

ALEXANDER R. SIEMAN

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EDUCATION

Georgia Institute of Technology Atlanta, Georgia *August 2017*
Master of Science in Electrical and Computer Engineering *GPA: 3.9/4.0*

University of Pittsburgh Pittsburgh, Pennsylvania *August 2014*
Bachelor of Science in Electrical Engineering, Minor in Computer Science, *Magna Cum Laude* *GPA: 3.72/4.0*

PROFESSIONAL EXPERIENCE

Philips Respironics Pittsburgh, PA
Project Software Engineer *September 2021 - Present*

- Led a team of software developers and test engineers using agile/scrum development practices, coordinating tasking, working with stakeholders to define priorities, and coaching new hires
- Developed reusable device drivers and libraries in C# to support projects and expand the automated test platform
- Designed a Python package to generate structured data into PDF documents compliant with quality standards
- Created and led an initiative to expand automated document generation solution, saving \$100k in 6 months
- Worked to drive software platformization across Philips businesses, presenting strategy and roadmap to technical leadership and collaborating with software architects to define a common reference architecture

Senior Embedded Software Engineer *February 2019 - September 2021*

- Designed and implemented embedded C/C++ firmware for medical devices, including device driver development, design of logging and event handling, and documentation for regulatory standards compliance
- Redesigned the therapy algorithm for portable oxygen concentrators to reduce oxygen delivery error by 60%
- Led team to develop reusable graphics components and accelerate screen drawing performance on embedded GUI
- Implemented reporting and artifact archival module in C# as part of an automated system test solution
- Helped modernize legacy product into FreeRTOS task-based architecture with HAL and OS abstraction layers

GE Power Conversion Cranberry Township, PA
R&D Electrical Engineer, Advanced Concepts Group *October 2016 - February 2019*

- Primary technical focus on the design, development, and testing of control and automation software, including model-based development in Matlab/Simulink, for megawatt-scale power electronics systems
- Designed software in Python to automate data collection from PLC units, reducing test time by up to 75%
- Developed firmware for microcontroller, Altera FPGA systems to ensure proper fault reporting and signal capture
- Co-inventor of two patents granted by the USPTO to secure relevant project IP

GE Energy Connections Pittsburgh, PA
R&D Electrical Engineer, Edison Engineering Development Program *August 2014 - October 2016*

- Implemented embedded firmware for a medium-voltage power electronics system, using Cortex-M3 based microcontroller boards to achieve controls algorithms for multi-level modulation and active capacitor balancing
- Designed automated functional tests in Python to provide 100% test coverage of microcontroller-based PCB boards to support design and manufacturing efforts

Electrical Engineering Co-op (3 Rotations) *January 2013 - May 2014*

- Developed and tested embedded software on microcontroller boards for medium-voltage induction motor drive

RELEVANT SKILLS

- **Programming Languages:** C/C++, Python, C#, VHDL, ARM Assembly, HTML, CSS
- **IDEs and Unit Testing:** VS Code, Visual Studio, Eclipse, IAR, Quartus, GoogleTest, Pytest
- **Version Control Systems:** Git and Subversion
- **Embedded Programming:** STM32 ARM Cortex microcontrollers, Arduino, and Raspberry Pi, with associated peripherals including SPI, I²C, DMA, ADC, UART, PWM timers, flash memory, and interrupts
- **Lab Experience:** testing and debugging electronics, and testing medium-voltage power electronics systems, with common equipment including oscilloscopes, power analyzers, multimeters, and logic analyzers