

Sayak Bera

PhD Research Scholar | Dept. of Computer Science & Engineering, IIT Kanpur

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RESEARCH INTERESTS

Space Borne Computation: Distributed ML Model Training, Earth Imaging with Synthetic Aperture Radar (SAR), Computer Vision.

EDUCATION

Indian Institute of Technology (IIT) Kanpur

PhD Student, Computer Science & Engineering

Kanpur, UP

Aug 2024 – Present

Jadavpur University

Master of Engineering in Computer Science & Engineering

Kolkata, WB

2021 – 2023

Techno India Salt Lake

Bachelor of Technology in Computer Science & Engineering

Kolkata, WB

2016 – 2020

ACADEMIC APPOINTMENTS & TEACHING EXPERIENCE

Indian Institute of Technology (IIT) Kanpur

Teaching Assistant

Kanpur, UP

Fall 2024 – Present

- CS 771: Introduction to Machine Learning (Spring 2025, Fall 2025, Spring 2026)
- CS 201: Mathematics for Computer Science - I (Fall 2024)

Techno India University

Assistant Professor, Dept. of Computer Science & Engineering

Kolkata, WB

Aug 2023 – Jul 2024

- Instructed core B.Tech courses including Operating Systems, Computer Networks, Fundamentals of Computation, and Programming in C.

Jadavpur University

Teaching Assistant

Kolkata, WB

Autumn 2022 – Fall 2023

- Data Structure & Algorithm Lab (Autumn 2022)
- Design & Analysis of Algorithm (Fall 2023)

CURRENT RESEARCH INVESTIGATIONS

- **Earth Imaging with SAR:** Designing lightweight Generative AI models and onboard data compression techniques to optimally downstream novel SAR-data tiles directly at the edge.
- **Distributed ML Training:** Simulating 2D parallel training (Data, Pipeline) to optimize throughput utilizing WAN & Internet for end-to-end distributed training.
- **CV & XAI-Based Deepfake Detection:** Developed a novel hand-crafted image descriptors to improve classification metrics and fortify Explainable-AI systems against different adversarial attacks in DeepFakes.

PREPRINTS

Preprints & Works Under Review

- Bera, S., Pal, A. "Leveraging Internet for Distributed ML Training", 2026.
- Bera, S., Bhattacharjee, D. "Evaluating Novel Descriptor Empowered XAI Robustness Against Adversarial Deepfake Attacks." *Under Review*, 2026.

MENTORSHIP

B.Tech Final Year Projects (Techno India University): Mentored multiple undergraduate research groups in domains including: Hand-written Digit Recognition Local Pixel Analysis (Image Processing), Stock Price Prediction using LSTM, Toxicity Categorization (NLP), Medical Image Classification, and Object Detection.

HONORS & CERTIFICATIONS

- **GATE 2021:** Cleared Graduate Aptitude Test in Engineering with 97+ percentile.
- **NPTEL Certifications:** Design and Analysis of Algorithms; Introduction & Data Structure in Python.

ACADEMIC SERVICE & LEADERSHIP

- **Coordinator & Manager (2026-2027), Secretary (2025-2026):** Vivekananda Samiti, IIT Kanpur. Managing institute-wide samiti programs: academic talks, and philanthropic drives.
- **Class Representative (2021-2023):** MCSE Batch, Jadavpur University. Served as the primary academic liaison between faculty and the postgraduate student body.

REFEREES

Dr. Amitangshu Pal

Assistant Professor

Dept. of Computer Science & Engineering

Indian Institute of Technology (IIT) Kanpur

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Dr. Debatosh Bhattacharjee

Professor

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