Ashton Gomes

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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

Experience

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 personally re-engineering the steering and suspension geometry, 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.

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

- Fine-tuned 100+ high-complexity generative AI outputs with 100% accuracy for a top AI company, performing deep parameter analysis to mitigate model hallucinations and maximize visual fidelity.

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

- Oversaw daily on-site operations for a $4.4M renovation, coordinating with multi-disciplinary contractors to ensure strict adherence to project drawings, technical specifications, and milestones.
- Conducted comprehensive audits of MEP systems, ensuring full regulatory compliance with NY State building codes and mitigating safety risks through proactive site inspections.

Projects

Senior Design - Shock Dynamometer — Aug 2025 – Present

- Developed a custom Scotch Yoke shock dynamometer to provide objective suspension analysis, engineering the system for 30 in/s peak velocity over a 3-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.

7 DOF Manipulator Analyzer — 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 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 joint position, velocity, and acceleration limits.

Samsung Galaxy Phone Case Prototyping — Apr 2025 - May 2025

- Developed an optimized TPU smartphone case by iteratively refining fin geometry via SolidWorks Flow Simulation (CFD), achieving a 46.4% increase in cooling efficiency over benchmark designs as validated through physical prototyping and testing.

Skills

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

Relevant Coursework: Control Systems, Robotics, Machine Design, Numerical Methods, Solid Mechanics, Heat Transfer

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