Rushil Venkateswar

+91-8789309659 rushilv14@gmail.com linkedin.com/in/rushilv4102 github.com/rv4102

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 2018 – Apr 2020**
Indian School Certificate Examination (ISC) *96.25%*

Awards and Achievements

- Achieved a peak rating of **1576 (Specialist)** on **Codeforces** and **1868 (Knight)** on **LeetCode** 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 to attend **Optiver Winter School**, a workshop on Quantitative Trading, conducted by IIT Delhi

Experience

Sprinklr, India | *Product Engineering Intern* | *Workflow Automation* **May 2024 – July 2024**
Objective: Automate after-call workflow graph creation using a chatbot interface and guided-path graph summarization using LLMs
- Ensured **structured output generation** from LLMs using **Pydantic** class definitions, allowing **data validation** & **serialization**
- Utilized **prompt engineering**, **function calling** & query re-asking through Instructor package to generate workflows from queries
- Modified open-source packages for compatibility, **dockerizing** and deploying the tools to reduce workflow creation time by over **60%**

Stanford University | *Research Intern* | *Maternal and Child Health Monitoring in LMICs* **May 2023 – Aug 2023**
Objective: Estimate 6 key indicators of health status in low income countries using numeric features derived from satellite imagery
- Trained a **Boosting on Error** ensemble to predict 4 level residuals using **Random Forest** & **XGBoost**, with MCRMSE of 10.759
- Utilized **Dask** package on an **8GB** dataset for **EDA**, finally using RF.feature_importances_ parameter to perform feature selection
- The internship program was conducted as a Kaggle Competition, and our team secured **1st position** out of 30 participating teams

Projects

Hospital Management System | *Database Management Systems Lab* **Feb 2023 – Mar 2023**
Objective: Design and development of an extensible Hospital Management web application for Patient Care and Administration
- Developed a **Python Flask** based web application to connect **MySQL** to a **bootstrap front-end** coupled with **Jinja templates**
- Implemented **user session management** using **flask-login** & provided **access control** through **Python decorator functions**

Message Oriented TCP | *Computer Networks Lab* **Feb 2023 – Mar 2023**
Objective: Development of a wrapper around **TCP sockets** using additional book-keeping to ensure **reliable** message delivery
- Created 'MyTCP' 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 2023**
Objective: Design a **pipeline-based** shell supporting **parallel command execution**, **detection of malware** and **file locks**
- 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**

Competitions and Conferences

Inter IIT Tech Meet 12.0 - Gold Medalist | *Team Captain* | *DevRev – High Prep Event* **Sep 2023 – Dec 2023**
Objective: Create a low-latency tool-use LLM which matches closed-source LLMs in performance while being cost-effective
- Created **RTaC** framework to convert tools to python functions, promoting **docstring-reading** capabilities in coding-base LLMs
- Utilized **PEFT** to finetune Code Llama 7B & DeepSeek 1.3B on 2500 examples of manually cleaned GPT generated synthetic data
- Achieved a competitive performance to GPT-4 at **20%** of the cost, supporting dynamic tool addition & mathematical/iterative logic

Inter IIT Tech Meet 11.0 - Gold Medalist | *Team Member* | *ISRO – Mid Prep Event* **Jan 2023 – Feb 2023**
Objective: Create a high-res map of the Moon by stitching image patches generated using super-resolution models on low-res images
- Proposed a novel **GAN-based** architecture with separate **adversaries** for ensuring **accurate reconstruction** of **craters** and **hills**
- Developed a Lunar Atlas by correcting coordinates & stitching together individual image patches from Chadrayaan-2 TMC payload
- Achieved a competitive **SSIM** of **0.794** while increasing spatial resolution from **5m/pixel** to **30 cm/pixel**, a **16x magnification**

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**