

Nikhil Chaudhary

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Education

Carnegie Mellon University, Master of Science in Electrical and Computer Engineering Dec 2027

Concentration: Computational Engineering Methods/Systems (CEM/S)

Coursework: Real Time Embedded Systems, Building Reliable Distributed Systems, Foundations of Computer Systems

Purdue University, Bachelor of Science in Computer Engineering, *GPA: 3.93/4.00* May 2026

Coursework: Computer Design & Prototyping, ASIC Design Laboratory, Applied Algorithms, Operating Systems

Awards: William and Mary Meese Scholarship, Robert and Grace Chou Scholarship, Dean's List (all semesters)

Experience

Firmware Engineer Intern, Astera Labs, San Jose, CA May 2026 - Aug 2026

- Designed a solution using Protocol Buffers (Protobuf) to automate the dynamic firmware update procedure and handle memory misalignment issues, resulting in segment tagging with minimal ICCM overhead.
- Spearheaded Python SDK optimizations, slashing initialization time by 70% with PHY/PMD object caching and aliasing.
- Debugged and integrated a 1.5x faster firmware-update routine (utilizing split flash memory) into overnight regressions.
- Created a datacenter rack-level bring-up and orchestration software platform, winning 1st place in the company-wide intern hackathon and presenting solutions to founders.

Firmware Engineer Intern, Astera Labs, San Jose, CA May 2025 - Aug 2025

- Brought up a Real-Time Operating System (RTOS) on a PCIe switch product microcontroller, with per-core abstracted timer APIs, replacing the bare-metal task loop.
- Demonstrated a proof-of-concept non-SMP multicore RTOS functional across 6 cores.
- Debugged pre-silicon firmware on the Cadence Palladium emulation platform.
- Validated internal RTOS toolkit features such as statistics collection and async event handling.

Embedded Software Engineering Co-op, GE Appliances, Louisville, KY Jan 2025 - May 2025

- Wrote embedded C software to improve dishwasher UI and cycle features across 20+ tickets.
- Implemented a 5-state finite state machine to control LED backlight behavior on Monogram dishwashers, updating bitmap assets for each operating state.
- Programmed an autonomous "sumo bot" with IR & line sensors to compete against enemy robots.

Projects

Project Manager and Developer, ES@P SlayerHIL Team Sep 2025 - May 2026

- Led 20 developers to develop a hardware-in-the-loop system with deterministic timing, mock sensor injection, and regression runs for embedded drone flight controller validation.
- Architected a test interface to stream flight test cases to a physics simulation module.

Data Science Researcher, Merck Corporation (The Data Mine, Purdue University) Aug 2023 - May 2024

- Collaborated with Merck Corporation on Drug-Drug Interaction (DDI) Prediction to improve patient safety by predicting drug reactions through NLP, feature engineering, and image processing.
- Visualized interactions between drug substructures on Stanford BioSNAP dataset via NetworkX.
- Leveraged PyTorch to refine and evaluate accuracy of existing Path-aware Siamese Graph Neural Network (PSG) and Substructure-Substructure Interaction (SSI) models for DDI prediction.
- Optimized an ensemble of 5 DDI models through testing of scikit-learn voting classifiers.

VR Developer, Computer Graphics and Visualization Laboratory, Purdue CS Department May 2023 - Dec 2023

- Developed a virtual reality (VR) educational application alongside Professor Voicu Popescu, allowing instructors to highlight 3D objects in real time within students' virtual Oculus headsets.
- Added server-client connection between a browser's cursor position and 3D ray on the VR headset via WebSocket API built on TCP protocol with an object-oriented (OOP) backbone.
- Applied 3D vector math and quaternions in C# to update live rotation and position of beam in Unity 3D.

Skills

Programming: Python, C, C++, Java, OOP, C#, MATLAB, React, R, OpenCV, SystemVerilog, RTOS, PyTorch

Other: Unity, CAD (Autodesk Inventor), Arduino, QuestaSim, Jenkins CI/CD, Git, TCP/IP, KiCad