

Adhilsha Ansa

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PERSONAL PROFILE

Integrated M.Sc. graduate from the National Institute of Science Education and Research [NISER], Bhubaneswar, currently working with the [SMLab] on deep learning research. My work focuses on graph learning, with additional interests in sequence modeling and multi-modal applications.

Current Research interests: Graph Learning, Natural Language Processing (NLP), Computational Physics

EDUCATION

Integrated M.Sc. in Physics (major) with minor in Computer Science	2020 – 2025
National Institute of Science Education and Research, Bhubaneswar, India	CGPA: 8.1/10

RESEARCH PROJECTS

Understanding Oversmoothing in MPNNs and GNDEs	2025 - Present
Studying oversmoothing effects in message-passing neural networks and Graph Neural Differential Equations to generalize across architectures. Tools: PyTorch, GNNs, Graph Representation Learning.	

Oversampling in Heterogeneous graphs [Thesis]	2024-25
Extending SMOTE to heterogeneous graph learning to overcome class imbalance; <i>Paper accepted at NLDL 2026 (spotlight and poster)</i> . Tools: PyTorch, GNNs, Deep Learning.	

Graph Learning using Modified Mamba [Experimental Project]	2024
Experimented with developing a novel method to adapt Mamba sequence models for graph learning. Tools: PyTorch, Graph Neural Networks, Sequence Learning.	

Long context LLM support [Experimental Project]	2024
Explored memory architectures using Mamba models to extend context length in large language models. Tools: PyTorch, LLMs, NLP, Python.	

Large Neural Networks at a fraction [Paper]	2023-24
A project investigating the Lottery Ticket Hypothesis in large networks by combining pruning with quatern-ion architectures. Published at NLDL 2024. Tools: Deep Learning, PyTorch, Image processing.	

TECHNICAL PROJECTS

Magneto-Hydro Dynamic Simulation	2024
• Simulated the effect of vertical outflow in mean-field dynamo theory by solving the induction equation with defined boundary conditions. Tools: Python, Fortran, Astropy	

Lock-in detection using ExpEYES	2024
• Implemented a software-based lock-in amplifier using ExpEYES-17 hardware and Python for signal recovery in noisy environments. Tools: ExpEYES-17, Python, SciPy	

Lattice Vibrations via FFT Analysis	2024
• Explored vibrational modes in 1D lattices through numerical simulations and FFT under varied initial and boundary conditions. Tools: Python, SciPy, scikit-learn	

Chaos in Non-Linear Circuits	2024
• Built and simulated non-linear electrical circuits; analyzed chaotic behavior and bifurcation patterns across parameters. Tools: Python, SciPy	

ONLINE EDUCATION

ML Specialization & DL Specialization (ongoing) 2023 – 2025
Coursera | DeepLearning.AI | Stanford Online - Andrew Ng

EXPERIENCE & SCHOLARSHIPS

Paper Presentation - Northern Lights Deep Learning 2024, UiT Norway 2024
Presented the paper "Large Neural Networks at a Fraction" at the Northern Lights Deep Learning (NLDL) conference 2024 as both a presentation and as a poster. [[slides](#)] [[poster](#)]

Reviewer - NLDL 2025 and 2026, UiT Norway 2024-2025
Reviewed two papers for NLDL 2025 and 2026, following an invitation based on oral and poster presentations at NLDL 2024 and 2026.

SMLab Talks, NISER Bhubaneswar, India 2024 - 2025
Delivered short research talks on emerging topics in machine learning, including NeoBERT, Large Concept Models, and 1-bit LLMs. [[Talks](#)]

Mentoring & Teaching, NISER Bhubaneswar, India 2023 - 2024
Mentored two undergraduate teams in ML projects for CS460 (2024) under Dr. Subhankar Mishra.
Teaching Assistant for first-year CS labs (2023) under Dr. Anup Kumar Bhattacharya.

ACM India Winter School, IIT Patna, India 2023
Participated in the ACM India Winter School on "Recent Trends in AI/ML for Industry 4.0" hosted by the Indian Institute of Technology Patna and partly sponsored by Google Research India. [[certificate](#)]

INSPIRE Scholarship for Higher Education (SHE) - DST India 2020-25
Merit-based national scholarship for the top 1% in Higher Secondary Education, renewed based on GPA.

PUBLICATIONS

Large Neural Networks at a Fraction 2024
Aritra Mukhopadhyay[†], **Adhilsha Ansad**[†], Subhankar Mishra [†]Equal contribution
Proceedings of the *5th Northern Lights Deep Learning Conference (NLDL)*, [PMLR 233:165-173](#)

HetGSMOTE: Oversampling for Heterogeneous Graphs 2026
Adhilsha Ansad, Deependra Singh, Rucha B. Joshi, Subhankar Mishra
7th Northern Lights Deep Learning Conference (NLDL), 2026

SKILLS

- **Programming Languages:** Python, Fortran, C
- **Tools & Frameworks:** PyTorch, NumPy, Pandas, SciPy, scikit-learn, Astropy, Matplotlib, Git, LaTeX, Jupyter, VS Code, Weights&Biases, HTML, CSS
- **Domains & Techniques:** Deep Learning, Graph Neural Networks (GNNs), Natural Language Processing (NLP), Large Language Models (LLMs), Computer Vision, Data Processing, Numerical Simulations, Data analysis & technical writing
- **Languages:** English - Fluent (TOEFL-iBT - 110)

REFEREES

- Dr.Subhankar Mishra (Mentor, Co-author) - smishra@niser.ac.in
- Dr. Subhasis Basak (Project Mentor) - sbasak@niser.ac.in