NABIN GIRI

Columbia, Missouri 65201

📞 +1 660-238-5608 🌐 nabingiri.github.io ✉ ngzvh@missouri.edu in linkedin.com/nabin-giri github.com/nabingiri

Education

University of Missouri   **January 2021 – December 2025**
PhD Student in Computer Science - Current GPA: 3.884/4.0   *Columbia, Missouri*
Oxford Machine Learning Summer School - ML Health and ML Finance

University of Central Missouri   **May 2018 – May 2020**
Masters of Science in Computer Science - Overall GPA: 3.58/4.0   *Warrensburg, Missouri*

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

Relevant Coursework

- Machine Learning
- Artificial Intelligence II
- Advanced Algorithms II
- Neural Networks
- Computational Methods in Bioinformatics
- Structural Biology and Biophysics Life Science
- Computational Modeling of Molecular Structures
- Systems Programming

Research Experience

Bioinformatics and Machine Learning Lab, Advisor: Dr. Jianlin Cheng   **January 2021 – Present**
Graduate Researcher, University of Missouri   *Columbia, Missouri*
- Developed a deep learning bioinformatics pipeline to model protein-ligand interaction in 2021 Ligand Model Challenge
- Developed and trained transformer model to reconstruct the 3D structure of protein complex from 3D cryoEM map
- Developed process-based parallelism scripts to preprocess data parallelly utilizing all physical cores of multiple nodes in python using MPI in Slurm and LSF clusters
- Train and experiment with models using distributed deep learning training approach in multi-node cluster with GPUs
- Developed pipeline for prediction of ligand's bound pose and orientation in protein for CASP15 competition

Master's Thesis, Advisor: Dr. Yui Man Lui   **May 2020**
Recommendation System Using Factorization Model and MapReduce Framework   *Warrensburg, Missouri*
- Participated and presented research on Three Minute Thesis competition at the University of Central Missouri
- Developed an unified toolkit that can process different collaborative filtering algorithm simultaneously
- Trained model using gradient descent algorithm. Program available at GitHub repository
- Infer phase is deployed in Amazon Elastic MapReduce (Amazon EMR) cluster leveraging distributed computing approach of MapReduce framework

Professional Experience

Max International   **March 2017 – April 2018**
System Engineer, Head of Department   *Kathmandu, Nepal*
- Lead and managed team of six members to develop system architecture, perform technical assessment of the client's infrastructures, and write reports of implementation and assessments to achieve the project goals
- Designed and configured failover clustering of ESXi hypervisors, storage and mapped RAID configured storage to VMWare host as datastore
- Configured VMWare vSphere replication for disaster recovery in virtual machines
- Configured clustered active directory domain services and hybrid exchange server with some users in O365 and others in-premises exchange server
- Reconfigured and reimage Dell storage SCv2020 operating system with support from Dell technical team

Capgemini   **October 2014 – October 2016**
Software Engineer   *Bangalore, India*
- Developed scripts and formula for BMC remedy tool, Windows Server and VMWare to automate tasks
- Resolved server issues and provided root cause analysis report (RCA) for system problems
- Single point of contact for windows server patching and providing consolidated patched reports to teams
- Worked on Wintel team as a Windows Server and VMWare infrastructure engineer
- Helped developers to write C++ programs, wrote technical documentation on memory management in C++
- Provided training and knowledge transfer sessions to junior members of the project

Technical Skills

Languages: Python, C++, Bash, SQL

Tools: High Performance Computing, PyCharm, Visual Studio, Amazon Web Services, Google Cloud Platform, PyRosetta, UCSF ChimeraX, PyMOL, LaTeX

Technologies/Frameworks: PyTorch, PyTorch Lightning, PyTorch Geometric, Deep Graph Library, Linux, GitHub

Extracurricular

Nepalese UCM Association   May 2018 – May 2020
President   *University of Central Missouri*
- Led Nepalese community to work towards common goals of preserving and promoting Nepalese culture at the university
- Organized events for domestic and international students to celebrate different festivals of Nepal together
- Assisted new incoming new Nepalese student for a smooth transition to American teaching method and culture

James C Kirkpatrick Library   May 2018 – May 2020
Graduate Student Worker   *University of Central Missouri*
- Migrated physical rhetor books of library to an online repository – Amazon Glacier
- Managed digital materials of the library by Sierra Library System and cloud-based Ex Libris Alma service platform
- Lead meetings and discussion sections with team members and faculty about managing the library during off-hours
- Provided training to new team members on using Ex Libris Alma service to manage library materials
- Advised graduate students about research materials and workshops at the library

