Ashwattha Phatak

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Education

North Carolina State University - Raleigh, NC — Aug 2024 – May 2026
Masters in Computer Science — **GPA: 3.91/4.0**
Coursework: Adv. Distributed Sys., Operating Sys., Parallel Systems, Computer Networks, Real Time Autonomous Driving

Vishwakarma Institute of Technology - Pune, India — Aug 2019 – May 2023
Bachelors in Electronics and Telecommunication; — **GPA: 8.76/10.0**
Coursework: Algorithms, Computer Vision, Machine Learning, Linear Algebra, Artificial Intelligence, Signal Processing

Skills

Programming: Python, C, C++, Golang, Bash, React, Flask
OS & Systems: Embedded Linux, RTOS, Device Drivers, Kernel internals, Filesystems, efibootmgr, real-time scheduling
Networking & IPC: TCP/IP, DHCP, IPC, Sockets, UDP, CAN bus
ML & Data Processing: On-device inference, PyTorch, TensorFlow, CUDA, TensorRT, NumPy, Pandas, Scikit-learn
Tools & Workflow: Git, Linux, Docker, Docker Compose, CMake, Make, AWS, GDB, QEMU, Kubernetes, MongoDB

Experience

Precision Sustainable Agriculture — Raleigh, NC
Systems Software Intern — May 2025 – Present

- Built a one-touch commissioning workflow to provision Jetson AGX Orin devices, Wi-Fi modems, and managed switches, supporting **15 deployed edge systems** with a roadmap to **50+ systems across the U.S.**.
- Implemented static DHCP assignment and multi-switch networking logic, ensuring deterministic IP allocation for camera, sensor, and GPU nodes running on-device ML inference.
- Designed automated OTA update infrastructure enabling centralized, touchless rollout of system and application updates to distributed embedded platforms.
- Architected OTA pipelines to be **model-update ready**, explicitly supporting future over-the-air ML model delivery alongside system software.
- Migrated ROS1-based communication to a lean IPC-driven framework, improving data throughput and system reliability for on-device perception workloads.

Systems Lab (Dr. Yoon Man-ki) — Raleigh, NC
Research Assistant — Jan 2025 – May 2025

- Built evaluation pipelines to benchmark compressed and decompressed range-image datasets used in 3D ML detection systems.
- Quantified trade-offs between data resolution, runtime performance, and detection accuracy to guide platform-level sensor data configurations.

State Street Corporation — Bangalore, India
Software Engineer (Site Reliability) — Jul 2023 – Jul 2024

- Supported large-scale financial platforms by driving incident response and change management workflows, improving service stability and reducing operational risk during production deployments.

State Street Corporation — Bangalore, India
Automation Intern — Jan 2023 – Jun 2023

- Built React dashboards to visualize infrastructure reliability metrics, aiding operational decision making and reducing incident risk.

Projects

DeltaFS — Distributed Versioned File System — Oct 2025
C++, Linux, Multithreading, Sockets

- Designed a WAFL-inspired filesystem with copy-on-write snapshots, block-level delta encoding, and crash-consistent journaling.
- Implemented distributed metadata replication via socket-based inter-node synchronization for robust consistency under concurrency.

Xinu OS — Kernel Development — Aug 2024 – Dec 2024
C, Xinu, QEMU

- Implemented Linux-like fair round-robin scheduling to resolve process starvation.
- Built demand paging with multi-level page tables enabling 4GB virtual memory per process.