Timothy Radtke

Chicago, IL U.S.A. |

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Summary

Embedded systems engineer with a strong foundation in DC circuit design, firmware architecture, and professional power tool development. Adept at translating complex technical challenges into robust, scalable solutions with a proven ability to lead cross-functional initiatives. Passionate about advancing tool intelligence through embedded machine learning, data-driven design, and innovative sensor utilization.

Education

Marquette University, MS in Electrical/Computer Engineering — Sept 2019 – May 2022

- GPA: 3.9/4.0
- **Thesis:** Improving the Hardware Security of Unmanned Aerial Vehicles Against Side Channel Analysis using Motor Noise

Michigan Technological University, BS in Computer Engineering — Sept 2012 – April 2017

- GPA: 3.7/4.0

Experience

Milwaukee Tool – Brookfield, WI/Chicago, IL — May 2017 – Present

Principal Electrical Engineer | 2025 - Present

- Architecting the next-generation tool-to-tool communication platform, enabling innovations in the HVAC technician space.
- Providing firmware architecture leadership for ForceLogic products, driving platform consistency and enabling new product development engineers to innovate quickly on new products.
- Translating high-level business requirements into actionable technical plans; aligning cross-functional teams on what success looks like and project direction.
- Mentoring early-career engineers in hardware design, firmware, and project execution to help them build technical acumen and confidence.

Senior Electrical Engineer | 2023 - 2025

- Delivered a robust diagnostics framework for both current Plumbing & Electrical category products and future ones that enhances repair quality and provides critical insight back to engineering teams on field failures.
- Spearheaded data management and analysis for the Plumbing and Electrical product category creating tools and processes that accelerated insights for reliability, product management, and product design teams.
- Led a small advanced electrical engineering team through the execution of a smart accessory recognition project aimed at furthering the intelligence built into ForceLogic products.

Electrical Engineer II | 2022 - 2023

- Developed and prototyped an inertial navigation algorithm for the Roll Groover unlocking productivity on the jobsite through the automation of a repetitive task.
- Enhanced data logging capabilities on ForceLogic tools to streamline user report generation, and enabling additional innovations such as the preparation for machine learning tasks.
- Simplified ForceLogic firmware to improve modularity, readability, and performance; laying the groundwork for future advanced features and allowing the new product development teams to prototype and iterate on new to world features quickly.

Electrical Engineer | 2017 - 2022

- Designed and implemented an AutoStop algorithm for a compact pipe threader that significantly reduces operator risk, enhancing jobsite safety.
- Developed a versatile hydraulic pump which supported multiple operational modes, including a wireless remote

for safer use when cutting potentially live wires.

- Created an advanced crimp grading algorithm for a dieless crimper, leveraging a precision distance sensor to deliver consistent and accurate crimps across the supported size range.
- Supported overseas manufacturing efforts, collaborating with supplier and contract manufactures in China to ensure successful product builds.

24G – Clawson, MI May 2016 – Aug. 2016

Hardware/Software Development Intern

- Engineered a custom hardware solution to support digital marketing activations for clients including Heineken and Audi.
- Designed and installed a custom interface system to modernize a legacy bowling alley backend, integrating lane mechanics with a new digital scoring system.

Patents & Publications

US20240261953: Hydraulic Pump 2024
US20240246215: Systems and Methods for Identification of Power Tool Accessories 2024
US20240246219: Smart Accessory Storage Device 2024
US20230287981: Directional Control Valve 2023
US12224545: Systems and Methods for Evaluating Crimp Applications 2022
US20220362869: Pipe Threader 2022
US12011752: Battery Pack Powered Roll Groover 2021
US11870197: Systems and Methods for Determining a Status of an Action Performed by a Power Tool 2021
US11958177: Hydraulic Piston Pump for a Hydraulic Tool 2019

Predicting a Good Crimp: Using Machine Learning on the Embedded System in a Hydraulic Crimper: Advances in Embedded Electronics Systems Conference | Barcelona, Spain Feb. 2022

Performance Evaluation of the Weighted Least Connection Scheduling for Datacenters with BigHouse Simulator: IEEE International Conference on Electro Information Technology | Mankato, MN U.S.A May 2022

Safeguarding Unmanned Aerial Vehicles Against Side Channel Analysis via Motor Noise Injection: IEEE Hardware-Oriented Security and Trust | Washington, D.C. U.S.A. June 2022

Technical Skills

Languages: Bare-Metal C, C++, Python, MTSL, BASH, VHDL
Machine Learning: Jupyter, Keras, TensorFlow, Metal
Data Science: AWS Athena, SQL, NumPy, Pandas, GeoPandas, Matplotlib, Seaborn
Hardware Development: Altium Designer, LTSpice, STM32 Microcontrollers, MSP430 Microcontrollers, Motor Control, Power Electronics, VHDL Digital Design
Embedded Communications: I2C, SPI, UART, IEEE 802.15.4, Bluetooth Low Energy
Languages (Human): English (native), Spanish [España] (working proficiency)

Volunteering

Teaching Assistant: Microsoft TEALS Program Aug. 2021 - Aug. 2022
Teaching Mentor: LAUNCH 2022, 2021, 2020
Vertical Rescue Specialist & Medical First Responder: Superior Search & Rescue Aug. 2016 - Aug. 2017

Certifications

General Class Radio License | KD9IBI: Federal Communications Commission Exp. 2027
CPR/AED/BLS: American Heart Association Exp. 2025