Rohit Singh Rathaur

National Champion @ EXL Excellence Quotient 2022
Mathematics & Computing
Minor in Computer Science and Engineering
Birla Institute of Technology, Mesra

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Education

Degree/Certificate	Institute/Board	CGPA/Percentage	Year
Integrated MSc	Birla Institute of Technology, Mesra	8.02	2018-2023
Senior Secondary	State Board	80.80 %	2017
Secondary	State Board	85.83%	2014

Experience

- **UiT The Arctic University of Norway** *Dec. 2022 - May 2023*
  Academic Exchange Student Tromso, Norway
  – Working on Acceleration physics-based optimization problem with Deep Learning in a data-efficient manner
  – Building a proxy eigen solver for 2D and 3D matrices: Independent of the physics problem
  – Accelerate compliant mechanism problem in topology optimization with the eigen solver developed in 2
  – Accelerate a design optimization problem from CFD based on the solver developed in 2

- **ePioneers** *Jan. 2022 - December 2022*
  Data Scientist India, Remote
  – Used Git version control to manage the source code and integrated Git with Jenkins to support build automation and integrated with Jira to monitor the commits.
  – Implemented AWS Elastic Container Service (ECS) scheduler to automate application deployment in the cloud using Docker Automation techniques.
  – Developed an MVP of Climate City Models, a data-driven project aimed at predicting the impact of climate change on urban environments.
  – Conducted extensive data preprocessing, including cleaning, feature engineering, and normalization of large-scale climate and geographical datasets using Google Earth Engine.
  – Developed visualizations and interactive dashboards using tools like Plotly and Tableau to effectively communicate insights and predictions to stakeholders.

- **CERN-HSF** *June. 2022 - December 2022*
  Technical Writer India, Remote
  – Played a key role in enhancing the LLVM documentation by crafting engaging and interactive C++ use cases specifically for Clang-REPL, making it accessible for users of diverse skill levels with fellow contributor
  – Demonstrate interactive C++ use cases in the LLVM documentation by developing basic documentation and tutorials apt for Clang-REPL
  – Created a series of advanced Clang-REPL tutorials designed to seamlessly integrate ClangRepl into Xeus, paving the way for greater interoperability and improved user experience
  – Proactively collaborated with the Xeus-Cling team, exploring opportunities to port the kernel to LLVM and expanding the project's potential impact
  – Leveraged strong technical skills in Clang and C++ to effectively communicate complex concepts, contributing to the growth and success of the LLVM project
  – Skills: Clang, C++

- **Pumas AI** *April 2021 - June 2021*
  Product Development Intern India, Remote
  – Developed and expanded documentation for the DataFrames ecosystem of Julia
  – Developed pharma-specific examples and tutorials pertinent to data wrangling and munging
  – Aim was to create developer-centric documentation to help their developers

- **Qu & Co** *April 2021 - September 2021*
  Research Intern India, Remote
  – Worked on Machine Learning for PDEs and ODEs
  – Write-up for the investigation of the existing NN DE Solver libraries
  – Write-up for the investigation of the existing NN DE Solver libraries and benchmarked the solution

- **University of Bristol (Direct Supervisor: Dr. David Barton)** *Nov 2020 - Feb 2021*
  Research Intern India, Remote
  – Applied Scientific Machine Learning to dynamic (time-varying) problems with parameter dependence and non-linear behavior.
  – Worked on specific applications of SciML and physics-based modeling.
  – Used Machine Learning for root finding with control-based continuation under a Ph.D. student to help in training an ML model.

Talks & Presentations

- **Synthetic Observability Data Generation using GANs** *26th August 2022*
  AI for Good: ITU Event Link
  – Provided a detailed overview of GANs, covering some hands-on exercises using Tensorflow. The talk included an explanation of GANs for time-series Data, taking TGANs as examples. The talk began with a quick survey of existing GANs for Time-Series Data and end with a discussion on possible GANs to consider for this challenge.
- **AI/ML for NFV Usecases** *14th June 2022*
  Linux Foundation Networking: Developer & Testing Forum Event Link
  – Demonstrated failure prediction models and also presented our work on AI/ML use cases for NFV.

