Nikhil Singh

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Skills

Languages: C/C++, Rust, Go, Haskell, Java, Python, Bash, Nix
Systems: Linux (NixOS), low-latency systems, debugging, performance optimization
Infrastructure: NixOS/Flakes, Docker, CI/CD (Jenkins, GitHub Actions), GCP
Developer Tools: Git, Neovim, Tmux, QEMU, SSH
Backend Frameworks: Django, FastAPI, Flask, Actix Web (Rust), Servant (Haskell)
Datastores & Messaging: MySQL, MongoDB, Redis, Kafka
Engineering Focus: Backend systems, distributed workflows, reproducible infrastructure, performance-sensitive software

Experience

Product Engineer Jun 2025 – Present
Juspay Technologies *Bengaluru, KA*

- Owned and maintained critical backend services, participating in design reviews, on-call debugging, and production incident resolution.
- Designed failure-handling, retry, and reconciliation mechanisms for distributed payment workflows.
- Designed and operated event-driven backend services handling high-volume UPI payment traffic with high availability.
- Reduced request latency and load using Redis caching and internal signaling in high-concurrency flows.
- Added monitoring and alerting for payment services to improve visibility and speed up incident resolution.
- Maintained deterministic production builds and deployments using Nix for multi-language services.

Researcher — Systems & Software Engineering May 2023 – May 2025
Gautam Buddha University *Greater Noida, UP*

- Applied research outcomes to practical system design, emphasizing reproducibility, modularity, and long-term maintainability.
- Authored an IEEE-published paper on modular, lazy-evaluated NixOS configurations for reproducible operating system management (IEEE Xplore).
- Developed reusable Nix flake-based system configurations using disko, impermanence, and home-manager to enable hardware-agnostic, ephemeral deployments.
- Co-authored an IEEE-published study on ML-based heavy rainfall prediction for the Northern Himalayan region (IEEE Xplore).

Other Professional Experience 2023 – 2024
Multiple Roles *Remote & Greater Noida*

- Built backend services and automation workflows as a Software Developer Intern, working with REST APIs and Linux-based systems.
- Mentored and led hands-on workshops on Git and reproducible development environments for 100+ participants.

Projects

Custom Android Build System | *CI/CD, Linux, AOSP* 2019 – 2022

- Built and automated Android ROM build and OTA pipelines using Jenkins for multiple devices.
- Debugged AOSP and kernel-level issues, managing patch workflows for stable multi-device releases.
- Made architectural trade-offs between performance, maintainability, and reproducibility, documenting decisions for long-term use.

Open Source Contributions Ongoing

- Maintainer of Tmux Minimal Status (240+ stars), focusing on performance, reliability, and minimal design.
- Reviewed issues and pull requests, guiding contributors and maintaining project quality standards.
- Contributed to Hyprwm, AUR, and Nixpkgs, primarily on tooling improvements and system reliability.

Ndots & Nvix 2024 – Present

- Designed modular, declarative NixOS configurations using flakes for reproducible and portable Linux systems.
- Built a modular Neovim distribution with an optimized plugin system and fast startup performance.
- Made design decisions balancing reproducibility, performance, and ease of maintenance across systems.

Education

Gautam Buddha University Greater Noida, UP
Master of Technology in Software Engineering ***(CGPA: 8.83)*** *Aug. 2023 – May 2025*
Bachelor of Technology in Computer Science Engineering *Aug. 2020 – Aug. 2023*