MATTHEW BRANDENBURG

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EDUCATION

Lamar University, Beaumont, TX **GPA: ---**
Bachelor of Science (B.S.) in Mechanical Engineering Expected: May 2029

PROJECTS

Rocket Tracking Ground Station *-LUNAR* Sept. 2025
Designed large antenna and camera mount in SolidWorks for vertically tracking rockets up to 10,000 ft.

- Engineered a 360° horizontal rotation system with adjustable legs for leveling on uneven terrain.
- Integrated LIN Engineering stepper motors and telescoping aluminum legs for adjustable stability and compact transport. Focus placed on simple and rapid setup in field.
- Modeled full system in SolidWorks, optimizing center-of-gravity placement and range of motion.
- Modeled keeping adjustable hardware using 3D printing and machined aluminum fittings for mechanical validation in mind.

Trans-Sonic Boat-Tail *-LUNAR* Sept. 2025

- Designed a 5-inch carbon-fiber boattail for EZRA IREC (Experimental Zenith Rocketry Association – Intercollegiate Rocket Engineering Competition) rocket to minimize base drag at Mach 0.97 - 1.3.
- Modeled the geometry of various designs and fit in SolidWorks, verifying aerodynamic performance through Open Rocket simulations and NASA aerodynamic research.
- Assisted in designing a removable locking mounting system to ensure secure boat-tail alignment at maximum dynamic pressure and supersonic speeds while allowing simple rapid field assembly.
- Authored the complete boat-tail aerodynamic research report analyzing drag coefficients, stability margins, and performance predictions for the LUNAR EZRA IREC vehicle.

WORK EXPERIENCE

Lamar University, Beaumont, TX ***-Student Assistant*** Sept. 2025 – Present

- Supervised 30+ engineering students in additive (3D printing) and subtractive manufacturing processes.
- Supported faculty-led research by fabricating precision components and assemblies for mechanical testing.
- Designed and produced custom fixtures and printed parts to assist with student prototypes and setups.
- Implemented equipment maintenance and safety check systems, improving lab uptime and cleanliness.
- Established weekly consumable inventories and created storage standards, reducing setup time by 20%.

Market Basket, Mauriceville, TX ***-Cashier*** May 2023 – Sept. 2025

- Operated POS/register and payment terminals; process cash/cards, returns, and voids per policy.
- Balanced cash drawer; follow cash-handling, coupon, and loss-prevention procedures.
- Trained and mentored new associates on checkout procedures, product handling, and customer service standards to ensure consistent operations while maximizing customer satisfaction.

ORGANIZATIONS

Lamar University Association of Rocketry (LUNAR), *Member – Vehicle Team* Sept. 2025 – Present
Association of Mechanical Engineers (ASME), *Member* Sept. 2025 – Present
American Institute of Aeronautics and Astronautics (AIAA), *Member* Sept. 2025 – Present

SKILLS

- **CAD & Design: SolidWorks** –design and assembly**, AutoCAD** – 2D drafting**, Fusion 360** – modeling basics
- **Manufacturing & Lab: 3D printing – FDM** (Qidi, Creality, Bambu), **Resin printing – stereolithography** (SLA), **Nylon printing – selective laser sintering** (SLS), **CNC machining – Americas Cutting Edge (ACE)**
- **Certifications: AutoCAD** –2025, **Microsoft Office Specialist** – 2024, **TABC Seller-Server** –2025

HONORS/AWARDS

- Academic Excellence Scholars - Covers 40% of tuition on high school academics. Sept. 2025 – Present
- Giannopoulos Regents Scholarship in Engineering – Covers 60% of tuition on merit. Sept. 2025 – Present