Varun R Mallya

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Objective

My interests lie in low-level systems programming, and I enjoy working with C++ based software.

Education

Indian Institute Of Technology, Roorkee   *Aug 2023 – Present*
Bachelor of Technology

- CGPA: 9.636/10.0
- **Coursework:** Programming and Data Structures, Data Science, Numerical Methods, Probability and Statistics, Multivariable Calculus and Vector Algebra

Deeksha CFL PU College, Bangalore   *Mar 2022 – Mar 2023*
Class 12

- Grades: 97.33% (Rank 13)
- **Coursework:** Physics, Chemistry, Mathematics, Computer Science, English, Sanskrit

Experience

Software Engineering Intern   *Remote*
Neander.AI   *Nov 2024 - Present*

- Worked in a high demand startup environment alongside multiple other experienced software developers to build an LLM based product that helped bring the company on the market.

Software Developer   *Roorkee, Uttarakhand*
SDSLabs   *Feb 2024 - Present*

- Implemented a container runtime from scratch in Golang that can run Linux containers directly from their file systems with full isolation.
- Participated in multiple hackathons, game jams and Capture the Flags as a part of the SDSLabs team.
- Part of the CSAW-Embedded Security Challenge 2024 team from IIT Roorkee
- Competitive Programming on Codeforces with a max rating of 1241. Profile ⬈
- Conducted lectures on VPN technology and Game development attended by more than 200 students

Undergraduate Teaching Assistant   *Roorkee, Uttarakhand*
Academic Reinforcement Program IIT Roorkee   *Oct 2024 - Present*

- Mentored more than 150 first year students in the materials science course (MTC-101).

Achievements

Flare On 11: Completed 6 reverse engineering challenges and achieved 476th place out of 4157 players.

ETHOnline 2024: Won the DIMO and Sign protocol sponsor tracks with a team of 5. ETHGlobal ⬈

OP Jindal Scholarship 2024: Nominated by IIT Roorkee for this scholarship for having the highest CGPA in the Mechanical Engineeering department.

JEE Advanced: AIR 3656

JEE Main: AIR 4193 out of 11.5 lakh candidates

KCET: AIR 31 out of 3.5 lakh candidates

Projects

Particle Simulation   *ParticleSim* ☑

- ○ Wrote collision mathematics and simulated and optimized a particle simulator with Object Oriented C++. As a side project to this, I also wrote a damped bouncing ball simulator ☑.
- ○ Tools Used: C++, SDL2

Hell-Squared   *Hell-Squared* ☑

- ○ Designed and programmed an aesthetically pleasing game built only with geometrical figures and lighting effects in Godot. Wrote multiple shaders and used particles to create visual effects for BYOG 2024 conducted in part by IGDC.
- ○ Tools Used: Godot, Shadertoy

Quizio   *Athena* ☑ *Helios* ☑

- ○ Quizio is a quizzing application by SDSLabs used for our recruitment tests. I built and fixed a part of a multiple correct answers feature. Also managed complex states on the front end using Zustand.
- ○ Tools Used: React, Zustand, Express.JS, MongoDB, Node.JS

Chromatica   *Chromatica* ☑

- ○ Wrote recursive algorithms to implement a very peculiar game mechanic made for a game jam. Also wrote game logic in GDScript. Can be played here ☑
- ○ Tools Used: Godot, GDScript

Zeus   *Zeus* ☑

- ○ Built a container runtime from scratch that uses Goroutines and Linux kernel internals such as cgroups and namespaces. Provides complete isolation to the running container processes.
- ○ Tools Used: Golang, Linux Manpages

MVC-LMS   *MVC-LMS* ☑

- ○ Written in Go, it uses the Go html template engine to render pages with MariaDB/MySQL as the database. It is a full fledged Library manager with features including JSON Web Tokens, secure routes, password hashing. Is completely Dockerized with Docker Compose along with config files for Apache to virtually host on your computer.
- ○ Tools Used: Golang, Apache, MariaDB, Docker, JavaScript, HTML, CSS.

MentoGram   *MentoGram* ☑

- ○ Written on the MERN stack, it makes use of WebRTC for real time video transmission, has an internally implemented file manager in Node.JS, basic CRUD login functions and chat implemented with Socket.io with frontend written in ReactJS. Also uses Docker for program compilation and y.js for collaborative programming.
- ○ Tools Used: React, Express, MongoDB, Node.js, y.js, Docker, Socket.io, WebRTC.

Review Reply Bot   *Review Reply Bot* ☑

- ○ Uses TF-IDF to tokenize and vectorize datasets for reviews and sorts and replies to reviews using Latent Dirichlet Allocation for topic extraction. Also uses NLTK as an alternate means for tokenization.
- ○ Tools Used: Python, Scipy, Scikit-learn, Tensorflow, Spacy, React, Flask, NLTK

Technologies

Languages: C++, C, x86 Assembly, JavaScript, Go, Python, GDScript, TypeScript, Bash, HTML, CSS

Technologies: SDL2, Godot, MySQL, MariaDB, MongoDB, React, Next.js, Git, Bash, Postman, IDA-64