# NABIN GIRI

Berkeley, CA

📞 +1 573-810-3959    🖇 nabingiri.io    ✉ ngiri@lbl.gov    💼 linkedin.com/nabin-giri    🎓 Google Scholar

Revised : August 2, 2025

## EDUCATION

**University of Missouri**  January 2021 – May 2025
*Ph.D. in Computer Science, Minor in Statistics*  *Columbia, MO*

**Emphasis:** *Deep Learning and Structural Biology*

**Dissertation:** *Deep Learning for Modeling Protein Atomic Structures from cryo-EM Density Maps*

**Summer Schools:** *Oxford Machine Learning & London Geometry and Machine Learning*  *2022, 2023*

**Seminar:** *Preparing Future Faculty Seminar (Spanned one academic semesters)*  *2024*

**University of Central Missouri**  May 2018 – May 2020
*Masters of Science in Computer Science - Thesis Track*  *Warrensburg, MO*

**Workshop:** *Graduate Research Workshop Series (Spanned one academic semester)*

**Thesis:** *Recommendation System Using Factorization Model and MapReduce Framework*

**Bangalore University**  May 2011 – May 2014
*Bachelors of Computer Application - First Class Honors*  *Bangalore, India*

**Semester Projects:** *Supermarket Management System & Online Admission System*

## EXPERIENCE

**Lawrence Berkeley National Laboratory**  June 2025 – Present
*Machine Learning Postdoctoral Scholar*  *Berkeley, CA*

**University of Missouri**  January 2021 – May 2025
*Graduate Researcher at Bioinformatics and Machine Learning Lab*  *Columbia, MO*

**Amazon.com Inc.**  May 2024 – August 2024
*Applied Scientist II Intern*  *Seattle, WA*

**BIOVIA - Dassault Systèmes**  May 2023 – August 2023
*Scientific Software Development Intern*  *San Diego, CA*

**University of Central Missouri**  May 2018 – May 2020
*Graduate Student Worker (GSW) - James C Kirkpatrick Library*  *Warrensburg, MO*

**Max International**  March 2017 – April 2018
*System Engineer, Head of Department*  *Kathmandu, Nepal*

**Capgemini**  October 2014 – October 2016
*Software Engineer*  *Bangalore, India*

## TEACHING

**Machine Learning for Biomedical Informatics**  Spring 2024
*Course Level: CMP_SC 8180 (INFOINST 8880)*  *University of Missouri*

## PUBLICATIONS (First-author papers numbered in red.)

- [13] **A labeled dataset for AI-based cryo-EM map enhancement.** **Nabin Giri**, Xiao Chen, Liguo Wang, and Jianlin Cheng. *Computational and Structural Biotechnology Journal. 2025.*

- [12] **Atomic Protein Structure Modeling from Cryo-EM Using Multi-Modal Deep Learning and AlphaFold3.** **Nabin Giri** and Jianlin Cheng. bioRxiv *2025.*

- [11] **Protein-Ligand Structure and Affinity Prediction in CASP16 Using a Geometric Deep Learning Ensemble and Flow Matching.** Alex Morehead, Jian Liu, Pawan Neupane, **Nabin Giri** and Jianlin Cheng. *Proteins: Structure, Function, and Bioinformatics, 2025.*

- [10] **De novo atomic protein structure modeling for cryoEM density maps using 3D transformer and HMM.** **Nabin Giri** and Jianlin Cheng. *Nature Communication, 2024.*

- [9] **Cryo2StructData: A Large Labeled Cryo-EM Density Map Dataset for AI-based Modeling of Protein Structures.** **Nabin Giri**, Liguo Wang, and Jianlin Cheng. *Nature Scientific Data, 2024. Dataset available in **Harvard Dataverse.***

- [8] **Outcomes of the EMDataResource cryo-EM Ligand Modeling Challenge.** Catherine L. Lawson, Andriy Kryshtafovych, Grigore D. Pintilie, Stephen K. Burley,. . ., **Nabin Giri**,. . ., Helen M. Berman, and Wah Chiu. *Nature Methods, 2024.*

- [7] **Deep Learning for Protein-Ligand Docking: Are We There Yet?** Alex Morehead, **Nabin Giri**, Jian Liu and Jianlin Cheng. *ICML AI4Science, 2024.*

- [6] **Impact of AlphaFold on Structure Prediction of Protein Complexes: The CASP15-CAPRI Experiment** Marc F. Lensink, Guillaume Brysbaert, Nessim Raouraoua,. . ., **Nabin Giri**,. . ., Sameer Velankar and Shoshana J. Wodak. *PROTEINS: Structure, Function, and Bioinformatics, 2023.*

- [5] **Combining pairwise structural similarity and deep learning interface contact prediction to estimate protein complex model accuracy in CASP15** Raj S. Roy, Jian Liu, **Nabin Giri**, Zhiye Guo and Jianlin Cheng. *PROTEINS: Structure, Function, and Bioinformatics, 2023. [Ranked First in CASP15]*

- [4] **Deep learning for reconstructing protein structures from cryo-EM density maps: recent advances and future directions** **Nabin Giri**, Raj S. Roy, and Jianlin Cheng. *Current Opinion in Structural Biology, 2023.*

- [3] **Improving Protein-Ligand Interaction Modeling with cryo-EM Data, Templates, and Deep Learning in 2021 Ligand Model Challenge** **Nabin Giri** and Jianlin Cheng. *Biomolecules, 2023.*