Projects

- **The Linux Foundation** *June 2021 - September 2021*
  ML for NFV Intern Github
  – Developed cutting-edge failure prediction models for Network Function Virtualization (NFV) using advanced deep learning techniques, such as Recurrent Neural Networks (RNN) and Long Short-Term Memory (LSTM).
  – Conducted an extensive literature survey on critical NFV problems, including event correlation, VNF placement, anomaly detection, VNF failure prediction, and synthetic data generation, laying the groundwork for future research and development.
  – Expanded the capabilities of the Acumos platform by integrating ML models tailored for NFV and Telco use cases, enhancing the platform's versatility and applicability in the industry.
  – Leveraged modern technologies like Python, TensorFlow, Docker, and Kubernetes to create efficient, scalable, and robust solutions for NFV-related challenges.
  – Tech Stack: Python, TensorFlow, Docker, Kubernetes
- **LCS2 Lab, IIIT Delhi** *July 2020 - Dec 2020*
  Undergraduate Research Intern, Hostility Detection GitHub
  – Worked on Low Resourced Indian Language: Hindi to detect hostile posts.
  – Presented a novel hostility detection dataset in the Hindi language. We collected and manually annotated around 8200 online posts from Twitter and other sources and did data cleaning, preprocessing, annotation, model building, tuning, and evaluation.
  – Implemented baselines using Machine Learning and Deep Learning techniques
  – Tech Stack: Python
- **BetaProfile**
  Personal Project Github
  – A nicer look at your GitHub profile and repository stats with data visualizations of your top languages and stars. Sort through your top repositories by the number of stars, forks, and size
  – Used Next.js, Chart.js, GitHub Polyglot, Styled Components, React Flip Move

Honors & Awards

- Accepted as a mentee at Des Femmes Bitcoin Mentorship program
- LiFT Training Scholarship Recipient
- **National Winner** at **EXL Excellence Quotient 2022** and won a cash Prize of Rs. 2 Lakhs
- Selected as a volunteer for ICML 2021
- GP Birla Scholarship Recipients for outstanding performance
- NVIDIA Jetson Nano Developer Grant, 2021
- District Qualifier in SOF: IMO, 2016. Secured City Rank: 18, State Rank: 265, International Rank: 4323
- UP Board Merit Award for outstanding performance in Secondary School, July 2014.
- Secured second position in Science Competition at state level organized by UP Government. Received a cash prize of worth 5000 INR.

Technical Skills

- **Languages**: Python, C/C++, SQL, R, Java*, Unix Shell Scripting, Julia, JavaScript, Go*, Rust*
- **Data Science Toolbox**: R, Python 2.x/3.x, MATLAB, Jupyter Notebooks, Visual Code, PyCharm, TensorFlow, PyTorch
- **Web Technologies**: React, GraphQL, Bootstrap, NodeJS*
- **Database**: Orcale, MS Access, MongoDB
- **Machine Learning**: Classification, Clustering and Regression Techniques, Supervised and Unsupervised Learning, Time Series and Forecasting, Deep Learning (ANN, CNN, RNN, LSTM), Neural Networks, Deep Learning, NLP, NLTK, Computer Vision*
- **BI Tools**: Tableau*, Power BI, plotly.io, Seaborn, Matplotlib
- **Cloud Services**: AWS-Sagemaker, Lambda*, EC2*, GCP-Big Query, Auto ML, DataFlow*
- **Integration Tools**: Dockers, Kubernetes, DevOps, Jenkins, PyMongo*, API Gateways*, RESTful

** Elementary proficiency*

Key courses taken

- **Mathematics**: Linear Algebra, Calculus, Differential Equations, Discrete Maths, Probability & Random Processes, Real & Complex Analysis, Operation Research
- **Computer Science**: Data Structure & Algorithm, Design & Analysis of Algorithm, OOPs using Java, Operating System

Leadership & Extracurricular Activities

- Joint President at Society for Data Science, BIT Mesra which is the largest Data Science community in eastern India and organized Data Science Summit 2021 where we had more than 5000 participants in all types of events.
- Active contributor to Open Source Software. Notable organizations include SciML under The Julia Language.
- Won a "Special Mention" for "Surrogates.jl" under the contribution section to fix issues.
- Volunteered for United Nations
- Represented Internshala in my campus, and help my peers in order to make the best use of Internshala as well as gain essential skills in marketing, communication and enhance leadership qualities