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, Graduated *Magna Cum Laude* — *GPA: 3.724/4.0*

PROFESSIONAL EXPERIENCE

Philips Respironics — Pittsburgh, PA
Senior Embedded Software Engineer — *February 2019 - Present*

- Primary technical focus on the design and implementation of embedded C/C++ firmware for medical devices, including driver development, design of logging and event handling, and requirements design for testability
- Designed a compiler to generate structured data input into PDF documents compliant with quality standards
- Leading an initiative to extend document compiler solution, estimated $60k per project per year savings
- Redesigned therapy algorithm in portable oxygen concentrator to reduce oxygen bolus 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# to support 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
- Led all aspects of the development of real-time control and automation software, from requirements definition to delivery of fully validated product for power electronic 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*

- Designed and implemented embedded firmware utilized in medium-voltage power electronics systems
- Implemented multi-level PWM modulator and active capacitor balancing algorithm in induction motor drive by scheduling low-level bridge control using peripheral timer units in Cortex-M3 based microcontroller boards
- Implemented control loops and custom SPI-derived fiber-optic communication protocol in Altera FPGA systems
- 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 embedded software on microcontroller boards for medium-voltage induction motor drive application
- Contributed to design and testing of medium-voltage induction motor drive

RELEVANT SKILLS

- C/C++, Python, C#, VHDL, ARM Assembly, HTML
- IDEs Visual Studio, Eclipse, IAR, Quartus, Anaconda
- Version Control Systems including Git and Subversion
- STM32 ARM Cortex microcontrollers, and peripherals including SPI, I^2C, DMA, timers, memory, interrupts
- Automated unit test using Google Test, and automated system-level test using Gauge framework
- Experienced with lab equipment including oscilloscopes, power analyzers, and logic analyzers, along with packet capture and analysis using Wireshark
- Proficient in Machine Learning, including regression and classification, using Python scikit-learn
- Matlab/Simulink, including PLECS, Simscape Power Systems, and Statistics and Machine Learning Toolbox