Neil Muralles

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EDUCATION

Louisiana State University (LSU), Baton Rouge, LA **May 2027**
Bachelor of Science in Mechanical Engineering GPA: 3.89
NCEES FE Exam Passed - August 2026

EXPERIENCE

Mechanical Engineering Intern **June 2026 - August 2026**
S&B Engineers and Constructors, Baton Rouge, LA

- Designed shell-and-tube and air-cooled heat exchangers in HTRI Xist/Xace from process datasheets, iterating configurations to meet thermal, pressure-drop, and overdesign requirements.
- Designed pressure vessels in COMPRESS from process datasheets, including a horizontal vessel with a boot and a large tower; produced corresponding AutoCAD equipment drawings.
- Developed an Excel engineering tool to evaluate pin-and-bolt configurations for gasket sealing; corrected existing calculations and added checks for pin bending, double shear, and bolt tear-out.
- Performed hand calculations and COMPRESS analyses to estimate tank weights; delivered engineering calculations to the mechanical engineering department manager.
- Reviewed rotating-equipment and refrigeration-system design considerations through pump selection, equipment specifications, and fluid-system requirements.

Undergraduate Researcher **March 2025 - Present**
Stein Lab @ iCORE LSU, Baton Rouge, LA

- Contribute to the design and experimental testing of a liquid-metal distribution system
- Selected for the NASA LaSPACE Undergraduate Research Assistantship (LURA), receiving $4,500 in competitive research funding to support undergraduate research
- Troubleshoot design and test challenges with a multidisciplinary research team and document technical work in Overleaf for faculty and research sponsors.

PROJECTS

3-DOF $30 Prototyping Robotic Arm **January 2026 - March 2026**

- Designed and 3D-printed custom mechanical components for a low-cost robotic arm integrating additive manufacturing, Arduino control, and electromechanical prototyping.
- Applied a four-bar linkage to reduce passive torque on the shoulder motor by 90%, enabling the arm to support loads at the end effector.
- Modeled inverse kinematics in Python using the Newton-Raphson method to solve joint angles for target end-effector positions.

Liquid Metal Distribution Device with Induced Vibration **August 2025 - May 2026**

- Designed 3D-printed components for modular aluminum-extrusion framing using design-for-assembly principles to reduce part count and simplify assembly.
- Designed a stepper-motor-driven syringe actuation subsystem using off-the-shelf components for controlled liquid-metal extrusion.

SKILLS

Thermal/Fluids: Heat Exchanger Design, Pressure-Drop Analysis, Pump Selection **| Test/Analysis:** Experimental Testing, Excel, Python **| Engineering Software:** HTRI Xist/Xace, COMPRESS, AutoCAD **| Prototyping/Controls:** CAD Modeling, Arduino, 3D Printing