JUSTIN SAPUN

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EDUCATION

Dartmouth College, Hanover, NH **June 2025**
Bachelor of Engineering, Major in Computer Engineering: **GPA 3.9/4.0**
Relevant Coursework: Embedded Systems, Digital Electronics, Software Development
Honors/Awards: Academic Distinction Citation in Modern Statistic Computing

Bard College, Great Barrington, MA **June 2024**
Bachelor of Arts, Major in Computer Science: **GPA 3.8/4.0**
Relevant Coursework: Theory of Computation, Algorithms and Data Structures, Machine Learning
Honors/Awards: Dean's List 5/6 Semesters, Johns Hopkins Center for Talented Youth Annual Scholarship Recipient

PROFESSIONAL EXPIERENCE

The Electrified Garage, Amesbury, MA (Seasonal) **June 2023-August 2024**
Technician
- Conducted comprehensive diagnostics, repairs, and software updates for electric vehicles, showcasing proficiency in EV systems and technology.
- Demonstrated strong customer service skills and prioritized safety compliance while assisting with electric vehicle conversions, contributing to a seamless and efficient service experience.

Formula One Hybrid, Hanover, NH **January 2023-Present**
Controls Technician
- Implemented a front-end data visualization dashboard to monitor recorded or live data from various sensors equipped.
- Helped Implement a traction control module that works in tandem with torque vectoring and electronic differential.

Robotics Club, Great Barrington, MA **September 2021-May 2022**
Robotics Engineer

PROJECTS

Automatic Window Shades **September 2024-Present 2024**
- Created drivers for various hardware components for use with AVR microcontrollers including the L293D H-bridge, and DS3231 Real-Time Clock, successfully integrating multiple systems.
- Engineered power consumption strategies, reducing idle consumption to 17uA for the transmitter, theorizing a battery life of up to 347 days, significantly enhancing device usability and sustainability.
- Currently constructing a prototype PCB to integrate all hardware components for enhanced efficiency and reduced size

Electric Motorcycle Conversion **August 2023-August 2024**
- Designed and built a 30-series LiFePo4 battery pack managed internally by a BMS. Implemented three speed functions and variable regenerative braking displayed on an LED screen. Tested HV and LV systems to ensure basic operation.
- Independently designed and constructed the low voltage electrical system ensuring seamless integration of new components and compliance with safety standards.

Morse Code Decoder Game **March 2023-June 2023**
- Designed and implemented a digital Morse code decoding game using FPGA technology, achieving 100% real-time decoding accuracy and processing user inputs within a response time of 40 milliseconds.
- Developed a robust state machine and data path that successfully interprets Morse code signals transmitted from 2 button inputs, allowing for seamless mapping to ASCII characters displayed on a VGA monitor.

Inverted Pendulum Control System **March 2023-June 2023**
- Developed a dynamic model of an inverted pendulum system on a battery powered car by successfully deriving a final transfer function through analysis of motor dynamics, sensor behavior, and force-to-angle relationships.
- Implemented a PID controller achieving a closed-loop system with less than 50% peak overshoot and a settling time of 0.65 seconds, meeting design specifications for fast response to disturbances.

Tiny Search Engine **January 2022-March 2023**
- Collaboratively developed a robust Tiny Search Engine in C, leveraging teamwork to create efficient indexing and query processing algorithms, enhancing search accuracy and speed.

LEADERSHIP, SKILLS & INTERESTS

Leadership: Volunteer Ski Patroller, Dartmouth Men's Volleyball, Vice-President of Economics and Finance Club
Programming Languages: Python, C, Java, VHDL, MATLAB, HTML
Software Skills: Microsoft Office Suite, Algorithm Development, Data Analysis, Linux, GitHub, CLI, SSH
Additional Interests: Circuit Building, Robotics, Golf, Woodworking, Machine Learning, Research