Anuj K. Kakkad

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Objective

Computer Engineering student with experience in embedded software, firmware, device drivers, and hardware-software integration, seeking an embedded software or firmware internship starting Summer 2027.

Education

Georgia Institute of Technology | Atlanta, GA *August 2024 – Present*
Bachelor of Science in Computer Engineering, GPA 3.65 Expected Graduation, Dec 2028

Skills

Programming: C, C++, C#, Java, Python, Bash
Platforms: Embedded Linux, FreeRTOS, ESP-IDF, Windows, Linux
Hardware: ESP32-S3, digital I/O controllers, I2C/SPI/UART devices
Software: CMake, GDB, Git, .NET, TensorFlow/TFLite, Jenkins, Snowflake
Communication: Design proposals, technical reports, presentations
Languages: English (fluent)

Experience

Intuitive | Sunnyvale, CA *June – August 2026*
Software Engineering Intern

- Developed custom C driver for high-voltage insulation tester using SCPI-over-serial protocol with 1kHz real-time monitoring.
- Implemented multi-threaded monitoring via 8192-sample circular buffer and mutex-synchronized background thread.
- Reduced mutex hold time to sub-microsecond by restricting critical sections to buffer operations, preventing lock contention during 10ms SCPI queries.
- Implemented platform-agnostic mutex and thread abstractions via inline functions, enabling driver deployment on both Windows and Linux test systems without code duplication
- Achieved 45% latency reduction (5.1ms to 2.8ms per query) vs vendor IVI driver with NI-VISA by implementing direct serial communication

Moderna | Norwood, MA *July – December 2025*
Technical Development Co-op

- Developed C#/.NET drivers for Advantech USB-5860 digital I/O controller with edge detection and debouncing
- Built state machine-based test automation system with 15+ states processing 300 tests/day across 6 stations
- Implemented HAL with simulation layer to emulate hardware I/O, reducing hardware-dependent testing cycles by 50%
- Published real-time test measurements to Snowflake via RESTful APIs at 10 second intervals
- Configured Jenkins CI/CD pipeline triggered on commits to automate builds and generate installer packages

Sulchek BioMEMS and Biomechanics Lab | Atlanta Georgia *August 2024 – May 2025*
Undergraduate Researcher

- Built and trained CNN in Python to detect cell clogging in microfluidic devices from microscopy image data, achieving 97% accuracy on 3K-image dataset
- Implemented image preprocessing pipeline with data augmentation and train-validation split

Relevant Coursework

Data Structures & Algorithms: Arrays, linked lists, stacks, queues, trees, graphs, hash tables, sorting, searching, algorithm design, and time/space complexity analysis
Digital Design Logic: Boolean algebra, combinational and sequential logic, finite state machines, registers, counters, memory, and digital system design
Object-Oriented Programming: Classes and objects, inheritance, polymorphism, encapsulation, interfaces, exceptions, and object-oriented software design