Landon Bakken

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Education

University of Wisconsin Madison **Sept 2024 – Present**
Bachelor's in Computer Engineering, expected July 2028 *Madison, Wisconsin*

Madison Area Technical College **Sept 2022 – Jul 2023**
College-level coursework completed while in high school *Madison, Wisconsin*

Experience

UW Wisconsin-Madison Formula SAE **Sept 2024 – Present**
Controls Lead *Madison, WI*

Notables

- 1st place in Design, 2nd place AutoCross @ 2025 Michigan Electric
- 2025 Multimatic Vehicle Dynamics Award @ 2025 Michigan Electric
- 3st place in Efficiency and Design @ 2025 Michigan Combustion

Combustion Car

- Developed systems to tune engine cylinder phi (air to fuel ratio), resulting in a 13.2% power increase
- Made torque model to derive spark delay from the current RPM, throttle position, and desired torque reduction. Allows for precise and immediate torque cuts for traction control, faster pneumatic shifting, and faster throttle response
- Developed a driver-focused steering wheel with shift lights, distraction-free display, and lap timer with real-time estimated lap times and splits

Electric Car

- Developed code for the ECU, emphasising a modular system to simplify simulation
- Developed software in loop simulation to develop, tune, and validate traction control and torque vectoring
- Added safety features such as a shutdown circuit, dyno mode, and accumulator relay
- Developed flexable torque control system that combines driver input, control, and safety systems
- Implemented and tuned traction control with load transfer based feedforward and a slip error based PI controller
- Developed driver focused torque vectoring with speed and steering angle inputs that is well integrated with traction control by enforcing torque split
- Managed multi-bus CAN communication by forwarding signals and optimizing the database

UW Makerspace **Sept 2024 – Present**
Technical Staff *Madison, WI*

- Assist students with operating tools and equipment at the UW Madison Makerspace
- Tools include 3D printers, laser cutters, soldering equipment, textile tools, waterjet for metal, CNC for wood, other woodworking tools, and other general use items
- Trained students on how to safely use composits room for carbon fiber work

Personal Projects

Machine Learning | *Neural Networks, Gradient Descent, Python* **Dec 2024 – Jan 2025**

- Built a machine learning model and training system from scratch using gradient descent in Python, relying only on NumPy for optimization and GUI libraries for interface

Multiplayer Networking | *Networking, C#, Unity, Documentation* **Nov 2023 – Dec 2024**

- Developed a low-latency, peer-to-peer multiplayer system for Unity using UDP, TCP, and HTTP protocols, with comprehensive documentation for users without networking experience

3D Engine on a Calculator | *Low-level programming, Extreme Optimization* **Oct 2021 – May 2023**

- Created a 3D game engine on a TI-84+ CE using raycasting, the rendering technique used in early DOOM games

Technical Skills

Computer Languages: Python, Simulink, C#, Java, C++, Javascript, Verilog, CSS/HTML
Manufacturing: SLA, FDM, Laser cutting, Soldering
Development Tools: Git, VS Code, Kvaser, Unity
3D Design: Blender, Fusion, Solidworks
Concepts: Traction systems, PID controllers, CAN protocol, Signal iltering