

Kent Cassidy

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Website Portfolio: kentcassidy.com

Education

B.S. in Computer Engineering—University of California, Davis, Class of 2023

Outstanding Senior Design Project Award for:

[FPGA-based Customizable Tensor Processing Unit for Machine Learning](#) 

Overview: Demonstrated a fully integrated hardware/software prototype of a customizable TPU as a hardware accelerator for machine learning. Capable of calculating both dense and sparse matrix multiplication up to 4096 x 4096. Compatible with C programs and doubles matrix calculation speed compared to a standalone CPU.

➤ **Relevant Coursework:**

Power Electronics, Digital Systems I and II, Analog Circuits I and II, Electronic Circuits, Embedded Systems, Computer Architecture, Device Physics, Artificial Intelligence, Operating Systems, Computer Networks, Computer Security, Algorithm Design & Analysis, Discrete Math, Probabilistic Analysis, Vector Analysis, Modern Physics

Work Experience

- **Full Stack Web Developer—Independent** Jun 2021 - Sep 2022
Collaborated with clients to ensure project requirements were met. Deployed, and maintained multiple sites with database and user authentication features. Handled marketing responsibilities for both myself and clients. Completed projects for 10 business clients. Examples of commissioned work can be found at kentcassidy.com.
- **Residential IT Technician—Independent** Jun 2021 - Sep 2022
PC and network equipment setup and troubleshooting, data and account recovery along with computer repair (HW/SW). Fluent and amicable in customer service, educating non-technical users. Aided over 30 clients.
- **IT Specialist—UC Davis Campus Recreation, Unions, and Stores** Oct 2019 - Jun 2021
Helpdesk support and troubleshooting, accounts and system administration through *Windows Active Directory* and *Group Policy*, software maintenance and hardware repair with a consistent clientele. Experience with network (IP, DNS, LAN, VLAN, VPN, Firewall, etc.) configurations, POS, VoIP, and surveillance video systems.
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Technical Proficiency

- **Electronics:**
Experience in crafting low/high/bandpass filters for signal processing as well as buck-boost converters, rectifiers, and inverters for power supply. Able to troubleshoot using an oscilloscope and multimeter. Experience with *LTSpice* for circuit design and simulation. Able to design basic digital systems using BJT or CMOS transistors.
- **RTL Design:**
Able to design specialized hardware, optimized for performance and resource utilization at Register Transfer Level. FSMs and combinational logic design using static timing analysis, debugging with JTAG—*Verilog*
- **Embedded Systems:**
Able to bridge software and hardware domains with SPI, I2C, and UART. Experience in capturing analog light and audio sensor input for real-time conversion and processing. Experience with *Arduino* and *TI Launchpad*—*C*
- **Programming (Low-Level Focused):**
Deep understanding of dynamic memory management, garbage collection, and memory leaks detection. Proficient in direct memory access and manipulation e.g. able to implement Object-Oriented design patterns such as inheritance and polymorphism in C using pointers. Experienced in utilizing tools like *GDB* and *AddressSanitizer* for debugging and memory profiling. Proficient in data structure and algorithm analysis for timely and memory efficient programs. —*C, C++, Git, Some RISC-V Assembly, Matlab*
- **Web Development:**
HTTP Methods and RESTful API architecture principles, with fundamental understanding of web security and TCP/IP. Experienced in MVC frameworks as well as integration and deployment of custom, dynamic full stack web sites in virtual server environments—*JavaScript (+Node.js), PHP (+Laravel), Git, Some SQL, Wireshark*