Brandon King

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Education

University of Alabama – *B.S. in Mechanical Engineering* **DEC 2024**
Research Ambassador, 2021-2022 **GPA:** 3.75

PROFESSIONAL EXPERIENCE

FROTHED – *Mechanical Engineer (Electromechanical Systems)* December 2024 – Current

- Responsible engineer for hardware development of the world's first automatic matcha maker
- Led iterative hardware loops across 6 exit chamber designs, optimizing for O-ring sealing, actuation, and compression mechanics
- Designed and simulated 5 mixing geometries in Flow-Sim to improve aeration by 50%, validated through bench testing
- Developed prototype electronics using ESP32s for OTA updates and remote diagnostics

BLOX – *Mechanical Engineering Intern* May – July 2024

- Responsible engineer for material storage rack redesign, Integrating RFID bins for real-time inventory tracking
- Designed, simulated, and assembled rack systems using aluminum extrusions and sheet metal for scalable deployment
- Integrated Microsoft Dataverse with Business Central to automate buyout log validation, eliminating late shipment costs by $150 to $1,000 per install

EcoCAR EV Challenge – *Controls Team Lead (Self-driving)* August 2022 – December 2023

- Responsible engineer for lane-centering neural network, achieving an accuracy of 95% in two sprint cycles
- Led 5-person team in development of a Model Predictive Controller (MPC) for adaptive cruise control (ADAS)
- Implemented high-speed control horizon optimization for adaptive cruise control to reduce onboard compute load by 20%
- Utilized Roadrunner to create 25 unique highway merging scenarios for testing autonomous driving features, included in reports to the U.S. DOE

Michelin – *Manufacturing Engineering Intern* May – August 2023

- Responsible engineer for automating skiver power-cycling using existing sensor suite, saving 5 hours a day of redundant running
- Developed and implemented prestaging procedures for die changes to save $1,250 per shift and over $362,000 annually
- Created detailed process maps for cementer cleanings, reducing average cleaning time by 20 minutes and saving $260 per cycle

Formula SAE – *Powertrain Engineer* August 2021 – August 2022

- Reverse-engineered shifting tank brackets in CAD and applied topology optimization (FEA and generative design) to reduce mass by over 15%
- Led iterative joint design for differential carrier mounting points using FEA, resulting in a 25% reduction in max von Mises stress
- Redesigned muffler and clamping system for noise reduction by utilizing multi-chambered designs and corner gussets

Skills

CAD/Analysis: Solidworks, Onshape, Fusion 360, NX

CS/EE: Matlab, C, Python, HTML, KiCad, Arduino, ESP32

Drafting and GD&T Manufacturing: Injection molding, CNC, FDM/SLA