

# Derek C. Welty

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## Summary

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Senior Hardware Engineer with 10 years of experience in consumer electronics industries working in all phases of the product development life cycle. Possesses a Master's degree in Electrical Engineering and a broad set of skills and experiences ranging from early prototyping to PCB design to system validation. Highly self-motivated and solution-oriented team player with a growth mindset and passion for technical problem solving.

## Experience

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### Senior Electrical Engineer

MICROSOFT CORPORATION

- XBOX console schematic integration, board layout design, and BOM management

Redmond, WA

Jan 2022 – Present

### Senior Design Verification Engineer

MICROSOFT CORPORATION

- Owned targeted verification of XBOX systems and subsystems including SoC power management firmware
- Designed, integrated, and maintained automated test systems (Python, PowerShell, C++)
- Performed hardware prototype bring-up, debugging, failure analysis, and telemetry forensics
- Formulated statistical techniques to analyze large data sets and design experiments
- Triaged and diagnosed countless high priority issues leading to increased customer experience and factory yield

Redmond, WA

Sept 2019 – Jan 2022

### Senior Design Engineer

GARMIN INTERNATIONAL

- Conceptualized and materialized automotive mass production consumer infotainment electronics
- Designed schematics and developed complex printed circuit boards with analog, digital, high-speed, audio, display, camera, wireless, DC-DC power, capacitive touch and RF circuitry
- Project Engineer leading system design and coordinating interdisciplinary collaboration across teams
- Researched components for ideal part selection and BOM management while balancing performance and cost
- Directed and collaborated with factory team in Taiwan to design for testing and manufacturability
- Tested and debugged field hardware/software issues for technical root cause and corrective actions

Olathe, KS

Mar 2017 – Sept 2019

### Electrical Engineer I/II/III

DOE NATIONAL SECURITY CAMPUS, MANAGED BY HONEYWELL

- Lead test engineer architecting/implementing hardware/software solutions for scalable test infrastructure
- Defined test plans and electrical verification methodologies for board level and top level systems
- Integrated FPGA and CPLD designs into motherboard designs for embedded control and testing
- Interfaced with government customers and supported earned value management project planning

Kansas City, MO

Jan 2013 – Mar 2017

### Network Engineer Intern

SPRINT NEXTEL CORPORATION

- Designed and implemented a VoIP Android IMS client using Java
- Debugged client/server communications by analyzing network packets and protocols
- Utilized network and streaming protocols such as UDP, SIP, and RTP

Overland Park, KS

May 2012 – Aug 2012

### Production Management Engineer Co-op

CARGILL CORN MILLING INC

- Served as a project engineer/manager for various factory installations
- Focused on power, automation, and maintenance projects
- Hired and led a team of contractors to carry out construction projects

Eddyville, IA

May 2011 – Dec 2011

### UI/UX Developer

LUMATE, LLC

- Created in-house and customer specific UI graphics for mobile applications (Android, iOS)
- Supported back-end web development (Python, jQuery, HTML)
- Interfaced directly with customers creating logos, flyers, posters, apparel designs, and brochures

St. Louis, MO

Oct 2010 – Mar 2015

## Education

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### MS in Electrical Engineering

MISSOURI UNIVERSITY OF SCIENCE & TECHNOLOGY

**GPA: 4.00/4.00**

*Aug 2013 – May 2018*

Digital Network Design, Wireless Networks, Resilient Networks, Network Performance Analysis and Modeling,  
Stochastic Signal Analysis, Power Electronics, Advanced Electromagnetics, Microwave Engineering, Analog CMOS Design

### BS in Electrical Engineering, Minor in Mathematics

MISSOURI UNIVERSITY OF SCIENCE & TECHNOLOGY

**GPA: 3.93/4.00**

*Aug 2008 – Dec 2012*

IEEE, Eta Kappa Nu, Missouri Miner Photo Editor, Student Union Board Promotions Director

## Skills

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**Protocols** Ethernet, USB, WiFi, BT, I2C, SPI, HDMI, MIPI, GPS, UART, PCIe

**Programming** Python, PowerShell, VB.NET, Java, MATLAB, Arduino, Git, Subversion, TestStand, ADB, VISA

**Lab Equipment** Oscilloscopes, multimeters, network analyzers, logic analyzers, power supplies, Raspberry Pi, Arduino, PXI

**Software Tools** Schematic capture, PCB layout, Mentor Graphics, CADSTAR, OrCad, SPICE, Solidworks

**Extra Training** Advanced GNSS/GPS, Radar Systems Certificate, MIL-STD 1553, Six Sigma Green Belt

**Graphic Design** Adobe Photoshop, Adobe Illustrator, L<sup>A</sup>T<sub>E</sub>X, HTML, CSS, Bootstrap

**Miscellaneous** MS Office, Android, Linux, Windows, Atlassian suite, Azure DevOps

## Awards

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2016 **Outstanding Engineer Award**, Honeywell Aerospace

## Patents

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2019 **US10447297B1**, Electronic Device and Method for Compressing Sampled Data