Shivang Jhalani

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EDUCATION

PES University   Aug 2023 – Apr 2027

Bachelor of Technology in Computer Science & Engineering   *Bangalore, India*
- **GPA**: 9.24
- **CNR Scholar**: 5x recipient of the CNR Merit Scholarship
- **Extra coursework**: Generative AI, Machine Learning, Cloud Computing, Big Data Systems, Software Engineering Principles

SELECTED PROJECTS

Approximate Nearest Neighbour benchmarking | *Python, Docker, cgroups v2*   Jan 2026
- **Built a clean API for ANN benchmarking** with containerized build/search runners, config-driven runs, and aggregated results.
- **Added low-overhead performance metrics** (CPU/memory/I/O/latency) to enable fair, comparable evaluations.
- Part of an ongoing research using **AI Driven Research Systems**.

YACA: chat | *ConvexDB, real-time systems*   Sep 2025
- **Engineered a horizontally scalable chat backend** on **ConvexDB** with real-time delivery for low-latency, and consistent messaging.
- **Integrated embedding-based semantic search** over conversation history optimized for cost and UX.

CPU using FPGA | *Verilog, Vivado, ISA design*   Mar 2025
- **Built an 8-bit CPU prototype** in **Verilog / Vivado**: implemented datapath, control unit, instruction decoding, and memory interfaces to validate ISA-level execution on FPGA.
- **Developed assembler** and **simulation testbenches** to enable reproducible end-to-end verification and future extensibility.

Vehicle to Vechicle Communication for safety | *IoT, simulation*   Jan 2025
- **Simulated V2V safety messaging**: modeled vehicle behaviour, broadcast protocols, and a decentralized system to **improve driver reaction-time on road**.
- **Measured protocol reliability** under realistic traffic scenarios; awarded **1st place — CodeRed '25**. Demo: https://youtu.be/iNDNUqBqwZw.

EXPERIENCE

SysAdmin SME   Oct 2024 – Nov 2024

PESU I/O   *PES University, Bangalore*
- Designed and delivered a 4-week hands-on course on Linux system administration and NixOS for 20+ peers.
- Authored detailed guides and reproducible deployment scripts, teaching peers to independently provision and maintain Linux servers beyond the duration of the course.

Teaching Assistant   Jan 2026 – Present

Operating Systems   *PES University, Bangalore*
- Designed fun programming assignments and lab exercises covering operating system concepts.
- Maintained an automated grading and plagiarism-detection pipeline, reducing manual grading effort while improving grading consistency across evaluators.

Research Intern   Jun 2025 – Aug 2025

PESU CDSAML Lab   *PES University, Bangalore*
- Implemented and evaluated latent-representation reasoning techniques for multimodal large language models, extending baseline architectures with intermediate reasoning supervision.

SKILLS

Systems & Low-Level: C, Verilog, System Administration, NixOS, operating systems concepts
Backend & Infrastructure: Go, Node.js, Docker, REST APIs, GCP, Oracle Cloud, ConvexDB
Machine Learning & Tooling: Python, NumPy, ML fundamentals, LangChain, LangGraph, RAG pipelines
Databases & Data: PostgreSQL, SQL, vector search concepts
Other: JavaScript, React, Git, CI/CD