Adhilsha Ansad

Bhubaneswar, India | adhilsha.a@niser.ac.in | +91 9497 887 421

Personal Website | ORCID

Introduction

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 Neural Networks, Sequence Learning, Computer Vision

Education

National Institute of Science Education and Research, Bhubaneswar, IN   2020 – 2025
Integrated M.Sc. in Physical Sciences (major) and Computer Science (minor)
- CGPA: 8.1/10.0 [CS Transcript excerpt] [Academic Transcript] [Certificate]

Online Certifications [Coursera]   Online
- Machine Learning Specialization [certificate]
  (Andrew Ng's 3-course series)

  Supervised Machine Learning | Advanced Learning Algorithms | Unsupervised Learning, Recommenders, Reinforcement Learning
- Deep Learning Specialization (ongoing)
  (Andrew Ng's 5-course series)

  Neural Networks and Deep Learning | Hyperparameter Tuning, Regularization and Optimization | Structuring ML Projects | Convolutional Neural Networks (*in progress*) | Sequence Models

Projects

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

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

Representation Learning on Graphs using Modified Mamba   [Experimental] 2024
- Developing a novel method to adapt Mamba sequence models for graph data representation.
- Tools Used: PyTorch, Graph Neural Networks, Sequence Learning

Oversampling in Heterogeneous graphs   [Thesis] 2024-25
- Extending SMOTE to class-imbalanced heterogeneous graph data; *Paper under review.*
- Tools Used: PyTorch, GNNs, Deep Learning

Understanding Oversmoothing in MPNNs and GNDEs   Current
- Studying oversmoothing effects in message-passing neural networks and Graph Neural Differential Equations with the aim of generalizing across architectures.
- Tools Used: PyTorch, GNNs, Graph Representation Learning

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

Experience & Scholarship

Paper Presentation - NLDL 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, UiT Norway   2024
- Reviewed two papers for NLDL 2025, following an invitation based on oral/poster presentation at NLDL 2024.

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 Students, 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: A Heterogeneous Graph Oversampling Framework [Thesis]   2025

Skill Summary

Programming Languages: Python, Fortran, C
Tools & Frameworks: PyTorch, NumPy, SciPy, scikit-learn, Astropy, Git, LaTeX, Jupyter, VS Code, Weights&Biases
Domains & Techniques: Deep Learning, Graph Neural Networks (GNNs), Natural Language Processing (NLP), Large Language Models (LLMs), Computer Vision, Data Processing, Numerical Simulations
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