

Rameses Mendoza

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Independent Engineering Projects

Wearable Thermal Management System Development

Ongoing

- Developing a portable closed-loop cooling system utilizing thermoelectric cooling, liquid circulation and custom-designed thermal management components
- Project Details: rameses.me/wtms

Electric Bicycle Design & Fabrication

- Designed, fabricated and tested an electric bicycle using commercially available components and custom-machined mounting hardware.
- Project Details: rameses.me/dullahan

Experience

Research Assistant, Manufacturing Information and Tolerancing | University of Illinois Urbana-Champaign
Champaign, IL

Sep 2026 – Present

- Supporting research relating geometric tolerances, manufacturing features, and design intent through graph-based representations of CAD geometry.
- Contributing to software development and dataset generation for predicting manufacturing processes and appropriate tolerancing strategies using machine-learning and LLM-assisted information encoding.
- Work Details: rameses.me/manufacturing-research

Machinist | Illini Pullers

Champaign, IL

Sep 2025 – Present

- Completed mill and lathe training to perform operations on steel and aluminum components to tolerances of ± 0.003 inches.
- Developed proficiency in manual machining, dimensional measurement, and manufacturing fundamentals through hands-on shop experience.

sPHENIX Researcher | UIUC Nuclear Physics Group

Champaign, IL

Jun 2022 – Jul 2022

- Used Python to discover, solve and visualize an inconsistency in energy readings between the 6000+ blocks of the sPHENIX Detector's electromagnetic calorimeter.
- Authored a final report detailing findings and recommended calibration adjustments, improving detector measurement accuracy.
- Work Details: rameses.me/sphenix-research

Skills

- Design: CAD (SolidWorks, Fusion 360; Modeling, Assemblies, Drawings, Introductory FEA), Failure Prediction (Crack Propagation, Fatigue Loading, Creep). 3D Printing.
- Quality Assurance/Measurement: Micrometer & Digital Caliper (dimensional inspection incl. circular parts)
- Machining: Manual Mill and Lathe (facing, chamfering, drilling, boring, tapping at $\pm .003$ inch tolerance)
- Material Analysis: Impact Testing, Steel Metallurgy (alloying, annealing, austenizing, quenching, tempering), Property Testing (hardness, elastic modulus, hardenability)
- Programming: Python (Numpy, Sympy, Pandas, Matplotlib)

Education

University of Illinois at Urbana-Champaign, Champaign, IL

2023 – 2027

- B.S. Mechanical Engineering (Minor in Business), GPA 3.47/4.0