

James Drake

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EDUCATION

Auburn University, Samuel Ginn College of Engineering
Bachelor of Mechanical Engineering
GPA: 3.41 / 4.00

Auburn, AL
May 2027

ENGINEERING PROJECTS

Autonomous UAV (Airframe & Avionics)

- Personal Project* December 2025 – Present
- Designed and assembled a custom UAV integrating flight controller, ESC/power, and FPV hardware in a lightweight layout.
 - Optimized packaging for CG balance, cooling, and serviceability; secured wiring to reduce EMI risk and speed troubleshooting.
 - Prototyped and tested 3D-printed mounts to improve stiffness and reduce vibration transmission into avionics.

Smart IV Bag Stand (Mechatronics Prototype)

- Class Project (MECH 3200)* August 2025 – December 2025
- Designed a motorized IV-bag stand with load-cell sensing and microcontroller control for real-time monitoring and alerts.
 - Built a TFT UI and modular, labeled wiring harness to simplify assembly, debugging, and field service.
 - Iterated 3D-printed components (PETG) for stiffness, printability, and compact packaging around the drive mechanism.

Fitment Parts (CAD + Additive Manufacturing)

- Personal Project* October 2025 – November 2025
- Reverse-engineered trim clips/panels in CAD; validated fit/function on the target assembly.
 - Tuned tolerances and lead-ins/chamfers for repeatable printing and clean installation.
 - Established a repeatable print + QC workflow to produce consistent small-batch parts.

Thermocouple Controller (Instrumentation)

- Personal Project* November 2025 – January 2026
- Built a microcontroller thermocouple measurement/display + control module for a heater-coil test setup.
 - Calibrated readings and implemented robust wiring/connector practices for reliable data in a high-vibration environment.
 - Designed a compact enclosure for serviceability and clean integration into lab/test fixtures.

WORK EXPERIENCE

Carlston Ice Arena, Lafayette, CO

- Building Supervisor May 2025 – August 2025
- Operated resurfacer/edger; maintained dasher boards and glass; monitored rink conditions and equipment.
 - Preventive maintenance and light mechanical/electrical repairs (motors, pumps, lighting); completed daily inspection and safety logs.
 - Trained new staff on SOPs and event operations; supported emergency response and facility safety

Flatirons Subaru, Boulder, CO

- Automotive Technician December 2021 – May 2023
- Performed multi-point inspections and brake/suspension service; tire mount/balance; torqued fasteners to spec.
 - Troubleshoot electrical faults using DMM/scan tool; verified repairs with road tests and documentation.
 - Coordinated parts and built estimates; supported customer check-ins and service write-ups during peak hours.

SKILLS

Design & CAD: SolidWorks (CSWA), assemblies/drawings, DFM/DFA, DFMA/DFAM, tolerance/fit, basic FEA

Manufacturing: Advanced FDM (PETG/ASA/CF-nylon), inserts/annealing, CNC/router workholding, TIG/MIG welding