Andreas Tzitzikas

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github.com/Wafer0

Education

University of Maryland, College Park, MD — Expected May 2027
Master of Science in Computer Engineering — **GPA: 4.0**

University of Maryland, College Park, MD — Expected May 2026
Bachelor of Science in Computer Engineering — **GPA: 3.88**

Projects

5-Stage Pipelined 32bit RISC-V CPU — Aug 2025 - Present
- Design and implement a 5-stage pipelined CPU (Fetch, Decode, Execute, Memory, Write-Back) for the RISC-V ISA, including hazard detection and forwarding units.
- Achieved 100% functional correctness by passing a comprehensive suite of 50+ assembly test programs and successfully synthesizing the design on a Xilinx FPGA.

Low-Power 6-bit Dadda Multiplier in CMOS — Feb 2025 – Apr 2025
- Optimized a 6-bit Dadda multiplier to achieve a 27% reduction in worst-case propagation delay (from 422 ps to 307 ps) and a 30% reduction in power consumption through strategic transistor sizing and architectural trade-offs.
- Pivoted from a Carry-Lookahead Adder (CLA) to a Ripple-Carry Adder (RCA) for the final summation stage after experimental simulations showed the CLA-based design nearly doubled both power consumption and delay.

STM32G4 Bare-Metal Peripheral Integration — Jan 2025 – May 2025
- Implemented firmware modules in ARM Assembly for the STM32G491RE, enabling complete control over hardware peripherals.
- Performed direct register-level programming for GPIO, DAC, ADC, Timers (PWM/PPM), and SPI for external flash memory.
- Developed and managed shared EXTI interrupt routines for GPIO, DAC, ADC, and TIM2.

Experience

Embedded Systems Intern, Alchemity – College Park, MD — Jun 2025 – Aug 2025
- Accelerated validation of a hybrid solid oxide fuel cell reactor by developing a full-stack automation suite (Rust, Python, Electron.js) to test component stacks in parallel, converting multi-day manual experiments into automated overnight runs.
- Engineered real-time STM32 firmware to precisely control the synthesis of proprietary materials within modular reactors, featuring non-blocking motor/relay drivers and SPI peripheral management.
- Built end-to-end control interfaces including desktop GUIs, embedded display drivers, and CLI tools to streamline workflows.
- Deployed robust, fault-tolerant embedded control systems to maintain safety and uptime in laboratory environments.

Undergraduate Teaching Assistant (ENEE205), ECE Department – College Park, MD — Sep 2025 – Present
- Lead weekly lab and discussion sections for 12 students, clarifying core circuit theory and guiding hands-on application of course concepts.
- Evaluate and provide constructive feedback on homework, lab reports, and quizzes to reinforce learning objectives and ensure student comprehension.

Technical Coordinator, Electronics Prototyping Lab, Terrapin Works – College Park, MD — Jun 2024 – Present
- Provide end-to-end PCB support (schematic to assembly) for 20+ students and faculty per semester, maintaining LPKF tools to ensure 90% uptime.
- Lead training for new employees and expand campus outreach to increase awareness of PCB services, while assisting researchers with device diagnostics and construction.

Skills

Languages & HDLs: C/C++, Python, Rust, Java, OCaml, SystemVerilog, Verilog, MPI, OpenMP, CUDA, ARM Assembly
Computer Architecture: RISC-V & ARM ISAs, Pipelined Datapaths, Hazard Control, CMOS VLSI Design, RTL Design
EDA Tools & Methodologies: Xilinx Vivado, ModelSim/QuestaSim, Cadence Spectre, FPGA Synthesis & Implementation, Testbench Development, PPA Optimization
Embedded Systems: STM32 Bare-Metal Firmware, Real-Time Control, PCB Design, SPI, I2C, UART, GPIO, ADC/DAC