Andres Barrios

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EDUCATION

The University of Texas at Austin — Bachelor of Science, Mechanical Engineering Honors — December 2026
Certificate: Programming and Computation — **GPA:** 4.0

TECHNICAL SKILLS

CAD/Analysis: SolidWorks, Autodesk Inventor, Onshape, Siemens NX, Inventor Simulation, DFMA, Tolerance Stack-Ups
Manufacturing: 3D Printing, CNC Machining, Injection-Molding, GD&T
Programming: Python, MATLAB

PROFESSIONAL EXPERIENCE

UT Center of Autonomy – *Undergraduate Robotics Research Assistant* | Austin, TX — September 2025 - Present

- Designing and prototyping low-cost bimanual manipulation platforms by integrating 3D-printed arm assemblies, mobile bases, and custom manipulators for household and lab testbed applications tasks
- Developing custom lifting mechanism to improve reach and stability of robot arms, integrating multi-DOF arm and gripper end-effectors into overall lift platform to overcome mobility limitations

Samsung – *Mechanical Design Engineer Intern* | Austin, TX — May 2025 - August 2025

- Designed mechanical assembly in Autodesk Inventor implementing electric actuators and custom-built pipe collar to safely lift 200 lb. piping within pump input subsystem, eliminating operator handling risks
- Created detailed GD&T drawings for machined pipe collar and adjustable claw clamps for pipe-lifting tool, iterating designs with manufacturer DFM feedback to optimize for manufacturability within existing shop tooling constraints
- Analyzed potential failure modes of lifting system, confirming via hand calculations that clamping-induced hoop stress remained below pipe yield strength and frictional torque was sufficient to resist actuator-induced rotation
- Evaluated stress under applied torque on steel collar internal corners using Inventor Simulation to prevent lifting failure

Amazon Robotics – *Hardware Development Engineer Co-op* | North Reading, MA — January 2025 - May 2025

- Operated within team of mechanical engineers in design development cycle of new fully autonomous drive unit robot releasing in over 1000 distribution centers, including prototyping and validation of hardware components
- Designed bolted wheel hub and taper-lock attachment in SolidWorks for drive unit robot, aimed to facilitate wheel removal from locomotors and to reduce downtime during component testing and inspection by over 50%
- Conducted tolerance stack-ups and bolted joint analyses to eliminate interference between critical wheel and locomotor surfaces and determine proper fastener torque application under drive unit loading
- Prototyped six modular ‘skeleton’ drive units, enabling in-facility testing of locomotors and sensor field-of-vision mapping

BP – *Mechanical Reliability Engineer Intern* | Whiting, IN — May 2024 - August 2024

- Developed injection quill design to minimize fluid impingement at pipe tee junction, analyzing flow conditions to optimize material selection and evaluate vibration effects on quill stability in piping system
- Coordinated delivery of proper design requirements of injection quill, per ASME B31.3 standards, with third-party vendor
- Designed new dripleg for condensate removal, improving steam heat transfer efficiency to piping systems by creating new drainage line with ASME-compliant sloping to prevent condensate accumulation in critical fluid lines

PROJECTS

RC Car | *SolidWorks, Prototyping* — August 2025 - Present

- Designing RC racecar in SolidWorks and overseeing prototype fabrication, material selection, and assembly within $100 budget for competitive performance against 20+ teams

Fidget Spinner Manufacturing | *SolidWorks, FEA, Prototyping* — August 2023 - December 2023

- Developed three fidget spinner models in SolidWorks, with various prototypes manufactured using different machine-shop tools, including a 3D printer, CNC laser cutter, and injection-molding machine
- Analyzed high-stress regions on model with SolidWorks Simulation to help optimize design for stability and durability

LEADERSHIP AND PROFESSIONAL DEVELOPMENT

Management Leadership for Tomorrow (MLT) – *Career Preparation Fellow* — January 2025 - Present

- Accepted into selective 18-month professional development program for high-achieving diverse talent
- Complete business case studies and assignments to grow leadership and technical skills relevant to technology sectors
- Attend conferences hosted by industry leaders such as Apple, Google, and LinkedIn