

ABIN SHAKYA

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EDUCATION

Louisiana State University, Baton Rouge

PhD in Computer Science : 4.062/4.0 GPA

Relevant Courses : Applied Deep Learning, Bayesian Data Analysis,
Machine Learning, Big Data Analysis, Statistics 7004, Statistics 7014, Algorithm Design and Analysis

Advisor: Dr. Bijaya Karki
Aug 2021 - May 2026 (Expected)

Tribhuvan University, Kathmandu, Nepal

BE in Computer Engineering: 3.6 GPA (US Scale)

Advisor: Dr. Subarna Shakya
Nov 2013 - Nov 2017

EXPERIENCES

Louisiana State University, Baton Rouge

Position: Research Assistant

Aug 2021 - Present

- Working on Graph Neural Network accelerated Molecular Dynamics to get insight on atom distribution inside the core of Earth.
- Developed deep learning-based potential energy models for molecular dynamics, facilitating simulations of Earth's interior, and authored the paper **Insights into core-mantle differentiation from bulk Earth melt simulations**.
DOI: 10.1038/s41598-024-69873-8
- Implemented a state-of-the-art Bayesian Neural Network architecture to address prediction uncertainty in X-ray dataset, contributing to more reliable and robust predictions.
- Navigated intricate computational geometry problems, which included activities such as manipulating 3D convex hulls and alpha shapes, seamlessly incorporating them into molecular dynamic applications. This enhanced representation of geometric solutions which significantly improved our understanding of molecular interactions.
- Developed indexing algorithms that empower efficient queries on compressed data, resulting in optimized data retrieval processes. This innovation directly contributed to the increased speed and effectiveness of data analysis.

Sparrow Private Limited, Lalitpur, Nepal

Position: Software Engineer

Oct 2017 - Sep 2021

- Worked as a Backend Engineer (**Python/Django**) in architecting a comprehensive Digital Wallet Ecosystem.
- Streamlined daily operations by automating tasks to support the finance team in reconciliations.
- Exhibited an exceptional level of technical prowess while delivering top-tier L3 support, effectively taking charge of and skillfully mitigating complex issues as they arose, ensuring seamless operations.
- Successfully migrated code base from Django 1.8 to Django 2.2, ensuring modern and efficient framework utilization.**
- Enhanced flight search engine efficiency by strategically implementing caching and parallelization techniques.

SKILLS

Programming Language:

Python, R, JAVA, C, C++, SAS, SQL, MATLAB

Frameworks/Libraries:

Pytorch, Tensorflow, Django/DRF, PySpark, Keras, Pandas, Numpy,
Scikit-Learn, Matplotlib, PyG, HPC, Seaborn

Tools, Technologies, DB:

PostgreSQL, MongoDB, SparkSQL, PySpark, Apache Kafka, Apache Hadoop
Amazon S3, Nginx, Redis, RabbitMQ, Latex

ML skills:

Graph Learning, Representation Learning, Generative AI,
Sparse Neural Networks, Quantization of Neural Networks, Fine-Tuning LLMs

Time Series Analysis / Statistics:

ARIMA, SARIMA, GARCH, Exponential Smoothing, Gibbs sampling, MCMC,
PCA, SVD, A/B testing, ANOVA analysis

PAPERS, AWARDS AND RECOGNITIONS

- Shakya, A.*, Ghosh, D.B., Jackson, C., Morra, G., Karki, B.B. (2024). **Insights into core-mantle differentiation from bulk Earth melt simulations**. Scientific Reports. DOI: 10.1038/s41598-024-69873-8.
- Shakya, A.*, Pokharel, A., Bhattarai, A., Sitikhu, P., Shakya, S. (2018). Real-Time Stock Prediction Using Neural Network. 8th International Conference, Confluence 2018— IEEE. ISBN: 978-1-5386-1720-5.
- Talk on "Stock Market Prediction using Neural Networks" at Kelaniya International Conference on Advances in Computing and Technology held in Srilanka
- Enrolled in a fully Funded PhD Program : NASA Emerging Worlds Research Grant, Computer Science, LSU, 2021/22
- Enrolled in a fully funded Bachelor's Program: Merit based scholarship for securing 26th Rank in Engineering Entrance Examination (From a pool of 15000+ applicant)