Gaurav Raj

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PROFILE

Offensive Security Researcher & Software Engineer with **8+ years of open-source experience (1600+ commits in 2025 alone)**. Specialized in **low-level systems programming (C/ASM/Rust), Linux internals, kernel development, and red team operations**. Creator and maintainer of BerserkArch Linux, focused on secure, automated, and scalable offensive security environments. Strong crossover between kernel engineering, cloud infrastructure, and full-stack development.

TECHNICAL ARSENAL

Core Languages C, C++, Assembly, Rust, Golang, Python, Bash, Zig, JavaScript, TypeScript, Java.
Systems Engineering Linux Internals, Kernel Dev, Memory Management, Bootloaders, Device Drivers, Embedded/IoT.
Full-Stack Dev Frontend (React/Next.js/Astro.js), Mobile (Android/IOS), Desktop Apps, Backend, Automation, APIs.
Cloud & DevOps AWS (SES, EC2, S3), GCP, Terraform, Vagrant, Kubernetes, Docker, Github Actions, CI/CD, Linux.
AI & LLM Security: LLM Fine-tuning, Prompt Engineering, Model Evaluation, Data Analysis, LLM Red Teaming.
Red Team & Pentest Reverse Engineering, Network/Internal/Web Pentesting, AD Attacks, C2 (Cobalt Strike/Sliver).

SECURITY & ENGINEERING EXPERIENCE

BerserkArch Linux Distro Project — Remote

Lead Maintainer, Developer & Systems Architect — *2025 - Present*

- **OS:** Designed and maintain an **Arch Linux–based** distribution for red team operations and secure development.
- **CI/CD:** Built fully automated ISO CI/CD pipelines using **GitHub Actions** and Docker (build, sign, checksum, deploy)
- **Containerization:** Published official **Docker** images for portable offensive security labs and rapid development.
- **Security Hardening:** Implemented **custom kernel patches** and **AppArmor profiles** for system hardening.

Cybercraft Labs Pvt Ltd — Patna, Bihar

Founder & Principal Engineer (Security Consultancy) — *Sept 2023 – Nov 2024*

- **Agency Leadership:** Founded and operated an independent security consultancy, managing client lifecycles from technical consultation to delivery of penetration testing and cloud security solutions.
- **Cloud Architecture:** Architected **AWS/GCP** hybrid infrastructures, hardened EC2, configured SES (DKIM/DMARC).
- **Software Development:** Developed full-stack web applications, desktop tools, and custom reconnaissance automation (Python/Go/Rust), optimizing client workflows and reducing manual testing time by 40%.

KEY R&D PROJECTS

THBOS (Custom x86 Kernel) | *Source Code* — *Systems Programming (C, Assembly & Zig)*

- **Kernel Dev**: Built a 64-bit **kernel from scratch**, including **custom bootloader** for Protected mode.
- **Hardware Interaction**: Directly manipulated **CPU** registers to use *CPUID* instruction set to fetch processor topology.

CarePulse | *Live App* | *Source Code* — *Healthcare Platform (Next.js, TypeScript, Appwrite)*

- **Dev:** HIPAA-aligned patient management system with server actions, Zod validation, Twilio SMS workflows, and next.js
- **System Design**: Built a scalable backend with admin panel with Server Actions for secure data handling.

Chip8 Emulator | *github.com/thehackersbrain/chip8* — *Systems Emulation (Rust)*

- **Emulation Logic:** A functional CHIP-8 emulator in Rust, with fetch-decode-execute cycle and stack management.
- **Memory Safety:** Leveraged Rust's borrow checker to ensure memory safety while handling raw bytecode execution.

HiddenWave | *github.com/thehackersbrain/hiddenwave* — *Steganography Tool (C++ & Python)*

- **DSA:** Implemented Least Significant Bit encoding algorithm in C++ to hide encrypted payloads inside WAV/MP3 audio.

ACHIEVEMENTS & CERTIFICATIONS

- **VulnHub:** Designed 2 vulnerable VMs (*Blogger*, *CorpVision*) with custom exploit chains (Webmin, Cronjob privesc).
- **Advanced Security Labs:** Completed **HackTheBox Fortresses** (Jet) & **TryHackMe Networks** (Wreath, Holo), mastering pivoting, AD exploitation, and perimeter breaching.
- **Global Rankings: Top 1% on TryHackMe** (CTF) | **HackerRank Gold Badge** (Problem Solving & Algorithms).
- **Certifications:** Certified proficiency in **Computer Forensics**, **Malware Analysis**, and **Active Directory Security** (Udemy/Independent Coursework).

EDUCATION

B.Sc (Maths Hons)	*Patliputra University, Patna*	**2027 (*ongoing*)**
Specialization:	*Advanced Mathemetics (ie. Calculus, Linear Algebra)*	**-**