

## Experience

### iRobot: Senior Embedded System Engineer

**2021 – Present**

Worked in cross-functional group responsible for developing firmware for embedded systems across iRobot products, including robot vacuum cleaners, internet of things (IoT) devices in the pet market, and other prototype consumer robotics. Responsible for advancing a legacy code-base and developing additional functionality for facilitating rapid hardware changes due to supply-chain challenges and tracking part variances across SKU-compatible devices, part of a small “internal startup” effort to diversify product portfolio, acting software lead on early stage robot dock and docking products, embedded software lead for iRobot’s Project 2025 Robot Platform.

### Techshot: Electrical Engineer

**2012 – 2021**

Responsible for multi-disciplinary roles on small project teams developing new products and technologies for customers including the DoD, DARPA, NASA, and commercial enterprises. Served as lead electrical and firmware engineer on NASA spaceflight Payloads.

Duties included circuit design, layout, assembly, test, and design for manufacture; embedded systems programming; desktop programming; product verification and certification to NASA/DoD/industry standards; and new business development, including grant writing and project management.

Developed software, hardware, and procedural systems to drive down the cost of building customized equipment across research areas including fruit fly genomics, materials science, marine biology, and stem cell research.

### Honeywell: Software Engineer I

### University of Louisville: Research Assistant

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## Education

### University of Louisville

**Master of Engineering**, Electrical and Computer Engineering.

Thesis Topic: A Prototype Security Hardened Field Device for SCADA Systems.

**Bachelor of Science** in Electrical and Computer Engineering. Highest Honors.

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## Publications and Speaking

“A Prototype Security Hardened Field Device for Industrial Control Systems,” International Conference on Advanced Computing and Communications Proceedings, Orlando, Florida, September 2010.

Technical Editor, “JavaScript on Things: Hardware for Web Developers,” Lyza Danger Gardener, Manning, 2017.

“Building Complex Systems for SPAAACE,” Hackaday Supercon 2018.

“Effects of Dexamethasone and IGF-1 on post-traumatic osteoarthritis-like catabolic changes a human cartilage-bone-synovium microphysiological system and Ground Control Tissues on Earth,” Frontiers in Space Technologies, Volume 1, 2024.

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## Leadership

### LVL1 Hackerspace: President

Founder, served four years on the board of a 501c3 non-profit makerspace. While president, succeeded in raising paying membership by 50%, raising \$40,000 grant funding, and relocated the organization to a newly renovated 8,800 square foot facility.

### Louisville Mini Maker Faire

Served as Vice President of Kentucky STEAM Engine LLC, a 501c3 non-profit organizing the Louisville Mini Maker Faire (and other STEAM Education-related events). Organized and managed aspects of the Faire from its inception, through 4 successful events (attendance ranged from 7,000-10,000+).

## Skills:

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### Programming

C	■■■■■□	C++	■■■■■□	C#	■■■□□
Python	■■■□□	Web (HTML/CSS/JS/SQL)	■■□□□	Verilog/VHDL	■□□□□
Rust	■■■□□	GoLang	■□□□□		

**Compilers/IDEs:** GCC, Visual Studio, Atmel Studio, Xilinx ISE, Git, Jira, Cmake, SCons

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### Operating Systems

Linux	■■■■■	ROS2	■■□□□	FreeRTOS	■■■□□
Embedded Windows	■■■□□	Zephyr	■■□□□	OKL4/SeL4	■■■□□

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### Software

Diptrace	■■■■■	KiCad	■■■□□	Altium	■■□□□
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**Others:** Microsoft Office, Enterprise Architect, AutoCAD, SolidWorks, LTSpice, Matlab

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### Embedded Technologies

ARM Cortex M	■■■■■□	Risc-V	■■■□□	Atmel AVR	■■■■■
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**Others:** Low-level USB design, CAN, SATA, High Efficiency SMPS design.

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### IoT

MQTT	■■■□□	LoRa	■■□□□	AWS IoT	■■□□□
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**Others:** IoT DevOps, Distributed IoT services, IoT Device Update Management

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### Miscellaneous

Project Management	■■■□□	Public Speaking	■■■■■□	Technical Writing	■■■■■□
Analog Circuit Design	■■■□□	Digital Circuit Design	■■■■■□	Grant Writing	■■■■■□

**Other Skills:** Fine-pitch surface mount soldering, design for manufacture, six-sigma green belt, design for testability, UL testing, FCC testing, FDA testing, general EE lab tooling, small motion control systems, Milspec/NASA spec EMI/EMC design and testing, Milspec/NASA spec vibration/environmental design and testing, ROS simulation, Poetry (Python), Conan (C/C++), VCPKG (C/C++), monorepo toolchain management