Graduate International Student Services   August 2018 – August 2019
International Students Ambassador   *University of Central Missouri*
- Lead a team of six members for organizing and managing International Education Week 2018 at the university
- Organized and presented event's agenda to student experience and engagement office to generate funds for the events
- Hosted international student orientation and assisted international students' requests for two academic semesters

Graduate Education and Research   December 2019
Graduate Research Workshop Series   *University of Central Missouri*
- A semester long graduate research workshop on topics to perform literature review, performing research on graduate level and paper citing formats

Awards and Memberships

Spring 2022 Research Forum   April 2021
Undergraduate research abstract reviewer   *University of Missouri*
- Liaised with undergraduate research department to review and advise undergraduates on their research abstracts

IEEE/ACM Transactions on Computational Biology and Bioinformatics   December 2021 - Present
Manuscript Reviewer   *IEEE/ACM*
- Review manuscripts related to bioinformatics and machine learning

Member of Upsilon Pi Epsilon-Gamma Chapter   September 2021 - Present
An Honor Society in Computer Science   *University of Missouri*

Graduate Education and Research   May 2020
Graduate Research Award   *University of Central Missouri*
- Research grant for using Amazon Web Services (AWS) for master's thesis especially, the Amazon EMR Cluster

Strata Data Conference   March 2019
Conference Scholarship - Gold Pass   *O'Reilly Media, Inc*
- Three-day conference gold pass and gift card to attend Strata Data Conference

Graduate Housing Scholarship   January 2020 – May 2020
Webb Housing   *University of Central Missouri Graduate School*
- Graduate housing scholarship based on academic performance

Microsoft Partner Meet   January 2020 – May 2020
Second place in competition   *Microsoft Partner Meet Nepal*
- Designed solution to the problem with three team members using Microsoft system center components (ranked 2nd among 15 teams)

Publication

- Mu Gao, Peik Lund-Andersen, Alex Morehead, Sajid Mahmud, Chen Chen, Xiao Chen§, **Nabin Giri**, Raj S. Roy, Farhan Quadir, T. Chad Effler, Ryan Prout, Subil Abraham, Jeffery Skolnick, Jianlin Cheng, Ada Sedova (2021). **High-Performance Deep Learning Toolbox for Genome-Scale Prediction of Protein Structure and Function** *2021 IEEE/ACM Workshop on Machine Learning in High Performance Computing Environments (MLHPC)*

- **Nabin Giri** and Jianlin Cheng. **A Deep Learning Bioinformatics Approach to Modeling Protein-Ligand Interaction with cryo-EM Data in 2021 Ligand Model Challenge** *Preprint in bioRiv*

- Elham Soltanikazemi, Raj S. Roy, Farhan Quadir, **Nabin Giri**, Alex Morehead, and Jianlin Cheng. **DRLComplex: Reconstruction of protein quaternary structures using deep reinforcement learning.** *Preprint in arXiv*

- **Nabin Giri** and Jianlin Cheng. **Review: Artificial Intelligence (AI) Methodologies in Structural Biology (2023)** *Current Opinion in Structural Biology. Manuscript in preparation. Invited*

Conferences

S^{2}C^2 CryoEM Map Modeling and Validation Workshop   September 8 – September 10, 2021
Stanford-SLAC Cryo-EM Center   *Stanford University*
- Discussed the latest developments of tools for building, refining, and validating models of cryoEM maps
- Tutorials on improving maps, building, refining, and validating models using different functions of PHENIX tool
- Tutorials to fetch, search, predict models using AlphaFold in UCSF ChimeraX, and map model overlay
- Tutorials on deposition, validation, biocuration at WWPDB and protein data bank file format

Strata Data Conference   March 25 – March 28, 2019
O'Reilly Media, Inc   *Moscone Center, California*
- Sessions attended and learned on spark, evaluation of machine learning algorithms, and kubernetes

Strata Data Conference   September 12 – September 13, 2018
O'Reilly Media, Inc   *Javits Center, New York*
- Moderator between speaker and audience at the conference. Volunteered as a room host
- Training attended on using deep learning approach for recommendation system

Dell EMC Storage Training   April 2018
DELL Technologies   *Cyberjaya, Malaysia*
- Three day rigrous training on VxRail, Unity and SC Series All-Flash Storage of Dell