Kevin Maa

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Education

University of Central Florida Orlando, FL
Bachelor of Science in Information Technology with Honors | GPA: 3.61 May 2027
Minor: Secure Comp & Networks | *Honors:* Burnett Honors College – University Honors
Relevant Courses: Computer Architecture Concepts, Network Security & Privacy, Security in Computing
Affiliations: IEEE UCF

Projects

KnightCore – FPGA Integration – 2025 AMD Hardware Competition – *Group Project* Apr 2025 – Aug 2025

- Solely responsible for integrating custom GPU hardware module onto Red Pitaya Zynq FPGA platform using Vivado block design, connecting Zynq processor, AXI interconnect, BRAM controller/memory, configuring address spaces in the housekeeping region, and generating bitstreams, enabling team to focus exclusively on hardware design.
- Debugged memory-mapped I/O communication issues between ARM processor and FPGA programmable logic, identifying and correcting address mapping errors in shared memory regions to enable successful hardware integration.
- Developed and executed shell script and Python-based validation tests on Red Pitaya to verify register read/write operations and confirm successful processor-to-FPGA communication through memory-mapped interfaces.

IEEE Resume Database Integration – *Group Project* Aug 2025 – Dec 2025

- Developed modular TypeScript/React frontend with 15+ reusable components for IEEE member profile system, implementing dynamic form arrays for education, work experience, projects, and skills with add/remove functionality to connect recruiters with student members.
- Architected form state management using React hooks to handle nested data structures including file uploads, date ranges, and GPA scales across multiple education entries and experience records.
- Built UCF major selection dropdown integrated with comprehensive majors catalog and implemented input validation infrastructure for bio length, URL formats, and required fields.

2026 SouthEastCon Robotics Competition – *Group Project* Sep 2025 – Dec 2025

- Integrated Raspberry Pi 5 into Hardware-in-the-Loop (HIL) system for autonomous robot software development, configuring Docker containers, VSCode remote development, and Cloudflare tunneling to enable collaborative testing environment for 10+ team members.
- Testing micro-ROS packages on Raspberry Pi to validate real-time ROS2 communication protocols, ensuring reliable message passing between embedded systems before hardware integration with FPGA and ESP32 microcontrollers.
- Designing automated startup scripts for Docker container deployment to streamline robot boot process and reduce setup time during competition testing.

4 Cluster PC Home Lab – *Solo Project* Sep 2025 – Present

- Designing and deploying distributed computing infrastructure using 4 Mini PCs configured in a Proxmox High Availability cluster with ZFS replication for self-hosted services, network experimentation, and cybersecurity training.
- Implementing containerized services using Docker and Kubernetes for application deployment, alongside network security tools including Wireshark, Security Onion, and Kali Linux for penetration testing and threat detection.
- Configuring network segmentation with VLAN architecture, OPNsense firewall rules, and VPN tunneling through WireGuard to isolate services and implement enterprise-grade security best practices.

Technical Skills

Languages: C, Verilog, SystemVerilog, TypeScript, JavaScript, HTML, CSS, SQL, Python, Bash, Assembly (RISC-V)
Hardware Design & Verification: AXI Interconnect, Memory-Mapped I/O, BRAM, UVM, Formal Verification, Functional Verification, RISC-V ISA
Embedded Systems: Raspberry Pi, ESP32, ROS2, micro-ROS
Frontend Development: React, Component Architecture, State Management, Form Validation
Virtualization & Infrastructure: Proxmox, ZFS Replication, High Availability Clustering, Network Segmentation
Cybersecurity: Wireshark, Security Onion, Kali Linux, Penetration Testing, OPNsense, WireGuard VPN
Tools & Technologies: Git, GitHub, Linux, Windows, VSCode, Vivado, Docker, Kubernetes, Cloudflare, VLAN