetan Arora. "Assessing the Feasibility and Ethics of Economic Status Prediction using Deep Learning on Household Images." ACM Journal on Computing and Sustainable Societies (2024).

Aatif Nisar Dar and Reshma Rastogi, 2023. "MLGAN: Addressing Imbalance in Multilabel Learning Using Generative Adversarial Networks," In Proceedings of IEEE International Conference on Emerging Techniques in Computational Intelligence (ICETCI), Hyderabad, India, 2023, pp. 324-331. ***Best Presenter Award***

Aatif Nisar Dar. "Principal Component Analysis," Global Scientific Journal, GSJ: Volume 9, Issue 7, July 2021, Online: ISSN 2320-9186. (*Lightly Peer-reviewed*)

Posters/Workshops/Symposiums

Aatif Nisar Dar, Badrinath Padmanabhan, Mrunal Atul Kadane, Aaditeshwar Seth. "Using Satellite Images to Track Relative Socioeconomic Development in Rural India". Poster at ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '24), 2024.

Research Week with Google 2024. ***Funded travel*** *1-3 Feb '24*
Symposium on Machine Learning, IIT - Bombay. ***Funded travel*** *21-23 Dec '23*

Online Articles

Aatif Nisar Dar. "How to Choose the Best Classification Model," "Partial Multi-Label GANs," and "Image-To-Image Translation via Generative Adversarial Networks (GANs)," Medium.

ACHIEVEMENTS AND VOLUNTARY WORK

- Voluntary Organizer at ACM COMPASS '24, New Delhi - India. *08-11 July '24*
- Best Presenter Award at the ICETCI 2023 conference for the paper entitled "MLGAN: Addressing Imbalance in Multilabel Learning Using Generative Adversarial Networks." *21-23 Sept '23*
- Member of AISCF (AI Safety Careers Fellowship), enhancing understanding of AI systems and safety measures. *Aug-Oct '23*
- Second position at Hackathon organized by the Department of Computer Science, Ramanujan College, University of Delhi. *Feb '20*
- Second position for Essay Writing Competition on the topic 'No Voter to be Left Behind,' Chief Electoral Officer. *May '18*
- Students Union Representative at Computer Science Department of Keshav Mahavidyalaya, University of Delhi. *Sept '18 - Sept '19*
- Secretary at NSS (National Service Scheme). *Aug '17 - Aug '19*
- Attended Ethical Hacking Workshop at DTU (Delhi Technological University). *Feb '18*

- Engaged in MUN (Model United Nations) activities at Jamia Millia Islamia University. *Oct '18*

SKILLS

Proficient in:
Python, Computer Vision, Generative Adversarial Networks GANs (Master's Thesis), Natural Language Processing, C++, Machine Learning, Neural Networks, Data structures and Algorithms, Google Earth Engine, QGIS, Data mining, Linux, and Latex.

Familiar with:
Matlab, R, Java, Big Data (PySpark), PHP, HTML, CSS, and JavaScript.