Ethan Michael Harte

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Education

University of California, Santa Cruz **September 2013 – June 2017**

Bachelor of Science with Honors in Computer Engineering with a focus on Digital Hardware.

Significant Course Work:

- Microprocessor System Design
- Computer Architecture
- Digital Signal Processing
- Logic Design with Verilog
- Signals and Systems
- Analog Circuits
- VLSI Digital System Design
- Logic Design
- Intro to Circuits
- Algorithms and Abstract Data Types
- Data Structures
- Computer Systems and C Programming
- Computer Systems and Assembly Language
- Technical Writing

Experience

Nevados **July 2025 – May 2026**

Embedded Systems Engineer **Hybrid / Oakland, CA**

- Revived a stale Yocto-based embedded Linux project and architected CI/CD cloud infrastructure to automate build, test, and deployment pipelines for production firmware releases.
- Designed and implemented an automatic OTA update service for solar trackers and weather stations, significantly improving fleet-wide update reliability and deployment speed.
- Integrated OpenTelemetry metrics collection and monitoring framework to characterize fleet health, enabling proactive identification and troubleshooting of system-level bugs in production environments.
- Deployed Mender-based fleet management solution to provide secure, scalable remote SSH access to field devices for diagnostics and maintenance.

Generac Clean Energy **September 2023 – May 2025**

Staff Firmware Engineer **Remote**

- Developed embedded control systems for managing PLC-based communications with microinverters via a Yitran PLC chip.
- Designed and implemented automatic set/verify routines for grid profiles, max power limits (including PTO states), and microinverter calibration/control parameters.
- Created robust CLI and CAN-based interfaces to enable full microinverter control, diagnostics, and calibration from external systems.
- Built a protocol translation layer to map SunSpec data models to a proprietary microinverter protocol, supporting DER compliance.
- Participated in and supported IEEE 2030.5 (CSIP) compliance testing, ensuring protocol alignment and interoperability.
- Engineered a grid phase-lock mechanism based on voltage thresholds, replacing zero-cross detection and significantly improving PLC stability on noisy grids.
- Designed a next-generation remote control P2P protocol that re-implemented GUI objects on the client side (Java) rather than transmitting raw screen captures—improving responsiveness from 10s/frame to ~0.5s/frame.

SunPower Corp **November 2018 – September 2023**

Staff Firmware Engineer **Remote / Richmond, CA**

- Lead engineering efforts to work around supply chain constraints in order to ensure product supply continuity – determined alternate components and implemented manufacturing and production support.
- Maintained product supply throughout the supply chain crisis by developing creative solutions for alternate hardware designs and components.

- Lead team of 5 developers for legacy product sustaining work. This included designing creative solutions for reducing flash degradation and developing support for IEEE1547-2018 regulatory requirements.
- Architecture design and BSP bring-up for the next generation SunVault (energy storage) product.
- Developed firmware that enabled and improved communications between the PV supervisor (PVS6) and the devices it monitors/controls. Heavy focus on Enphase IQ7 micro inverters communications and support.
- Worked with utilities to support regulatory requests such as HECO, Rule21/IEEE2030.5, and IEEE1547 based grid profiles.
- Brought up firmware for municipal interconnect disconnect controller (MIDc) which manages the grid disconnect contactor switch for SunVault systems.
- Network stack support for BG95/96 modules.

Q Analysts Test Engineer onsite at Facebook HQ **March 2018 – Present**
Test Technician (Lab Data Collection, Scripting) **Menlo Park, CA**

- Developing automation software for the QA robotics lab which includes a Yaskawa 6-axis robotic arm, Philips Hue lights, and virtual reality (VR) headsets.
- Overseeing experiments run in the lab (including setup, configuration, executing, and basic data analysis)
- Extracting, processing, and analyzing CSV and JSON data files produced from files on the headset.

Computer Science Database Systems II Staff **April 2017 – June 2017**
Tutor and Grader **UC Santa Cruz**

- Graded assignments for Professor Sheldon Finkelstein's Database Systems CS capstone course.
- Tested student's implementation of database systems using C++ test benches.
- Assisted students with questions regarding C++ and course concepts.

RT-2M Replacement Senior Design Project **January 2017 – June 2017**
Lead DSP Engineer **Plantronics**

- Interdisciplinary senior design project that maintained a professional relationship with Plantronics through biweekly progress evaluations.
- Designed LabVIEW software for the NI cRIO to replace Plantronics' outdated audio test equipment.
- Utilized event driven, object oriented, and multithreaded LabVIEW code for a robust software architecture.
- Engineered Digital Signal Processing algorithms for crest factor optimization, calibration, and audio signal generation and analysis.
- Successfully provided Plantronics with a working prototype of an RT-2M replacement tester.
- Worked in a team of six.

Leeps Lab Research Intern **December 2015 – December 2016**
Lead Software Engineer **UC Santa Cruz**
leeps.ucsc.edu

- Worked under Professor Kristian Vargas Lopez on a behavioral economics project.
- Developed a facial recognition program to determine and log the emotional state of a subject.
- Programmed using Affdex, Boost, and OpenCV C++ SDKs in a Linux environment.
- Utilized Shimmer Sensors to log heart rate (PPG) and skin conductance (GSR) data.
- Configured pilot experiments involving collecting data from student volunteer subjects.

Projects

Four Wheel Camper Solar Retrofit **May 2024**

- Created power budget to help determine system size that would meet my set requirement of being able to camp off-grid for a full week in ideal conditions.
- Built a custom solar mounting system to mount a 400W solar panel to the existing rails on the camper roof
- Supported charging from solar and/or truck battery, and added a 2000W inverter to power 120V appliances.

