

ALEXANDER R. SIEMAN

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EDUCATION

Georgia Institute of Technology Atlanta, Georgia
Master of Science in Electrical and Computer Engineering

August 2017
GPA: 3.9/4.0

University of Pittsburgh Pittsburgh, Pennsylvania
Bachelor of Science in Electrical Engineering, Graduated *Magna Cum Laude*

August 2014
GPA: 3.724/4.0

EXPERIENCE

GE Power Conversion

Electrical Engineer, Rotating Machines Diagnostics and Monitoring NPI

Cranberry, PA
October 2016 - Present

- Primary technical focus on the design and implementation of C-based signal processing and automation software for an edge computing platform designed to report key performance indicators and diagnostic fault features of electric rotating machines to a secure cloud sever
- Increased the detectability of electric rotating machine faults by refining the accuracy of domain-specific fault features through the analysis of large datasets
- Designed automated data collection software in Python, reducing test time by up to 75%
- Co-authored four patent applications currently filed with the USPTO, generating patent disclosures to secure relevant project IP and freedom to operate, working with IP law firm to edit and submit the patent applications

GE Energy Connections

Edison Engineering Development Program, Research and Development Engineer

Pittsburgh, PA
August 2014 - October 2016

- Primary technical focus on design and implementation of embedded firmware in real-time system 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 and implemented microcontroller bootloader to allow in-application programming
- Utilized Matlab and Simulink S-functions to simulate embedded software performance in power electronics circuits and to validate control loop design
- Implemented interrupt-driven fault detection circuits, fault data acquisition, and fault data reporting to supervisory controller
- Designed automated functional tests in Python to provide 100% test coverage of microcontroller-based PCB boards to support design and manufacturing efforts
- Ensured that embedded design constraints were met during PCB design phase and validated new PCB designs using standard lab equipment including oscilloscopes and logic analyzers
- Assured proper documentation of technical data and specifications, participating as a presenter and reviewer in technical and program reviews

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, Java, VHDL, and ARM and MIPS assembly languages, along with associated development environments including Eclipse and Quartus, and source control use, including Subversion and Mercurial
- Matlab/Simulink and associated toolboxes, including Simscape Power Systems and PLECS
- Experience with machine learning packages, including Python scikit-learn and Matlab Statistics and Machine Learning Toolbox
- Parallel and distributed computation in MPI and Pthreads, GPU programming using CUDA, OpenGL graphics