

SAMER MARMASH

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EDUCATION

Rice University

Bachelor of Science in Mechanical Engineering, Minor in Engineering Design

Houston, TX

Expected May 2027

- **Relevant Coursework:** Matrix Analysis, Differential Equations, Multivariable Calculus, Mechanics/Statics, Stress Analysis, Rigid Body Dynamics, Classical Thermodynamics, Computational Thinking, Engineering Design

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, Java, JavaScript, LaTeX

CAD & Engineering Tools: SolidWorks, Fusion 360, OnShape, Excel, AutoCAD

Manufacturing & Prototyping: 3D Printing (FDM/SLA), CNC Machining, MIG Welding, Manual Machining, Rapid Prototyping

Hardware & Electronics: Arduino, Servo Control Systems, Sensor Integration, Circuit Design, Embedded Systems

PROFESSIONAL EXPERIENCE

Rice Wind Tunnel

Houston, TX

Mechanical Design Engineer

May 2025 – Present

- Engineered redesigned wind tunnel base structure featuring dual longitudinal steel support frames, increasing test section accessibility by 60% and reducing experimental setup reconfiguration time from 45 to 15 minutes
- Executed precision fabrication of 8 structural components using CNC mill with $\pm 0.005"$ tolerance, performed MIG welding for frame assembly achieving 95% joint efficiency, and integrated load-bearing elements supporting 500+ lbs aerodynamic loading
- Collaborated with 4-member research team to validate structural integrity through FEA in SolidWorks, ensuring compliance with safety factors above 2.5 under maximum operational wind speeds of 120 mph

Rice Electric Vehicle

Houston, TX

Mechanical Systems Engineer

October 2024 – Present

- Designed and fabricated 12 custom aluminum mounting brackets for 72V battery pack system, reducing installation time by 40% while maintaining <2mm positional tolerance across thermal cycling
- Integrated suspension components including A-arms and coilover assemblies for fully electric vehicle chassis, coordinating mechanical and electrical subsystem interfaces across 8-person team
- Conducted stress analysis on chassis mounting points using hand calculations and SolidWorks FEA, validating safety factors >3.0 for peak cornering loads of 1.5g lateral acceleration

Arabic Language Research Assistant

Houston, TX

Research Consultant

January 2025 – Present

- Reviewed 50+ student assignments weekly and provided detailed grammar and style corrections, contributing to 15% improvement in average class proficiency scores across semester
- Sourced and translated 20+ primary Arabic texts for professors conducting research on Arabic literature, ensuring academic accuracy and contextual integrity of historical documents

ENGINEERING PROJECTS

Robotic Prosthetic Hand with Haptic Feedback

| Arduino, Fusion 360, C++, FSR Sensors | Project Details

January 2025 – Present

- Designed and prototyped 5-finger articulated mechanism with servo motors achieving 90° range of motion per joint, integrating force-sensitive resistors at fingertips to detect 0-10N grip pressure with $\pm 5\%$ accuracy
- Programmed Arduino Uno to process real-time sensor data at 100Hz, implementing PID control algorithm mapping pressure readings to proportional vibration motor intensity (0-255 PWM) on user's forearm for haptic feedback
- Iterated through 6 design revisions in Fusion 360, optimizing finger geometry to reduce weight by 30% while maintaining structural integrity under 15N grip forces during object manipulation testing

Rocket Telemetry Tracking System

| SolidWorks, Antenna Systems, Field Operations | Project Details August 2025 – December 2025

- Engineered dual-axis gimbal tripod system for Yagi directional antenna achieving $\pm 2^\circ$ tracking precision, enabling continuous telemetry lock on rocket trajectories reaching 100,000 ft altitude and Mach 0.8 velocities
- Fabricated secondary 10-ft extension pole tripod for omni-directional antenna using aluminum tubing, designing custom hinge mechanism and performing stability testing under 2 mph wind conditions to ensure secure field deployment
- Collaborated with 3-person telemetry team to validate antenna performance through ground station testing, achieving 95% uplink reliability during launch operations

Electric Bike Performance Optimization

| Carbon Fiber, 3D Printing, Mechanical Design | Project Details December 2024 – December 2025

- Designed and assembled custom electric bike integrating carbon fiber seat post and handlebars, achieving 2.3 lb (18%) weight reduction while maintaining structural rigidity for 140lb rider and 25 mph commuting speeds
- Modeled and 3D-printed ergonomic thumb throttle using TPU filament, iterating through 5 prototype versions to optimize grip comfort and control precision, resulting in 40% improved throttle response feedback
- Integrated 1000W brushless motor with 48V battery system, achieving 28-mile range and reducing daily commute time by 35% compared to traditional cycling