Rushil Venkateswar

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Education

Indian Institute of Technology, Kharagpur **Dec 2020 – May 2025**
Integrated Bachelors and Masters of Technology in Computer Science *8.71/10*

Little Flower School **Apr 2007 – Apr 2020**
Indian School Certificate Examination (ISC) *96.25%*

Awards and Achievements

- Achieved a peak rating of **1547 (Specialist)** on **Codeforces** under the handle **rv4102**
- Secured an **AIR 473** in Joint Entrance Exam Advanced 2020 and an **AIR 1176** in Joint Entrance Exam Mains 2020
- Nominated for best **Bachelor Thesis Award** by Department of Computer Science and Engineering, IIT Kharagpur
- Selected for **Optiver Winter School**, conducted by IIT Delhi

Experience

Sprinklr **May 2024 – Jul 2024**
Product Engineering Intern *Gurugram, India*

Objective: Develop tools to create a flowchart from a query and to summarize a flowchart

- Ensured **structured output generation** from LLMs by creating **Pydantic** based class definition to model the flowchart
- Utilized **prompt engineering** & **OpenAI function calling** through Instructor package to generate flowcharts from queries
- Deployed the tools using **Tornado** and **Docker**, empowering the product team to reduce flowchart creation time by over **60%**

Stanford University – Prof. Pascal Geldsetzer **May 2023 – Aug 2023**
Research Intern *Remote*

Objective: Estimate key indicators of health status in low income countries using satellite imagery

- Trained a **Boosting on Error** ensemble model using **Random Forest** & **XGBoost** at 4 levels, achieving MCRMSE of 10.75918
- Utilized **Dask** package to load an **8GB** dataset & performed feature selection using Random Forest's **feature importance**

Projects

Message Oriented TCP | *Computer Networks Lab* **Feb 2023 - Mar 2023**

Objective: To build a message oriented TCP Protocol using socket programming

- Created a library guaranteeing **reliable, in-order** delivery of **messages** up to **5000 bytes** using standard TCP sockets
- Utilized **POSIX threads** & **mutex locks/conditional signals** to ensure **synchronised access** to global buffers for messages

Linux Shell Development | *Operating Systems Lab* **Jan 2023 - Feb 2022**

Objective: To create a shell that will run as an application program on top of the Linux kernel

- Effectively managed **process groups** and monitored child processes using **signal handlers**, ensuring **synchronized execution**
- Implemented features such as **background execution, pipelining, wildcard handling**, and **command history navigation**

Hospital Management System | *Database Management Lab* **Feb 2023 - Mar 2023**

Objective: To design a web application for a hospital management system

- Developed a **python flask** based web application to connect **MySQL** to a **bootstrap front-end** with **jinja templates**
- Implemented **user session management** using **flask-login** & provided **access control** through **python decorator functions**

Competitions and Conferences

Inter IIT Tech Meet 11.0 - Gold Medalist **Jan 2023 – Feb 2023**
Team Member *ISRO – Mid Prep Event*

Objective: Create a high-resolution map of the Moon using a pipeline of Image Super-Resolution models

- Proposed a novel **GAN-based** architecture with **adversaries** for ensuring **accurate reconstruction** of **craters** and **hills**
- Achieved a competitive **SSIM** of **0.794** while increasing spatial resolution from **5m/pixel** to **30 cm/pixel**, a **16x magnification**

Inter IIT Tech Meet 12.0 - Gold Medalist **Sep 2023 – Dec 2023**
Team Captain *DevRev – High Prep Event*

Objective: Create an efficient tool-use LLM which matches closed-source LLMs in performance

- Employed **PEFT** & **LoRA** to fine-tune LLMs like **DeepSeek** & **Code Llama**, utilizing function calls, reducing costs by **30%**
- **Created synthetic datasets** for tooling scenarios, including **dynamic tooling**, mathematical, conditional and iterative tooling

Relevant Coursework

Theory + Lab: Operating Systems, Computer Networks, Database Management Systems, Computer Organisation & Architecture, Compilers, Software Engineering, Programming & Data Structures, Algorithms-I & II, Distributed Systems
Theory: Deep Learning, Machine Learning, Probability & Statistics, Statistical Inference, Discrete Structures, Linear Algebra

Technical Skills

Languages: C/C++, Python, LaTeX, SQL, Bash, MIPS, Assembly
Skills: Systems Programming, Socket Programming, Data Science, Object Oriented Design
Technologies/Frameworks: Keras, Tensorflow, NumPy, Pandas, Flask, scikit-learn, Git, C++ STL, C pthreads

Leadership / Extracurricular

Student Mentor | ***Students' Welfare Group, IIT Kharagpur*** **Dec 2022 – Present**