Ashton Gomes

ashton.gomes@outlook.com | https://ashton-gomes.github.io/ | linkedin.com/in/ashton-gomes/

Education

Stony Brook University – MS in Mechanical Engineering — Expected May 2027

Stony Brook University – BE in Mechanical Engineering | GPA: 3.51/4.0 — Expected May 2026

Projects/Research

Vehicle Dynamics Lead, Stony Brook Motorsports – Stony Brook, NY — Aug 2023 – Present

- Directed a 12-member sub-team through the end-to-end design and fabrication of steering, suspension, and braking systems, utilizing Gantt charts to track critical path milestones and ensure 100% on-time delivery of all vehicle dynamics components.
- Modeled load transfer via MATLAB to quantify cornering forces, optimizing spring rates for maximum traction.
- Eliminated critical maneuverability limitations by re-engineering the steering and suspension geometry and kinematics, achieving a 33% reduction in turning radius and a 10° increase in steering angle to maximize vehicle agility on dirt.
- Increased suspension component strength by 286% as validated through SolidWorks FEA and physical load testing, by optimizing control arm geometry and refining manufacturing workflows to eliminate previous failure points.

Research Assistant - Robotics — Jan 2026 – Present

- Implemented a robotic path planner in Python utilizing Screw Linear Interpolation (ScLERP) and Dual Quaternion algebra, successfully generating SE(3) invariant trajectories that inherently satisfy geometric constraints without explicit modeling.
- Developed an RMRC loop to translate task-space plans into real-time joint velocities via Jacobian inversion.

Senior Design - Shock Dynamometer — Aug 2025 – Present

- Developed a custom Scotch Yoke shock dynamometer to provide objective suspension analysis, engineering the system for 18 in/s peak velocity over a 4-inch stroke for precise damping characterization.
- Engineered the power transmission and control system utilizing an AC motor, VFD, and load cell DAQ, enabling adjustable velocity profiles to generate force-velocity curves for suspension tuning.

Kinova Gen 3 Robotic Arm Motion Planner — Nov 2025 – Dec 2025

- Engineered a Python-based kinematic suite to solve for screw axes and numerical Inverse Kinematics (IK) using the Newton-Raphson method and Body Jacobians. Mapped the reachable workspace and identified singular configurations through Jacobian rank and condition number analysis.
- Programmed complex motion robot arm trajectories using 3rd/5th-order polynomials and cubic splines to navigate end-effector via points in Cartesian space. Validated all motion profiles through simulation to ensure compliance with all joint limits.

PID Turntable Controller — Oct 2025 – Dec 2025

- Engineered a digital PID turntable speed control system using LabVIEW and NI-DAQ, optimizing gains to achieve a 0.043s rise time and zero overshoot while validating experimental performance against MATLAB simulations.

Work Experience

Fellow - AI Trainer, Handshake AI – Remote — Oct 2025 – Present

- Validated 100+ complex image, engineering and physics-based AI outputs for a top AI company, performing root-cause analysis on model hallucinations to ensure 100% technical accuracy and logical consistency in the training dataset.

Project Management Intern, Dormitory Authority of the State of New York – New York, NY — May 2025 – Aug 2025

- Monitored daily construction progress for a $4.4M renovation, cross-referencing on-site installations against engineering drawings and technical specifications to identify discrepancies and track project milestones .
- Conducted field inspections of MEP systems to verify alignment with NY State building codes, proactively documenting safety risks and technical non-compliance issues for the project management team .

Budget Coordinator, Essential Elegance Inc – New York, NY — May 2023 – May 2024

- Managed pricing, procurement, and technical documentation for 5+ interior design projects, reducing administrative processing time by 30% through advanced Excel tracking systems.

Skills

Software: SolidWorks, Fusion360, Python, MATLAB, C++, Microsoft Office, Google Workspace

Relevant Coursework: Control Systems, Robotics, Machine Design, Numerical Methods, Solid Mechanics, Heat Transfer, Dynamics, Manufacturing Processes, Statics, Thermal System Design, Machine Elements, Thermodynamics, Fluid Mechanics, Material Science

Hands-On: Lathe, Mill, CNC, GD&T, Manufacturing, Metalworking, Data Acquisition, Mechanical Assembly, Circuits, Soldering