

James Pope

jamespope@gatech.edu ♦ Find me on LinkedIn! ♦ Engineering Portfolio: jamespope.tech
If you would like to chat, please connect with me on LinkedIn!

EDUCATION

Georgia Institute of Technology

Bachelor of Science Mechanical Engineering — Expected May 2028

Skills

- CAD/CAE/Design: SolidWorks, Creo Parametric/Pro-Engineer, Autodesk Fusion/Inventor, COMSOL, KiCad
 - Proficient in solid modeling and sheet metal part and product design, functional dimensioning and geometric tolerancing/GD&T, FDM, SLA, and SLS additive manufacturing (3D-printing)
- Design for Manufacturability (DFM), Design for Assembly (DFA), manufacturing techniques
- Systems integration
- Languages: MATLAB, Simulink, Python, Excel
- Eagle Scout

WORK EXPERIENCE

TSMC Arizona — Wet Clean Equipment Engineering Intern (F21_WET2)

May 2026 — August 2026

- Determined point of failure of a purge vacuum pump, identified the consistently failing part, and designed a replacement process to drive 97% cost (est. ~\$70,000 yearly) reduction by negotiating replacement part pricing and beginning supply chain implementation with TSMC Manufacturing Materials, authoring a complete TSMC SOP and Continuous Improvement Plan (CIP) for companywide, fab-level implementation of the new process
- Led implementation of a CIP from the mother fab on a FOUP clean tool, coordinating a significant hardware enhancement installation and continuously monitoring impact with the WET 2 Process Engineering Section
- Monitored over 30 tools and responded to critical equipment issue alarms by troubleshooting failure modes, recovering tool robots and components, and implementing various appropriate solutions daily
- Regularly practiced preventive maintenance tasks to assist technicians, gain a thorough understanding of tool functionality, and develop a deeper understanding of the engineering principles that shaped the equipment
- Identified characteristics that impact the efficiency of load-lock chamber surface water vacuum purging by computationally simulating six chamber model configurations' processes using COMSOL
 - Designed simulations to find relationships between relevant operational, material, and geometric parameters
- Delivered a presentation highlighting the work processes and results described above, including work performed during over 150 hours of direct engagement with mission-critical tools in the fab cleanroom

PACCAR — SuperTruck Integration Intern

May 2025 — August 2025

- Integrated ten semi truck components by designing brackets to meet all design, functionality, and engineering constraints and PACCAR best practice guidelines with Creo Parametric
- Studied and produced ASME Y14.5-compliant (GD&T) parts drawings for dimensionally managed parts
- Assisted with building, reworking, and validating SuperTruck prototypes, contributing over 200 hours in a safety-critical environment and inspecting and operating heavy machinery (gantry cranes, industrial motor vehicles, etc.)
- Reviewed over 100 pages of documentation and mastered primary databases and file management systems
- Produced documentation on vehicle functionality, build process, supplier interaction, and more for future reference
- Assembled and presented PowerPoint presentations covering personal and team project progress for interdepartmental meetings, design reviews, and for both engineering and non-technical audiences
- Delivered a concise and easy to follow ten-minute overview of internship achievements and technical work related to the SuperTruck 3 program to other interns and corporate staff

Bank of America — Financial Center Operations & Administration Intern II

May 2024 — August 2024

- Drove my Financial Center to surpass regional performance goals by analyzing team performance data and developing actionable recommendations, improving overall efficiency and client satisfaction
- Provided hundreds of client recommendations regarding online banking, accounts, and more with extensive knowledge of the Bank's products and services
- Participated in financial center management operations, including team briefings, sensitive data access, account openings, safe-deposit box processes, and client management/authentications

EXPERIENCE

RobotX/RoboSub (Marine Robotics Group) — Unmanned Underwater Vehicle Lead August 2025 — Present

- BlueROV2 technical owner directing 10+ multidisciplinary engineering students in designing, modifying and integrating competition subsystems, administering design reviews, making system-level engineering decisions, and coordinating BlueROV2 manpower allocation and competition task responsibility alongside other subteam vehicles
- Created a lightweight hydrophone array integration package for the BlueROV2 UUV consisting of a removable boom arm and integrated electrical and software interfaces, considering acoustic interference from vehicle thrusters and ambient sources for optimal hydrophone positioning
- Created a RoboSub marker release subsystem driven with a positional servo to independently release two weighted markers, producing a compact device with a secure mounting interface that exceeded footprint requirements
- Developed an operationally robust single-part "FDM shell" marker by iterating through complete design and manufacturing cycles to encapsulate ballast, inserted during a print pause, within the shell
- Designed 3D-printed ballast tank and nameplate assemblies for the Stinger Tug introductory project, CNC-milled new polystyrene tug hulls, and mentored a four-member tug project team for a semester, guiding members through interdisciplinary design and fabrication challenges and project execution

Georgia Tech MATRIX Lab — IPD-RP TA, Principal Investigator August 2025 — Present

- Principal investigator defining the product design and research direction for, and managing, the work of 7 undergraduate students to develop a makerspace product kit and evaluate its effectiveness in demonstrating the capabilities of makerspace tools and reducing barriers to participation for novice users, since August 2026
- Designed and implemented makerspace improvements including instructional signage and consumable hardware (e.g. magnets, heat-set inserts) to enhance various 3D printing technologies
- Refined and toleranced an existing miniature vehicle digital model to accept external components during FDM printing, including embedded magnets, heat-set inserts, and an external chassis and steering system
- Manufactured and tested multiple iterations of the model, applying post-processing techniques including friction welding, sanding, painting, and stenciling to enhance appearance and surface finish

EcoCAR EV Challenge — Propulsion Controls and Modeling (PCM) Engineer January 2025 — Present

- Developed the vehicle onboard Human-Machine Interface touchscreen, including integration with stock HMI systems, content selection, icon design, and UI by learning the challenge sponsor's touchscreen application suite
- Wrote and updated control software MATLAB and Simulink for vehicle subsystems and propulsion supervisory control, establishing vehicle readiness through unit-, model-, hardware-, and vehicle-in-the-loop testing validation
- Validated the battery management controller subsystem and created a new test harness with over 10 tests to meet the scenarios outlined in the requirements traceability matrix
- Delivered a 20-slide data summary outlining the complete functionality of multiple central custom controllers by reviewing 100+ pages of technical documentation alongside frequent HMI UI and UX design reviews
- Participated in over fifteen team outreach sessions to stimulate interest in STEM among K-12 students

RoboJackets Robotics — RoboWrestling Mechanical Engineer and Team Lead August 2024 — May 2025

- Led a multidisciplinary team of electrical, mechanical, and computer engineers to design, build, and test a 500-gram robot sumo "wrestler" capable of responding to all scenarios encountered during competition with other robots that surpassed expectations during competition, defeating every other first-year robot it contended
- Designed a chassis to integrate subsystems in SolidWorks with snap and friction fits, as opposed to tape or glue, while distributing thermal output, minimizing unused space, and maximizing serviceability and adjustability
- Manufactured parts with engineering (SLA) resin after evaluating critical mechanical properties and requirements

FURTHER EMPLOYMENT AND EXPERIENCE

GT ASME — Volunteer Board, Special Events August 2026 — Present

GT iOS Club — UI Designer, SkillSwap (Figma) August 2025 — December 2025

GT Technology Consulting Group — Optidrop Consulting Project August 2025 — November 2025

Brookhaven Farmers Market — Setup, Support, and Guest Services April 2022 — Present

References Furnished Upon Request