Mergen Ulziibayar

US Citizen | +1 646-881-7736 | u.mergen@nyu.edu | LinkedIn: Mergen Ulziibayar | Portfolio

Education

New York University, Tandon School of Engineering — New York, NY
B.S. in Mechanical Engineering, Expected May 2027 — *Aug. 2023 – Present*

Engineering Experience

Research Assistant — Dec. 2025 – Present
CUSP IgNYte Lab — *New York, NY*

- Designed and improved outdoor sensor-box prototypes for urban air-quality research, focusing on airflow, weather exposure, mounting, cable routing, and ease of assembly.
- Assembled ESP32-based sensor systems with wiring, power components, solar/LiPo hardware, environmental sensors, and internal mounting features.
- Troubleshot power instability during prototype testing by checking voltages across components and updating the power path for more reliable operation.
- Used CAD, 3D printing, physical fit checks, and basic structural screening to improve prototype strength, service access, and field usability.

Mechanical Engineer — Feb. 2026 – Present
NYU Formula SAE, Suspension and Steering Sub-Team — *New York, NY*

- Supported suspension and steering fabrication through tube cutting, tab preparation, printed fit-up fixtures, assembly checks, and TIG welding support.
- Designed and revised printed fixtures to help hold tubing in the correct position during fit-up, correcting oversized geometry after the first print.
- Prepared 32 waterjet-cut steel tabs by removing burrs and cut remnants with angle grinding before assembly and welding.
- Worked with teammates in a shop environment to improve alignment, manufacturability, and build quality during chassis fabrication.

Mechanical Engineer — Feb. 2026 – Present
NYU RoboMaster UltraViolet, Gimbal Sub-Team — *New York, NY*

- Designed prototype launcher and gimbal hardware in CAD, including flywheel packaging, front armor, and a supercapacitor enclosure shell.
- Checked part clearances, motor-interface fit, feed-path spacing, and assembly access inside a constrained robotic system.
- Revised a press-fit motor interface with added screw retention after integration review to improve assembly reliability during testing.
- Simplified complex CAD assemblies to make team design reviews faster and easier to manage.

Projects

V-Aid Climbing | *Assistive Tactile Pin Array, SolidWorks, 3D Printing, Laser Cutting* — *Jan. 2025 – Apr. 2025*

- Designed and built a 12 x 12 tactile pin-array prototype that converts climbing route information into a physical raised-pin interface.
- Built 4 prototype generations using 3D printing and laser-cut panels, improving pin motion, guide features, and clamp behavior across each revision.
- Reduced early pin-rise failures from roughly 60% to reliable locking across tested route patterns by redesigning pin geometry and reducing binding.
- Helped secure $2,000 in NYU Prototyping Fund support for continued development of the accessibility-focused prototype.

Additional CAD and Manufacturing Work | *Coursework and personal design projects*

- Created CAD models, exploded assemblies, basic drawings, and BOMs for mechanical coursework and personal design projects.
- Built simple CAM toolpaths for a motor-holder part and identified manufacturability issues related to tool size, internal corners, and workholding.
- Used SolidWorks, OnShape, Fusion 360, and 3D printing workflows to turn early design concepts into physical prototypes.

Technical Skills

CAD and Design: SolidWorks, OnShape, Fusion 360, assemblies, drawings, basic simulation

Prototyping and Fabrication: 3D printing, laser cutting, fixture design, angle grinding, TIG welding

Robotics and Hardware: ESP32, Arduino, sensor integration, wiring, soldering, battery/solar-powered prototypes

Software and Tools: Python, MATLAB, Bambu Studio, Ultimaker Cura

Engineering Strengths: Prototyping, testing, troubleshooting, teamwork, documentation, build quality