Cooper Bailey

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EDUCATION

Tufts University   **Medford, MA**
Bachelors of Science in Computer Engineering   *Class of 2027*
- **Cumulative GPA:** 3.83
- **Relevant Coursework:** Advanced Computer Architecture, Computer Organization, Data Structures, Digital IC Design, Digital Logic, Embedded Systems, Parallel Computing, VLSI

PROFESSIONAL EXPERIENCE

Fedorka Enterprises/Primaira, LLC - *Product Engineering Intern*   *June 2025 - August 2025*
- Integrated Wi-Fi to an appliance by developing a custom C-based I^2C communication protocol between an external ESP32 and the embedded STM32, enabling automatic time display and on-screen consumable ordering
- Wrote software to create custom on-screen keyboards used to take input from a user, create user profiles, enter Wi-Fi credentials, and create custom scheduling options
- Built intuitive UI screens with TouchGFX to provide clear instructions for device operation
- Helped facilitate focus group testing with an emphasis on receiving feedback about the product from a target group of individuals to make improvements before going to market

PROJECTS

Embedded Systems Mini Golf Game   GitHub
C, CMSIS, SPI, I2C, SysTick
- Developed a fully playable wrist-controlled mini golf game on the Nucleo-L432KC, delivering a responsive and engaging gameplay experience on embedded hardware
- Designed and integrated motion-based controls using an MPU-6050 gyroscope communicating over I^2C, enabling real-time mapping of wrist movements to ball physics
- Created SPI-driven LCD graphics to produce an interactive title screen, dynamic animations, and interactive scoring, with smooth gameplay facilitated by SysTick interrupts
- Leveraged the hardware RNG to generate unique hole and ball locations before each round, enhancing gameplay variability and user experience

Gerp: Recursive File Search Tool   GitHub
C++, Custom Hash Table, File System Tree, String Processing
- Built a recursive file search utility in C++ modeled after the Unix grep command, capable of both case-sensitive and case-insensitive search modes for large-scale text repositories
- Designed and implemented a custom hash table class to map normalized words to their original forms and file/line occurrences for fast lookup

Static CMOS 2-Bit Comparator   GitHub
HSPICE Simulation, CMOS Custom Logic Design
- Robust static CMOS 2-bit magnitude comparator with custom gates, logical-effort sizing, and HSPICE timing verification
- Logic derivation, minimization, and custom logic design to minimize overall delay on critical path and saw an 87% reduction in worst-case delay

SKILLS & INTERESTS

Programming Languages: C/C++ (Expert), VHDL (Expert), Python (Intermediate)
Interpersonal Skills: Problem-Solving/Diagnosing, Critical Thinking, Communication, Collaboration
Interests: Physical Fitness, Soccer (Atletico Madrid), Hiking/Outdoors, Cooking