

Pratyush Nandi

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EDUCATION

Vellore Institute of Technology (VIT)

Vellore, India

Bachelor of Technology in Information Technology

Sep. 2024 – May 2028

- Relevant Coursework: Data Structures & Algorithms, Computer Architecture, Object Oriented Programming, Discrete Mathematics & Graph Theory, Theory of Computation, Operating Systems, Computer Networks, Database Systems

ACHIEVEMENTS & SCHOLARSHIPS

- Awarded the **Shubhra Kar Linux Foundation Training (LiFT) Scholarship 2025**
- Awarded the **Reliance Foundation Scholarship** (Rs 2 Lakhs) — selected among 200,000+ applicants
- Qualified **KVPY 2021** - secured rank 2364 among 300,000+ aspirants
- State rank **8 in Andhra Pradesh**, NTSE 2020 Stage 1
- Selected among **top 15 in India**, Rashtriya Military School entrance exam 2019
- Bronze medal, **IMO Stage 1 2019**; Qualified both stages, **SIMO 2018** (recognised by IIT Madras)

PROJECTS

PostmarketOS Port — Samsung Galaxy Tab A7 | 🐙

Ongoing

- Porting Samsung Galaxy Tab A7 (Qualcomm SM6115) to mainline Linux; writing board-level device tree targeting upstream submission to kernel.org
- Reverse-engineered vendor hardware topology from running system DTB using DTC; identified GPIO, I2C bus assignments, DSI panel configuration, and power rail mappings [Manuscript](#)
- Documented entire porting process publicly via a technical blog series — toolchain setup, hardware extraction methodology, DTS translation workflow [Manuscript](#)
- Open source contribution - targeting upstream merge into pmaports and mainline Linux kernel

nandist-overlay — Gentoo Linux Package Overlay | 🐙 | 🐙

Ongoing

- Maintaining a public Gentoo overlay providing custom ebuilds for packages unavailable in the official Portage tree
- Includes LLVM-based compiler optimization configurations, custom USE flag tuning, and wrapper script for circumventing OpenGL library access issue of Nix on non-nixos systems [Manuscript](#)

RV32I Instruction Scheduler Simulator | 🐙

2026

- Built a cycle-accurate simulator in C comparing VLIW static bundling against out-of-order dynamic execution on a stripped RV32I ISA focusing only on integer operations
- Implemented DAG-based dependency analysis, height-ranked list scheduling, and Tomasulo algorithm with reorder buffer and reservation stations
- Benchmarked across 4 workload classes (dot product, matrix multiply, sieve, Fibonacci) — demonstrating IPC tradeoffs between scheduling strategies
- No heap allocation; fixed-size arrays throughout, designed for portability and readability, Designed for integration into automated benchmark testing pipelines

AST-based Interpreter for Minimal Turing-Complete Language | 🐙

August 2025

- Implemented a complete interpreter in C under 200 LOC covering lexical analysis, tokenization, and AST-based parsing
- Compared AST model against stack-based alternatives for syntactic extensibility
- Implemented it in Haskell, to understand its unique approach to graph reduction

TECHNICAL SKILLS

Languages: C, C++, Haskell, Java, SQL, Shell Scripting, Python

Systems: Linux kernel, Device Tree (DTS/DTB), QEMU/KVM, Nix/NixOS, systemd, Concurrent Programming

Tools: Git, GDB, dtc, ADB, Heimdall, pmbootstrap, CMake, AWS

EXTRACURRICULAR

- Chess rating **2000+ (Lichess rapid)**; former regional player selected in Gandhinagar, Gujarat
- Consistent **1-Kyu shogi** performance across dojo24, 81dojo, Shogi Wars, and Lishogi