

**ZACHARY KILBURN**

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[kilburn.zachary@gmail.com](mailto:kilburn.zachary@gmail.com)**SUMMARY**

- 10 years hands on experience with PCB design, programming and diagnosing implementations including:
  - 8-bit/16-bit/32-bit PIC/dsPIC, Atmel, ARM, Xilinx FPGA, DDR
  - Control Flow: DMA, ADC, DAC, High Resolution Timing, UART, PID systems, RTOS
  - Communications Protocols: USART, SPI, I2C, RS232, RS485/RS422
  - Analysis Tools: Power Supplies, Logic Analyzers, Oscilloscopes, Spectrum Analyzers
  - Design Tools and Languages: PCB Design Suites (Eagle, Altium), Spice Simulation, Matlab, C++/C, VHDL/Verilog
- Experience with design integration; requirements, documentation, troubleshooting, and finalizing and supporting production

**PROFESSIONAL WORK EXPERIENCE****IEC Infrared Systems LLC**– Middleburg Heights, OH

May 2018 – Current

*Sr. Electrical Engineer*

- Electrical project lead on multiple simultaneous engineering projects
- New component/product research and proposals providing solutions for external customer and internal R&D products
- FPGA, DDR Memory, High speed signaling and multilayer board design experience
- Power electronics design, both high power and high efficiency
- First article design, assembly, testing and validation for new designs and modification of existing product lines
- Design new and maintain existing PCB designs in Altium for system integration and operation
- Assemble, validate and modify new PCB designs to prepare for production deployment
- Generate, maintain and update electrical drawings for production within existing and new products
- Implement new harnessing and PCB hardening workflows for existing and new product integration
- Work closely with Mechanical and Software disciplines to produce quality, manufacturable products
- Create, validate and deploy test fixtures and procedures for production product validation
- Troubleshoot and product rework for onsite production, providing continuous improvement through ECO processes

**EE and Software Consulting** – Cleveland, OH

February 2017 – March 2019

Contracting Firmware and Electrical Hardware Design

*Firmware and Electrical Engineer*

- Provide complete turn-key solutions based on client needs
- Research and design hardware circuit implementations for client requirements
- Meet with clients to discuss scope of work and progress toward milestones
- Implement embedded firmware solutions to accomplish circuit operation

**Design Flux Technology LLC** - Akron, OH

March 2014 – May 2017

R&amp;D in energy storage technologies – Patent “Cognicell” March 2014

*Project Engineer*

- Met with potential clients and discussed applications for technology
- Tested developmental circuitry for product revisions during core development of technology
- Constructed demonstration unit to promote technology to interested companies
- Setup and performed long term solar data collection to provide technical data for study on technology
- Provided software in embedded systems including: ADC for sensor integration, digital controls, FET control, PIC processors, Atmel processors, Bluetooth, UART, High Resolution Timing, AC waveform generation, and Power systems

**Essential Research Inc.** - Twinsburg, OH

July 2013 - January 2014

R&amp;D in sensor technologies

*Lead Firmware Developer*

- Constructed software for proprietary sensor devices includes ADC for sensors and thermocouples, DMA, PID systems, UART, Modbus RTU, CRC calculations, byte-wise/bitwise manipulation, serial menu implementation, dsPICs, and PICs.
- Assisted in the sensor construction and designing testing procedures for gas sensor validation

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## EDUCATION

### The University of Akron - Akron OH

August 2012 – May 2018

- Electrical Engineering
- Dean's List (3 Semesters)
- 3.4 GPA
- Senior Design Project
  - Autonomous Combat Robot
- Power electronics
- Control Systems
- Active Circuits
- VLSI
- Embedded Systems

### Case Western Reserve University - Cleveland, OH

August 2009 – January 2011

- Studies in Computer Science/ Electrical Engineering

### Hoover High School - North Canton, OH

- Graduated in June 2009 with a GPA of 3.4, Honor Roll and AP credits
  - Completed technical certification courses for CompTIA A+ and Net+ certifications
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## LEADERSHIP

- Team leader of the NASA Robotic Mining Competition held at Kennedy Space Center, Florida, 3 years
  - Software team leader of the FSAE Electric Vehicle Competition held in Lincoln, Nebraska
  - Tour guide at The University of Akron for high school and middle school students interested in attending the campus, speaking on behalf of the Robotics student organization
  - Perform outreach events both on and off campus, promoting the NASA Robotic project to inspire students and youth to get involved in extracurricular activities in STEM
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## ORGANIZATIONS AND COMPETITIONS

- NASA Robotic Mining Competition (5 years) – Kennedy Space Center, Florida
    - 2013 - Team member software sub-team
    - 2014 - Software Team Leader
    - 2015 to 2017 – Team Leader
    - 2018 – Software Team Member/Leadership support
  - BME Bike Brake Project – Akron, Ohio 2017
    - Design and construct an electronic braking system for disabled youth
    - Integrate electronics and controls into a bicycle for Summit DD
  - STEM Outreach Events – The University of Akron campus
    - *Kids Career Day* (2014 - 2018) – The University of Akron campus
      - Society of Women in Engineering – Lead robotics activity for visiting Girl Scouts
    - *Inquire Innovate Invent* (2014 – 2018) – The University of Akron
      - Helped organize and manage 150-200 students
      - Taught elementary students how to solder
    - *Mini-Maker Fair* (2013-2017) – Akron Public Library
      - Display and demonstrate robot for community
  - National Robotics Challenge (NCR) - Marion, Ohio 2013
  - Robo-Games (Combat Robotics) - San Mateo, California 2013 (Extracurricular) and 2018 (Senior Design)
  - FSAE Electric Vehicle – Lincoln, Nebraska
    - 2013 to 2015 – Lead software developer
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