- [2] **DRLComplex: Reconstruction of protein quaternary structures using deep reinforcement learning** Elham Soltanikazemi, Raj S. Roy, Farhan Quadir, **Nabin Giri**, Alex Morehead, and Jianlin Cheng. *The International Conference on Intelligent Biology and Medicine (ICIBM), 2022.*

- [1] **High-Performance Deep Learning Toolbox for Genome-Scale Prediction of Protein Structure and Function** Mu Gao, Peik Lund-Andersen, .., **Nabin Giri**,. . ., Jianlin Cheng and Ada Sedova. *IEEE/ACM Workshop on Machine Learning in High Performance Computing Environments (MLHPC), 2021.*

## AWARDS

| | |
|---|---|
| **Outstanding PhD Student Award** | **2025** |
| *College of Engineering* | *University of Missouri* |
| **Graduate Research Award** | **2020** |
| *Graduate Education and Research* | *University of Central Missouri* |
| **Graduate Housing Scholarship** | **2020** |
| *Webb Housing* | *University of Central Missouri* |
| **Conference Scholarship - Gold Pass** | **2019** |
| *Strata Data Conference* | *O'Reilly Media, Inc* |
| **Microsoft Partner Meet** | **2018** |
| *Ranked $2^{nd}$ out of 15 participants in the competition* | *Microsoft Partner Meet Nepal* |

## SERVICE

**The Protein Journal**
*Manuscript Reviewer*                                            *2025 - Present*

**GigaScience**
*Manuscript Reviewer*                                            *2025 - Present*

**International Journal of Biological Macromolecules**
*Manuscript Reviewer*                                            *2024 - Present*

**Neural Information Processing Systems (NeurIPS)**
*Manuscript Reviewer*                                            *2023 - Present*

**IEEE International Conference on Bioinformatics and Biomedicine (BIBM)**
*Program Committee and Manuscript Reviewer*                        *2023 - 2025*

**Briefings in Bioinformatics**
*Manuscript Reviewer*                                            *2022 - Present*

**IEEE/ACM Transactions on Computational Biology and Bioinformatics**
*Manuscript Reviewer*                                            *2022 - Present*

**Undergraduate Research Forum**                      **University of Missouri (MU)**
*Research Abstract Reviewer*                                              *2022*

**Upsilon Pi Epsilon-Gamma Chapter**                  **University of Missouri (MU)**
*Member*                                                        *2021 - Present*

**MU Nepalese Student Association**                   **University of Missouri (MU)**
*Member*                                                        *2021 - Present*

**Nepalese UCM Association**                  **University of Central Missouri (UCM)**
*President*                                                        *2018 - 2020*

**Association for Computing Machinery (ACM)**     **University of Central Missouri (UCM)**
*Member*                                                          *2018 - 2019*

**International Student Services**             **University of Central Missouri (UCM)**
*International Students Ambassador*                                *2018 - 2019*


## INVITED TALKS AND PRESENTATIONS

**Modeling Atomic Structures from Cryo-EM Maps**                         **2025**
*Phenix Group, Lawrence Berkeley National Laboratory*                  *Virtual*

**Modeling Atomic Structures from Cryo-EM Maps**                         **2025**
*Dana–Farber Cancer Institute, Harvard Medical School*                 *Virtual*

**Modeling Atomic Structures from Cryo-EM Maps**                         **2025**
*Computational Biosciences Group, Lawrence Berkeley National Laboratory*   *Berkeley, CA*

**Modeling Atomic Structures from Cryo-EM Maps**                         **2025**
*Artificial Intelligence Department, Brookhaven National Laboratory*     *Upton, NY*

**De novo Protein Structure Modeling for CryoEM using 3D Transformer & HMM**   **2024**
*Intelligent Systems For Molecular Biology (ISMB). Presented by Dr. Jianlin Cheng*   *Montreal, Canada*

**Deep Learning for Modeling Protein Atomic Structures from Cryo-EM Maps**    **2024**
*Department of Electrical Engineering and Computer Science*         *University of Missouri*

**Mizzou Tigers Summer Internship Experiences**                          **2024**
*Electrical Engineering and Computer Science Graduate Student Association*   *University of Missouri*

**Cryo2Struct: AI-Based Modeling of 3D Atomic Structures from Cryo-EM Maps**   **2024**
*CryoEM Super Group, Department of Biochemistry*                    *University of Missouri*

**Improving Relevance Prediction with Multimodal Models** — 2024
*Amazon Science* — *Seattle, WA*

**De Novo Protein Structure Modeling for Cryo-EM Maps Using 3D Transformer and HMM** — 2024
*BIOVIA* — *Virtual*

**Conformational Sampling with AlphaFold and Diffusion-Based Protein-Ligand Modeling** — 2024
*BIOVIA* — *Virtual*

**Cryo2StructData: Large Labeled Cryo-EM Dataset for AI-Based Protein Structure Modeling** — 2023
*BIOVIA* — *Virtual*

**Modeling Protein-Ligand interaction from cryo-EM data, Templates and Deep Learning** — 2021
*Organized by EMDataResource, presented the work developed for the 2021 Ligand Model Challenge* — *Virtual*

**Three Minute Thesis (3MT)** — 2020
*Presented Master's Thesis Research* — *University of Central Missouri*

## PRESS

Paving the way for new treatments
**University of Missouri, College of Engineering. September, 2024**

De novo atomic protein structure modeling for cryoEM density maps – Behind the Paper
**Nature Portfolio Communities. July, 2024**

Journey into Nabin Giri's BIOVIA Internship: Conformational Sampling with AlphaFold
**BIOVIA. September, 2023**

Mizzou team ranks first in category at CASP15 protein prediction competition **University of Missouri, College of Engineering. January, 2023**