Sit/Stand Desk Personal Project **August 2017 – November 2017**

- Designed and built a desk that can move up and down using an Arduino based embedded system that controls two linear actuators and a user interface (LED buttons and an LCD screen).
- Programmed a manual mode for the user to control the desk, an automatic mode where the user can specify a time interval for the desk to alternate between two heights, and the ability to save presets.
- Filtered out unwanted RF produced by the motors in the linear actuators.

RISC V CPU Synthesis Project **January 2016 – March 2016**
Class: Logic Design with Verilog **UC Santa Cruz**

- Synthesized a RISC V instruction set architecture CPU using Verilog.
- Designed using a three-stage fluid pipeline (fetch, decode, and execute) for better throughput.
- Implemented C++ testbenches to mimic an operating system for the CPU.
- Verified functionality using GTKWave and Yosys.

WalkVR - Hackathon Project **October 2015**
Lead Map Developer **CalHacks2.0**

- Developed a 3D environment using Unreal Engine for testing the features of our VR hardware.
- Used an Oculus Rift DK2, Leep Motion, and Myo Armband to create a full VR experience.
- Leep Motion tracked hand gestures while the Myo Armband was worn around the ankle to track walking.
- Worked in a team of five.

ObjectRekt – Hackathon Project **June 2015**
Embedded Software Developer **Flir Hackathon**

- Utilized the Flir Lepton longwave infrared thermal imager, Raspberry Pi, and OpenCV to create an automated camera that observes the scene and tracks a presenter's location, panning to the proper locations.
- Developed C++ program that determines the presenter's subject (whiteboard, projection, etc.) using an object recognition and then, using the Lepton Python SDK, the system recognizes the presenter's location and pans the camera accordingly to accommodate both the presenter and their subject.
- Worked in a team of five.

SlugTrails – Hackathon Project **January 2015**
Software Developer **HackUCSC**

- Developed an Android and IOS app with the purpose of crowdsourcing wildlife sightings.
- Implemented the Google Maps SDK to allow the user to tag their location with a time, animal, and a description of the sighting. This data was added to a database.
- Tested app using data generated form a Python script
- Taught myself C# for developing apps on Apple devices.
- Worked in a team of five.

Emocar - Sponsor Prize at CalHacks Hackathon **October 2014**
Lead Embedded Software Engineer **CalHacks**

- Designed a brain-computer interface that allows a user to control an Arduino rover with their mind.
- Utilized a machine learning algorithm to detect patterns in noisy data. Used this to determine if the raw EEG data matched a command for the rover.
- Won a sponsor prize for most connected project.
- Worked in a team of four.

Hartbeat - Alpha Game Jam Project **September 2014**
Lead Hardware Engineer & Lead Map Developer **Alpha Game Jam**

- Engineered an embedded system that captured the user's heartrate using an optical heartrate sensor and a pulse width modulation algorithm.
- Utilized the heartrate data to affect bullet spread radius to a first-person shooter testing environment we developed in UDK and UnrealScript.
- Developed map environment and heads-up display graphics.
- Worked in a team of six.

FindAR - First Place at HeroHacks Hackathon **August 2014**
Software Engineer **Hero Hacks**

- Engineered an augmented reality headset by mounting a camera on an Oculus Rift DK1.
- Designed computer vision filters using C++ and OpenCV including: filter by color, facial recognition, object detection, edge detection, and other various color filters.
- Worked in a team of five.

Skills

10yrs: Embedded Systems: (STM32, IMX6/8, PSoC, Atmel, ESP32, RTOS/FPGA, NI cRIO, Xilinx FPGA, Arduino)
10yrs: Git for large scale version control and project development.
4yrs: CI/CD (Yocto, GitHub Actions) for building projects.
4yrs: DER Regulatory Requirements (IEEE2030.5 CSIP, IEEE1547, CA-Rule21, HECO)
4yrs: Inverters (Chilicon Power / PWRMicro, Enphase IQ7, SolarBridge, Delta, SMA)
3yrs: Broadband and Cellular Embedded Support
3yrs: Team Management (Direct hires and contractors)
3yrs: Digital and Analog Circuit Design and Analysis
2yrs: Hardware Synthesis and VHDL (Verilog and System Verilog)
2yrs: Computer Vision
1yr: Digital Signal Processing

Solar Tech:	**Programming:**	**Software:**	**Device Comms:**	**Hardware & OS:**
Enphase IQ7	U-Boot	VMWare/VirtualBox	UART	STM32
SolarBridge Mis	C/C++	VIM	I2C	NXP LPC-17xx
Chilicon Power	Python	VS Code	SPI	IMX6, IMX8
BMS	Bash	Git	USB	PSoC4 PSoC5
MIDC (Storage	Batch	PuTTY	PLC	Atmel SAM
Disconnect	Yocto/Bitbake	MobaXTerm	CAN	NI Crio
Controller)	Javascript	WireShark	Modbus	Zephyr
Metering	Java	PSoC Creator	Sunspec	FreeRTOS
Commissioning	JSON	Microchip/Atmel	AT (for BG95/96)	Windows
IEEE2030.5	XML	Studio	CGI	Linux (Ubuntu)
IEEE1547	ProtoBuf	Xilinx Suite	RPC	
HECO	FlatBuf	Unreal Engine	MQTT	
CA-Rule21	Swagger	UDK	AWS IOT	
	LabVIEW		COBS	
			HSSP (for PSoC4)	