Pablo Pena

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EDUCATION

University of Texas at Austin - *Expected May 2028*
B.S in Mechanical Engineering - Engineering Honors Program
Cumulative GPA: 4.0

SKILLS

Programming Languages: C++, C#, MATLAB, Java, Python, SQL, DAX, CSS, HTML
Technical Skills: SolidWorks, Siemens NX, Arduino, Power BI, 3D Printing, Laser Cutting, Soldering, Composites Manufacturing

EXPERIENCE & ACTIVITIES

Texas Department of Transportation | Extern | - *(2026)*
- Evaluated professional drone platforms (Skydio X10, Quantum Systems Trinity Pro, Wispr Ranger Pro) used for safe, cost-effective infrastructure inspections
- Learned how autonomous systems and transportation policy are integrated to support emerging technologies, including autonomous trucking
- Observed deployment of Boston Dynamics Spot robot and LIDAR-based surveying for hazardous and inaccessible terrain analysis

NASA L'SPACE MCA Apprenticeship | Payload Mechanical Engineer | - *(2025)*
- Optimized rover chassis material density by 66.25% by conducting a trade study on Aluminum 6061 and Stainless Steel
- Reduced wheel subsystem mass by 89.63% through subtractive CAD and used edge blend to increase stress tolerance
- Designed a 3-DOF robotic arm CAD model with a custom gripper for a planetary rover concept

Landry's Inc. | Information Technology Intern | - *(2024)*
- Consolidated 9 critical IT performance metrics into a single Power BI dashboard, streamlining access and improving visibility across departments
- Audited and updated the General Manager intranet site; reviewed and updated over 60 entries and corrected outdated restaurant and staff listings for accuracy
- Developed a C# automation tool to transfer data between loyalty systems via API, eliminating the need for manual CSV data pulls

CLUBS & SOCIETIES

Texas Design Build Fly | Structures Engineer | - *(2024 - Present)*
- Designed and manufactured a pylon capable of securely holding 8.165 kg of steel shot, utilizing CAD software and 3D printing techniques for precision and functionality
- Reduced X-1 payload mass by 11.1%, improving lift-to-weight ratio and increasing max flight time by 8.4%
- Fabricated fiberglass components using wet layup and vacuum bagging, optimizing fiber orientation for stiffness and mass reduction

PROJECTS

3DOF Robotic Arm Simulation | - *(December 2025)*
- Built a MATLAB-based simulation of a 3-DOF robotic arm using kinematic and dynamic modeling to study task-space control behavior.
- Investigated how different control mappings and gains affect motion smoothness and responsiveness in end-effector trajectories

Custom Chess Timer & Board | - *(July - September 2025)*
- Designed and manufactured a custom-themed 32-piece chess set and board using SolidWorks
- Achieved 93.75% print success rate after optimizing part designs
- Integrated Arduino-based timer with pushbutton inputs and OLED display; ongoing circuit prototyping and enclosure fitting; planning laser-cut frame for housing

Mini-Battle Bot | - *(January - May 2025)*
- Designed and modeled a functional 1 lb battle bot in SolidWorks, including custom-printed wheels and integrated chassis features
- Designed a spinner with 100% PLA infill to ensure optimal momentum and damage
- Laser-cut chassis to fit a kill switch for emergency shutdown

ACHIEVEMENTS & AWARDS

- University Honors (*3 Semesters*)
- Tau Beta Pi Engineering Honor Society