

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

PROFESSIONAL EXPERIENCE

GE Power Conversion
R&D Electrical Engineer, Advanced Concepts Group

Cranberry Township, PA
October 2016 - Present

- Primary technical focus on the design, development, and testing of automation and control systems software, including model-based development in Matlab/Simulink, for megawatt-scale power electronics systems
- Led the development and validation of control and automation software designed to use existing power electronics platforms for complex systems, novel applications, and new test modes
- Designed and implemented 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 server
- Designed software in Python to automate data collection from PLC units, reducing test time by up to 75%
- Increased the detectability of electric rotating machine faults by analyzing ROC curves to refine the accuracy of domain-specific fault features through the analysis of large datasets
- Co-authored four patent applications currently filed with the USPTO to secure relevant project IP
- Presented and reviewed technical data and specifications in technical and program reviews

GE Energy Connections
R&D Electrical Engineer, Edison Engineering Development Program

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 with 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

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, Matlab, VHDL, ARM and MIPS Assembly, HTML, CSS, along with IDEs including Eclipse, Quartus, Visual Studio, and Anaconda, and Version Control Systems including Subversion, Git, and Mercurial
- Proficient in Machine Learning, including regression, classification, and statistical analysis, using Python scikit-learn and Matlab Statistics and Machine Learning Toolbox
- Matlab/Simulink and associated toolboxes, including PLECS and Simscape Power Systems
- Parallel and distributed computation in MPI and Pthreads, GPU programming using CUDA, OpenGL graphics