Ayush Gala

Raleigh, NC | +1 (619)-382-0493 | agala2@ncsu.edu | github.com/Ayush-Gala | linkedin.com/in/ayush-gala

EDUCATION

M.S. in Computer Science 08/2024 - 05/2026
North Carolina State University Raleigh, NC
Courses: Software Engineering, Operating Systems, Parallel Systems, Parallel Comp. Architecture GPA: 4.0 / 4.0

B.E. in Computer Engineering (Honors in Machine Learning & AI) 07/2020 - 05/2024
Pune Institute of Computer Technology Pune, India
Courses: Algorithms, Databases, Computer Networks, Web Technologies, Big Data Analysis GPA: 3.76 / 4.0

SKILLS

Programming Languages: C/C++, Python, Java, PowerShell, Javascript, SQL
Frameworks: React.js, Node.js, Electron.js, Django, CUDA, OpenMP, Slurm, MongoDB
Tools & Technologies: Git, Linux, AWS, Docker, Kubernetes, Jenkins, Terraform, Selenium, MS Office
Interests: Public speaking, Game Development, Design Thinking, Finance

WORK EXPERIENCE

Jr. Product Developer Intern | **Newton's Apple Security Solutions** 08/2023 - 03/2024

- Developed a phishing simulation SaaS tool that uses SMTP spoofing to conduct employee cyber-awareness training.
- Added device detection features for phished emails. Migrated the production environment to a AWS T3 EC2 instance, reducing deployment costs by 20%. Deployed the software on-premise for select clients, boosting revenue by 45%.
- Built a dashboard using React.js to track and analyze vulnerability reports across multiple tools for software systems.
- Built comprehensive testing suites (180+ test cases) and CI/CD workflows to automate deployments and ensure reliability.

Software Development Intern | **MasterCard** 05/2023 - 07/2023

- Wrote scripts to parse Jenkins CI/CD log files and extract regression test analytics to a centralized team dashboard.
- Streamlined workflow for 40 agile teams across 6 countries, lowering critical issue resolution time by 26%. Created build artifacts for team assignment and story submission history, further enhancing traceability in the DevOps pipeline.
- Designed a wireless proximity based point-of-sales (POS) machine for the annual intern innovation challenge.

NOTABLE PROJECTS

Cache Coherence Simulator | C++, Makefile, Bash, Github Workflows 01/2025

- Built a simulator from scratch to analyze MESI and MOESI cache coherence protocols in a 4-processor system with 64-byte L1 cache blocks. The program simulates 500,000+ cache transactions and reports protocol specific metrics.
- Achieved a 15% reduction in memory and bus transactions over baseline considering infinite L1 cache.
- Implemented protocol-specific methods to handle reads, writes, invalidations, and memory transactions, tracking metrics like hits, misses, and bus usage. The project is open source with proper documentation and licenses.
- Currently extending the simulator for directory-based protocols and validated correctness using trace-based testing.

Bill Manager - Desktop Application | React.js, Electron.js, Tesseract, Tensorflow, MySQL, GPT-3.5 05/2023

- Developed an AI-powered desktop application for automating invoice data entry, tax code compliance checks, and business record-keeping. Integrated Tesseract OCR with pre-processing techniques to extract text from scanned invoices.
- Implemented LLM-based text analysis using GPT-3.5 to improve OCR tagging and automate invoice categorization.
- Built a compliance module that validated tax codes from government databases via APIs to ensure regulatory adherence.
- Reduced manual keystrokes by 68%, saving 30+ hours/month in manual data entry efforts for invoice processing.

Voting platform - Web Application | TailwindCSS, Next.js, Express.js, MongoDB, AWS, Vercel 02/2023

- Developed a QR-code-based voting web application for a city-wide art competition using the MERN stack.
- Deployed the Next.js app and Express.js APIs on EC2 instances with auto-scaling configurations to handle traffic spikes.
- Extended the backend with an integrated payment gateway enabling secure payments to purchase tickets and merchandise.
- Utilized S3 buckets to store and serve static assets. Engineered the platform to handle high concurrency, serving 14k+ API calls during the event, processing 5k+ votes, and supporting over 1000 concurrent users with zero downtime.