ERIK SEUSTER

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Education

North Carolina State University — **Aug. 2020 – May 2025 (Expected)**
Double Major: B.S. Electrical Engineering and B.S. Computer Engineering. *Raleigh, NC*
Minor: Global Leadership (International Studies in Czech Republic, Germany, and England).
- **GPA:** 3.655
- **Relevant Courses:** Power Electronics, ASIC and FPGA Design, Embedded Systems, Microelectronics, Logic Design, Data Structures and OOP, Electro-mechanical Energy Conversion, Linear Systems.
- **Honors:** William M. Cates Scholarship recipient, Academic Semester Deans list (x7).

Experience

BMW Group — **May 2024 – August 2024**
Predictive Maintenance Intern *Greer, SC*
- Led IFM Moneo dashboard implementation, enhancing real-time sensor data visibility in the Press Shop.
- Designed a stand-alone PLC rack and collaborated with cross-functional teams to drive integration and planning.
- Optimized production efficiency by conducting time studies focused on reducing process and rework downtime.
- Engaged in daily meetings, gaining comprehensive insights into manufacturing operations and addressing key challenges in the Press Shop.

Renesas Electronics Corporation — **May 2023 – August 2023**
Field Applications Engineer Intern *Raleigh, NC*
- Engineered an air quality sensor module to modulate fan speed based on data from a multi-purpose sensor using a Renesas microcontroller, C coding, I2C and UART communication, and pulse-width modulation.
- Developed power sequencing logic for buck regulators using the GreenPAK development board to optimize efficiency.
- Implemented hardware modifications, including soldering components and hard-wiring I/O pins, to monitor and adjust voltage in buck regulators.

Projects

Quadratic Buck Converter Design | *Powerelectronics, PLECS* **Fall 2024**
- Designed and analyzed a Quadratic Buck Converter for DC-DC voltage step-down, incorporating steady-state, boundary condition, and efficiency analysis throughout the iterative design process.
- Performed component selection, loss calculations, and PLECS simulations to optimize performance, ensuring compliance with strict ripple, efficiency, and power specifications.

AI Transformer Self-Attention Module Design | *Verilog, VS Code, ModelSim, Synopsys* **Fall 2024**
- Designed and implemented a hardware unit for Transformer Self-Attention using Verilog, featuring modular micro-architecture, SRAM interfacing, and pipelined data flow for optimized memory management.
- Developed and verified the design with Questa (ModelSim) and Synopsys, enabling scalable and efficient computation of query, key, value, and scaled dot-product attention matrices.

Autonomous Miniature Car Embedded System | *C* **Fall 2023**
- Programmed vehicle movement using C and integrated six soldered PCB boards with functions for motor control, power systems, LCD display, DAC, IR light sensor algorithm with ADC, and an IoT module for WiFi communication.

Skills

Programming Languages: C, Verilog, C++, MATLAB, Assembly Language.
Hardware/Software: I2C, UART, Embedded Systems, Microcontroller Programming, Soldering, Oscilloscopes, Circuit analysis, Logic Design, Microsoft Office, ModelSim, Synopsys, PSpice, VS Code, PLECS, AutoCAD.
Language Skills: Bilingual in English and German.

Leadership / Extracurricular

Sigma Phi Epsilon Fraternity
Executive Board member and Chaplain
- Lead fraternity of over 110 active members on an executive board of 7 members.
- Oversaw chapter GPA's and implemented an academic plan to help struggling members, teaching good study habits and offering helpful resources throughout the semester.
- Chaired standards board of 8 members to ensure alignment with chapter goals and values.

Interests

Weightlifting, traveling, soccer, skydiving, boxing, running, golf, reading.