APRATIM MISHRA

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EDUCATION

- B.Tech in Computer Science & Engineering
  National Institute of Technology Srinagar
  (All coursework has been conducted in English)
  Nov 2022 – Present
  Current CGPA - **9.17/10**
- Higher Secondary School (Class 12th) (English medium)
  Jayshree Periwal Global School, Jaipur
  2022
  CBSE 12th Grade - **92.4%**
- Secondary School (Class 10th) (English medium)
  Maharaja Sawai Bhawani Singh School, Jaipur
  2020
  CBSE 10th Grade - **93%**

EXPERIENCE

RESEARCH INTERN - IIT JAMMU

Guide: **Prof. Manoj Singh Gaur**

December 2024 - Present Jammu, India

- Extracted kernel level information using eBPF based tools.
- Investigating inter-process communication (IPC) mechanisms at kernel level to detect and mitigate vulnerability.

RESEARCH INTERN - IIT JAMMU

Guide: **Prof. Manoj Singh Gaur**

July 2024 - August 2024 Jammu, India

- Built a contrastive learning model in PyTorch to generate embeddings for around 264,000 code snippets and calculated infoNCE loss.
- Converted code snippets from CWE dataset into Abstract Syntax Trees (ASTs) using Clang LLVM for structured representation.

PROJECT INTERN - IIT JAMMU

Guide: **Prof. Manoj Singh Gaur**

December 2023 - February 2024 Jammu, India

- Developed a NLP-driven information retrieval system using Hugging Face models and the RAG principle, implemented through the Langchain framework.
- Conducted PDF syntax analysis and implemented OCR to accurately extract and retrieve information from images.

ACHIEVEMENTS

- Ranked **3rd** in the department out of 82 students
- Secured **All India Rank 19439 (Top 1.94%)** among 1 million appearing students in JEE Main 2022
- Completed "Cryptography I" online course authorized by Stanford University and offered through Coursera

RELEVANT COURSES

Data Structures, Operating System, OOP, Computer Architecture, Algorithms, DBMS, Probability & Statistics, Linear Algebra, Discrete Math

PUBLICATIONS

Veningston K, Apratim Mishra "IndicLegalQA Dataset", Mendeley Data, Version 2, December 2024
DOI:10.17632/gf8n8cnmvc.2
A dataset of 10,000 Q/A pairs from Indian Supreme Court judgments, with metadata for information retrieval and legal interpretation tasks.

PROJECTS

Legal Q/A Model - Research Project
Guide: **Dr. Veningston K**
July 2024 - December 2024

- Fine-tuned Llama2 model using PEFT LoRA for memory optimization utilising the IndicLegalQA dataset.
- Achieved up to 70% accuracy in legal Q/A tasks, validated using Sentence-BERT based similarity scores.

Expense-sharing application - Course Project
November 2023

- Built a C++ application to manage shared expenses using object-oriented principles.
- Designed key classes for efficient management of participants, expenses, and group transactions.

SKILLS

- **Languages**: C, C++, Python, HTML, CSS, JavaScript, SQL
- **Operating Systems**: Windows, Linux
- **Libraries/Frameworks:** PyTorch, NumPy, Matplotlib, Pandas, Hugging Face Transformers, LangChain

MISCELLANEOUS

- Part of the Sponsorship Team for Techvaganza, the technical fest of NIT Srinagar, ensuring smooth event execution.
- Contributed to the development team for Rang-e-Chinar, the cultural fest of NIT Srinagar.