Arnav Samal

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Education

National Institute of Technology, Rourkela, India May 2026
B.Tech. in Computer Science and Engineering *Current CGPA:* ***9.09***
SAI International School, Bhubaneswar, India July 2022
AISSCE (Science, PCM) *Percentage:* ***94.8%***

Coursework

Courses: Deep Learning - NPTEL, Computer Vision, Natural Language Processing, Machine Learning, Probability & Statistics, Operating Systems, Data Structures & Algorithms, Database Engineering

Skills

Programming Languages: Python, C++, C, SQL
Libraries/Frameworks: PyTorch, TensorFlow, HuggingFace, Sci-kit Learn, SciPy, NumPy, Matplotlib, Flask
Tools: Git, GitHub, Conda, Docker, Jupyter, LaTeX, Microsoft SQL Server
Languages: English, Hindi, Odia

Experience

NIT Rourkela | *Undergraduate Researcher, On-site* Oct 2024 – Present
- Working under the guidance of **Prof. Tapas Kumar Mishra**, focusing on **Anisotropy in Transformer Models** and its impact on model behavior and downstream task performance.
- Currently conducting a literature review to address and mitigate the representation degradation problem.

IIT Hyderabad | *Research Intern, On-site* May 2024 – Aug 2024
- Worked under the supervision of **Prof. Konda Reddy Mopuri** on **Explainability in Vision Transformers**.
- Conducted an in-depth literature review and performed extensive experiments to measure patch importance and the overlay of top-k tokens between different blocks.
- Developed and proposed post-hoc explainability techniques and token pruning methods to improve interpretability in image classification.

Projects

SketchWarp | *Python, PyTorch* Feb 2025 – Present
- Developing a self-supervised learning framework in PyTorch for dense photo-to-sketch correspondences, enabling automatic image-to-sketch warping.
- Designing and implementing training and inference pipelines, inspired by the paper *"Learning Dense Correspondences between Photos and Sketches."*

NeurIPS - Ariel | *Python, SciPy, NumPy* Aug 2024 - Oct 2024
- Developed a pipeline for exoplanet spectral prediction using calibrated multi-sensor time-series data, implementing spatial-temporal aggregation, phase detection via gradient analysis, and Nelder-Mead optimization.
- Ranked 257th/1,152 in the NeurIPS-Ariel Challenge, with an evaluation score of 0.5704.

Achievements & Certifications

Ranked **12th** in the Department of Computer Science at NIT Rourkela (up to 5th semester)
Secured **5th** worldwide in the Capsule Vision Challenge 2024, organised by CVIP 2024
Selected among 170 from 20,000+ applicants for the SURE program at IIT Hyderabad
Achieved **2nd** position in HackFest, organised by ML4E for undergraduate students
Recognized as Kaggle Expert (Datasets & Notebook)

Extracurricular Activities

Core Team Member, Research Division of ML4E (Machine Learning Club) at NIT Rourkela
Quizzer for Inquizzitive (Quizzing Society) at NIT Rourkela