Z/K Zac Kilburn

Electrical Engineer

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LinkedIn

Website

ABOUT ME

Engineer with 6 years electrical design experience and 6 years software experience.

Considering a new position for either software or electrical work to challenge my experience and learn new skills.

EDUCATION

Bachelor Science Electrical Engineering

The University of Akron / 2012-2018

Computer Science

Case Western Reserve University / 2009-2011

SOFTWARE

PCB / Circuit Design

- Eagle
- Altium Nexus / Designer
- LTSpice

Harness Design and Testing

- EasyPC
- Cami CableEye

ERP System

- Macola

Office Tools

- Excel (with VBA)
- Word
- OpenOffice Draw

3D CAD

- Solidworks

IDEs

- Xilinx Vivado
- Xilinx Vitis
- Xilinx HLS
- Visual Studio
- Android Studio
- Arduino
- MPLAB

Programming Languages

- C / C++ / C#
- VHDL / Verilog
- HTML / Javascript / CSS

PROGRAMMING

- Xilinx
- STM32
- PIC
- RTOS

EXPERIENCE

Sr. Electrical Engineer

IEC Infrared Systems / Middleburg Heights, OH / May 2018 – Current

Specializing in long range IR surveillance and remotely operated weapons platforms, IEC Infrared Systems designs highly customized solutions for DOD and government agencies

- Lead designer / project lead on multiple simultaneous projects
  - Developed next generation platform for HD video / IP Enabled systems
  - Sole electrical engineer on small form factor product line development
- Leadership
  - Interviewed prospective Engineering hires
  - Advised multiple disciplines of engineers on designs
  - Generated reference 3D models / board schematic / layouts / harnesses
- PCB Design
  - Extensive experience with Altium Nexus
  - Rapid turn prototype circuits for internal and production level use
  - FPGA schematic and layout
  - DDR schematic and layout
- Mechanical Design
  - Designed enclosures / fixtures for on-site 3D printing
  - Mock-up mechanical / electrical interfaces for space constrained design validation
- Software Design
  - Xilinx FPGA Verilog / VHDL / IP including GTX, Serdes, Clocking, AXI and others
  - GUI development for control pad control of weapons platform during testing
  - Low-level peripheral firmware for PCB power-on and function testing
  - Internal use website / database for design navigation and interlinking
- Product improvement and design modifications
  - Introduced automotive style harness assembly fixtures with integrated testing
  - Designed testing platform for general use with any PCBs developed
- Hands on Design and Documentation
  - Electrical harness and cable drawings for production
  - System configuration drawings for production
  - System topology block diagrams for customers
  - Interdisciplinary work with Mechanical and Software subsystems
  - Prototype first article harness building, board assembly, product assembly
  - 0402, BGA, QFN, QFP and fine-pitch hot air and hand soldering experience
- Documentation / Testing / Validation
  - Engineering change order documentation
  - ISO9001 compliant documentation / procedures
  - Test fixture design and deployment for PCBs / Harnessing
  - Test platform design and deployment at system level
  - Test procedure development for component/product validation in production
  - Troubleshooting documentation for external repair depot

PROJECTS

Senior Design Combat Robot

The University of Akron / San Mateo 2018

- RoboGames competition
- Autonomous Operation with Neural Network
- Custom LIDAR solution
- 200lb Weight Class

FSAEE Formula One Electric

The University of Akron 2013-2015

Link

BME Bike Brake

The University of Akron 2018

Article

Portable Scoreboard

Personal Project

Link

Firework Mortar Launcher

Personal Project

Link

LEADERSHIP

NASA Robotic Mining Competition

The University of Akron / Kennedy Space Center 2013 - 2018

Interview Link

Lead University team to build mining robot for NASA competition in simulated regolith. Worked on autonomous operation for sensor fusion and path planning.

- 2013 - Team member software sub-team
- 2014 - Software Team Leader
- 2015 - 2017 – Team Leader
- 2018 – Software Team / Leadership support

REFERENCES

Available on Request

Project Engineer / Firmware Developer

Design Flux Technology / Akron, OH / March 2014 – May 2017

Founded as a spin-out company from The University of Akron, Design Flux Technology patented a novel dynamically reconfigurable energy source in 2014. Hired immediately after patent was approved and technology development began.

- Post patent development of technology
  - Cognicell technology
  - Battery cell reconfiguration at cell level
- Dynamic cell bypassing / reversal for circuit emulation without external modules
  - Variable voltage generation
  - High efficiency balance charging
  - MPPT operation
  - Inverter emulation
  - Charger emulation
- Technology Application Research
  - Met with potential clients and discussed technology applications
  - Developed core features of technology
  - Demonstrated technology to interested parties
  - Solely maintained location in Bounce Akron Innovation Hub
- Initial Tech Prototype Development
  - Constructed first demonstration unit to promote technology
  - Setup and performed long term solar integration providing data for analysis
  - Provided real world setup providing feedback for circuit improvement and iteration
- Provided software for embedded systems including:
  - ADC for voltage monitoring
  - Communications protocol for control and data gathering (UART / RS485)
  - MOSFET control circuitry
  - PIC / Atmel processors
  - Bluetooth
  - High Resolution Timing
  - AC waveform generation
  - High Power systems

Lead Firmware Developer

Essential Research / Twinsburg, OH / July 2013 – January 2014

Generating precision gas concentration sensors using new methodology, Essential Research aimed to reduce the cost and improve the sensitivity of existing CO_2 and NOX sensor devices

- Validated new sensor constructions
  - Constructed software system on custom PCB for sensor data collection
  - PID Control of heating element for 650°C operation for sensor operation
  - Provided feedback from sensor testing to influence construction techniques
- Setup gas flow test configurations
  - Constructed test setup with metered gas flow at varying concentrations
  - Modified software to calibrate sensors at varying conditions