PRAGYANSH CHATURVEDI

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OBJECTIVE

CS graduate and software engineer working with Linux (debugging and maintaining Ubuntu for the Raspberry Pi). Interested in operating systems, low-level programming and optimisations, embedded computers and SBCs, networking and security

EDUCATION

Bachelor's of Technology (Computer Science), Indian Institute of Technology Roorkee July 2024

Cumulative Grade: 9.432/10

SKILLS

Languages	C, C++, Python, Go, Rust, Bash, Perl, ARM A64
Software Packages	CMake, Meson, GDB, Valgrind, eBPF, perf, vtune, Docker, Git, Jenkins
Language Skills	English (SRW), Hindi (SRW), French (RW)

EXPERIENCE

Software Engineer August 2024 - Current

Canonical *Remote, India*

- Part of the Ubuntu Foundations - Architectures squad, where I work on maintaining Ubuntu and hardware enablement for Raspberry Pi devices. Link to my LP profile
- Leveraged libcamera, rpicam-apps and picamera to enable the Raspberry Pi camera stack on Ubuntu 25.04 and achieve parity with RaspiOS
- Working on failsafe boot mechanism and automated hardware image testing for the Raspberry Pi in Ubuntu 25.10
- Involved in debugging and updating thousands of packages in the Ubuntu archive and the linux kernel to move the distro forward, and communicating the bugs and fixes to the project authors
- Gave talks in Ubuntu sprints and Ubuntu Summit - Linux kernel interactive debugging on an RPi5

Software Engineering Intern June 2024

TurboML *Remote, India*

- TurboML is a real-time streaming ML platform.
- Profiled and fixed performance bottlenecks in the inference pipeline of TurboML's streaming models. Further improved performance by implementing the LR algorithm for wait-free reads.
- Created a custom RPC implementation in C++ for the project to give a unified "actions/" endpoint to all models and actionable objects.

Summer@EPFL Intern July 2023 - November 2023

École Polytechnique Fédérale de Lausanne *Lausanne, Switzerland*

- Worked in the Robust Scalable System Software Lab under Prof. Sanidhya Kashyap, mentored by Lyu Tao
- Wrote a fuzzer to find security vulnerabilities in the eBPF verifier of the linux kernel in C and Go using Google's syzkaller project
- Completed the input generator to generate random valid eBPF programs, and the fuzzing oracle
- This is a list of bugs found by the fuzzer and reported to the LKML

Quantitative Research Intern May 2023 - July 2023

JP Morgan *Mumbai, India*

- Part of QR Rates team, worked on the pricing of Interest Rate Swaps and other PRIIPS
- Automated a rate prediction pipeline from the derivative inputs to the final report being published to the stakeholders
- Contributed organised, quality and rigorously tested Python code to the codebase, which included a Monte Carlo Simulation engine, a connector library to a distributed DB, a connector to a reactive circuit, REST endpoints and load balancing, along with tests, all in a pythonic way

Contributor - ScummVM May 2022 - Sep 2022
Google Summer of Code *Mountain View, CA*

- ScummVM is a cross-platform collection of engines for various retro games
- Extended Director engine support to Macromedia Director 4.0 movies by implementing required systems and fixing bugs Link to work
- The codebase comprises completely of C++ with community written APIs for data structures, sound and sprite rendering

PROJECTS

GBEmu — SDSLabs — Link Jan 2023 - Jun 2023

- GBEmu is a Nintendo GameBoy emulator written in C++ using SDL2 for graphics, input and audio
- Created the CPU, MemoryMap, Interrupt Handler, Timers and the GPU of the system
- Is able to run 32 KB games like Tetris and Dr. Mario. Support for multiple memory banks and audio system needs to be added

Rootex — SDSLabs — Link Oct 2021 - Dec 2022

- Rootex is an advanced C++ 3D game engine powering an in-production game yet to be announced. The engine is based on the Entity-Component-System architecture and uses a Lua scripting Engine for making games.
- Created and profiled the in-development game with Rootex, fixing bugs in the engine, and optimizing it for the game

RusticOS — SDSLabs — Link Dec 2022 - Mar 2023

- Rustic OS is an x86 monolithic modular kernel written in Rust, attempting to make it usable for daily driver needs, expanding on Philipp Oppermann's blog on writing an OS in Rust
- Working on creating the process scheduler for the OS and implementing the filesystem.

Keyhouse — SDSLabs Mar 2022 - Apr 2022

- Created a Python based key and server access management tool which grants users access to computing resources of SDSLabs
- Used GitHub actions to deploy keys and grant access to users on the requested machine when their Pull Request is merged.

ACHIEVEMENTS

- **CSAW ESC Finals 2022** — Part of Team Volga which ranked 2nd in CSAW ESC Finals based off ML Security challenges organized by New York University
- **CSAW CTF Quals 2022** — Part of team SDSLabs which came 3rd in India in CSAW CTF organized by New York University
- **CSAW CTF Finals 2021** — Part of Team SDSLabs which ranked 2nd in India and 6th in the world among UG teams which participated in the CSAW CTF Finals organized by New York University
- **IAO OCSC 2017** — One of 25 Indian students who attended the Orientation cum Selection Camp for International Astronomy Olympiad 2017

EXTRA-CURRICULAR ACTIVITIES

Developer — SDSLabs Mar 2021 - July 2024

- Involved in maintaining and developing applications for campus students as well as those open to the internet
- Regularly conducted hackathons, public lectures, and competitions to foster the technical culture in the campus
- Compete in hackathons and CTF events under SDSLabs team.

REFERENCES

Dr. Sanidhya Kashyap
Assistant Professor
EPFL
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Arjit Jain
Co-Founder, CTO
TurboML
arjit@turboml.com