

CONTACT

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SKILLS

- Python 6+ yrs
- Machine Learning 4+ yrs
- PyTorch 3+ yrs
- Lean Prover 3+ yrs
- Web Development 5+ yrs

Machine Learning

- PyTorch
- Scikit-learn
- PyTorch Geometric
- PyTorch Lightning
- Transformers (Hugging Face)
- TensorFlow
- Keras

Web Technology

- Django
- HTML
- CSS
- JavaScript
- PostgreSQL
- SQLite
- Google OAuth
- Swagger
- Flask
- Selenium
- BeautifulSoup

RAHUL VISHWAKARMA

Int. MSc. - Mathematics & Computer Science

PUBLICATIONS

IndoorGNN: A Graph Neural Network based approach for Indoor Localization using WiFi RSSI
11th International Conference on Big Data and Artificial Intelligence

BDA 2023

Authors: [Rahul Vishwakarma](#), Rucha Bhalchandra Joshi, and Subhankar Mishra
Status: Accepted

Enhancing Neural Theorem Proving through Data Augmentation and Dynamic Sampling Method

arXiv

Authors: [Rahul Vishwakarma](#) and Subhankar Mishra
Status: Available on arXiv

PROJECTS

Digital Takshashila

Sept 24 - Ongoing

Tool: LangGraph, Agno, Django, PostgreSQL, Swagger, BeautifulSoup, Ollama

Currently (March 2025 – Present), I am working as a System Engineer at BHERI Tech Foundation, where I am developing LLM-based agents to answer questions related to Indian heritage, referencing primary sources from the Dhara platform. The current version of the service is available at: Dhara Prashna Page.

Previously (September 2024 – March 2025), I worked as a Junior Research Fellow (Project Associate) at IIT Hyderabad under the guidance of Dr. Mohan Raghavan. Our project focused on building a digital library to preserve and share ancient Indian knowledge by scraping diverse sources and creating a public-facing interface. The web portal providing access to our three main services (Dictionary, Verse Finder, Chunk Server) is available at: Dhara Page.

Neural Theorem Proving

Jun 23 - June 24

Tool: Python, PyTorch, ByT5 LLMModel, Lean, LeanDojo, Flask

This was my MSc thesis, supervised by Dr. Subhankar Mishra. In this research, we fine-tuned LLMs (ByT5) and combined them with the interactive prover Lean to automate mathematical proof generation. Some of our contributions are - introduction of a dynamic sampling method, augmentation of the training dataset, and development of a tokenizer specific to Lean 4. Additionally, we developed a website for Neural Theorem Proving to make our method easily accessible through both web and API usage.

Python Packages

- Pandas
- NumPy
- Folium
- Pillow
- Matplotlib
- Geopandas
- Seaborn
- OpenCV

ACHIEVEMENTS

JRF Scholar

I am a Junior Research Fellow at IIT Hyderabad.

DISHA Scholar

DISHA (DAE Incentive Scheme for Holistic Science Education and Augmentation) - 5 year scholarship for undergraduate studies, by Department of Atomic Energy (DAE), Government of India.

National Exams Qualified

- GATE 2024
Data Science and AI (DA)
Marks (out of 100) - 42
GATE Score - 418
All India Rank - 4146 out of 39210 total appeared
- NEST (National Entrance Screening Test) | Gen. rank: 223
- JEE (Joint-Entrance Exam) Mains | Percentile: 97.3

GNN-Based Indoor Localization with WiFi RSSI

Aug 22 - May 23

Tool: Python, Scikit-learn, PyTorch Geometric, Docker

In this project, we focused on improving the accuracy of location prediction in an indoor environment using WiFi RSSI. We trained machine learning models to capture intricate signal strength patterns unique to indoor spaces. We introduced a method called IndoorGNN, which utilizes Graph Neural Networks to achieve superior indoor localization performance, surpassing conventional algorithms such as kNN, SVM, and MLP. This project resulted in the publication of IndoorGNN.

Change detection in Satellite Images

Jan - June 24

Tool: PyTorch, Pillow, Satellite Images

In this project, we used machine learning for change detection (for roads and buildings) in satellite images over time. We trained ML models to predict masks for roads and buildings, then compared them across different timelines to identify changes. We also launched a website where users can upload two images of a region to detect changes using our trained model.

Theorem Proving in Lean

May - July 22

Tool: Lean 4, TensorFlow

During my internship at IISc Bangalore with Prof. Siddhartha Gadgil, I developed skills in theorem proving using the Lean Interactive Theorem Prover. Additionally, we explored the use of machine learning models to predict proof steps for theorems.

Recommendation System

March - May 22

Tool: Django, HTML

Developed a file access pattern-based recommendation system for NISER Archive to suggest study materials.

NISER Bus Tracker

June - Dec 22

Tool: Django, HTML, CSS, JavaScript

Developed a web app for sharing the live location of the NISER buses with its members.

EDUCATION

Int. MSc. - Mathematics (Major) & Computer Science (Minor)

2019 - 2024

**National Institute of Science Education and Research
Bhubaneswar, Odisha (India)**

CGPA - 7.63/10

Sainik School Nagrota, Jammu, J & K (India) (Physics, Chemistry, Math, CS)

2011 - 2018

12th (2018) - 82.8%
10th (2016) - 9.6 CGPA

ONLINE COURSES

Deep Learning with PyTorch Step-by-Step A Beginner's Guide Book

Aug 22 - Feb 23

IBM Data Science Professional Certificate Course Certificate of Completion

Dec - Jan 21

WORKSHOPS & CONFERENCES

AI to Assist Mathematical Reasoning: A Workshop
The National Academies of Sciences, Engineering,
and Medicine

June 12-14, 2023

ACM India Winter School - Algorithmic Foundations
of Data Science
NISER Bhubaneswar, India

Dec 11-22, 2023

Lean Together 2024 : Workshop
Virtually via Zoom

Jan 9-12, 2024

EXTRACURRICULAR

- **President of the Coding Club NISER** - Served as the elected president of the Coding Club NISER (August 2022 - May 2023).