Morgan Wang

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Education

University of Pennsylvania, School of Engineering and Applied Science — Expected May 2027
Bachelor of Engineering in Electrical Engineering — GPA: 3.97
Bachelor of Science in Physics
Relevant Coursework (In Progress)

- **ESE 2150**: Electrical Circuits and Systems
  Study of modern electrical and electronic circuits, with hands-on projects in circuit design, analysis, and simulation using tools like LabView and Spice.
- **ESE 2180**: Electronic, Photonic, and Electromechanical Devices
  Study of semiconductor electronic, optoelectronic, and electromechanical devices, including transistors, LEDs, photodetectors, and electromechanical actuators.

Skills

- **CAD:** Altium Designer, SolidWorks
- **Programming:** Python, C++, VHDL
- **Analysis Tools:** Ansys SIwave, LTspice, Ansys IcePak
- **Power Electronics:** Inverter Design, Thermal Management, Power Management Systems

Projects

Custom Motor Controller (MOC) | FSAE — Jun 2024 – Present

- Engaged in a two-year design process for developing a high performance 4-wheel drive motor controller
- Focused on efficient half-bridge inverter design with reduced switching losses
- Conducted thermal simulations in IcePak and calculated bus capacitance needed to smooth current ripples in LTspice
- Programmed FPGA to perform higher throughput fault-detection compared to a traditional MCU
- Current SiCFET design intends to reduce switching losses by 15% and board space by 30mm^2

Battery Management System (BMS) — Mar 2024 – Present

- Designed the schematic for a custom handheld calculator's battery management system
- Explored advanced power management, circuit protection, and energy efficiency concepts
- Addressed challenges in balancing compact design with reliable power management, laying the groundwork for future development
- Allow for future work on a low-power, high-end handheld calculator

Extracurricular

Electrical Hardware Member, Penn Electric Racing (FSAE) — Sept 2023 – Present

- Collaborated closely between sub-systems and sub-teams to meet aggressive deadlines, demonstrating strong teamwork and organization skills
- Mentored new members in PCB design and circuit analysis, fostering a collaborative learning environment and helping to build the team’s technical capabilities
- Participated in design reviews and brainstorming sessions, contributing innovative ideas that led to design optimizations and improved project outcomes