

Bhuwan Sharma

Computational and Systems Biology

Computational Systems Biology • Department of Bioinformatics • University of North Bengal

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Research Interests

Graph neural networks for biological network analysis • Deep learning for cancer biomarker discovery • Physics-informed graph models for protein dynamics • Knowledge graph embeddings • Gene Ontology-aware architectures

Education

Ph.D. Coursework

2026–Present

Department of Bioinformatics • University of North Bengal

M.Sc. in Bioinformatics

2023–2025

University of North Bengal

CGPA: 7.65; dissertation completed at the Computational Systems Biology .

B.Sc. in Zoology (Honours)

2020–2023

Kalimpong College, University of North Bengal

CGPA: 7.64.

Research Experience

Research Scholar

Aug. 2025–Mar. 2026

Computational & Systems Biology , Department of Bioinformatics, University of North Bengal

Developed deep learning methods for biomarker identification.

M.Sc. Dissertation Researcher

2024–2025

Computational & Systems Biology , Department of Bioinformatics, University of North Bengal

- Worked with graph-based computational approaches for biomarker identification in disease networks.
- Designed a GPU-accelerated differential gene expression analysis pipeline using Principal Component Regression and bootstrap resampling.

Selected Software & Research Tools

LGNM — Physics-informed GNN framework for predicting protein conformational dynamics, per-residue flexibility, and normal modes using quantum-inspired neural PDE operators.

CABiGoWEB — Cancer biomarker identification server using Graph Neural network with Gene Ontology, knowledge graph embeddings, and protein–protein interaction networks.

Publications

Manuscripts currently under peer review and in preparation; this section will be updated as publications become available.

Technical Skills

Programming: Python, R, Bash, Perl, C, Java, JavaScript

Machine Learning: PyTorch, PyTorch Geometric, DGL, Hugging Face Transformers, scikit-learn, CUDA

Bioinformatics: DESeq2, limma, edgeR, clusterProfiler, biomaRt, Bioconductor, ComBat

Networks: NetworkX, STRING, Cytoscape, Neo4j, PCNet

Infrastructure: Linux, Git/GitHub, Docker, Conda

Visualisation: Matplotlib, Seaborn, Plotly, UMAP, t-SNE

Web Development: FastAPI, Flask, Streamlit