Andres Barrios

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EDUCATION

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

TECHNICAL SKILLS

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

PROFESSIONAL EXPERIENCE

Oden Institute: Center of Autonomy – *Undergraduate Research Assistant* | Austin, TX   September 2025 - Present
- Design and prototype low-cost robotic manipulation platforms by integrating 3D-printed arm assemblies, mobile bases, and custom manipulators for household and lab testbed applications tasks
- Integrate 6-DOF robotic arm with gripper end-effectors into lead screw–driven body, designing custom attachments in Onshape for 80/20 aluminum frame to increase adaptability and enable vertical reach up to 900 mm

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, using manufacturer DFM feedback to optimize parts for machining while upholding existing design 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 – *Mechanical Design Engineer Intern* | 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%
- Optimized wheel system assembly by performing tolerance stack-up analyses and updating GD&T drawings for both machined parts, eliminating worst-case interference between critical wheel and locomotor surfaces
- 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 drainpipe 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*   September 2025 - Present
- Design RC racecar in SolidWorks with team of five students and oversee 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 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