



# Liliana Palomino

Mechanical Engineer

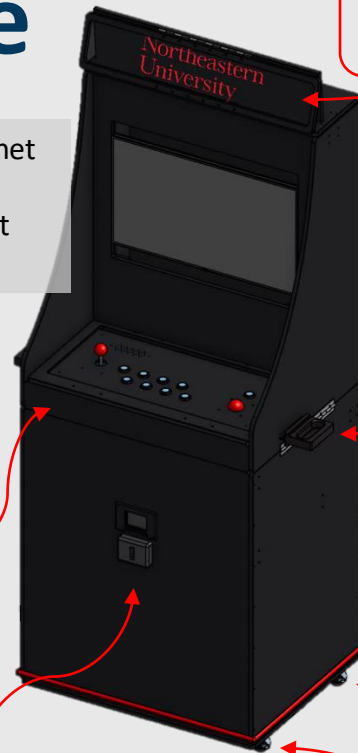
Fourth-year Mechanical Engineering student at Northeastern University with a minor in Mathematics. Passionate about product development, with hands-on experience in both engineering design and project management through co-ops, technical leadership, and team-based projects.

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# Arcade

Collapsible arcade cabinet for NU game design students to showcase at national conferences



Backlit  
Northeastern  
marquee

Hinged  
MDF  
walls

Dual-sided control panel  
(buttons/joystick +  
keyboard compatible)

Custom coin slot &  
LCD screen

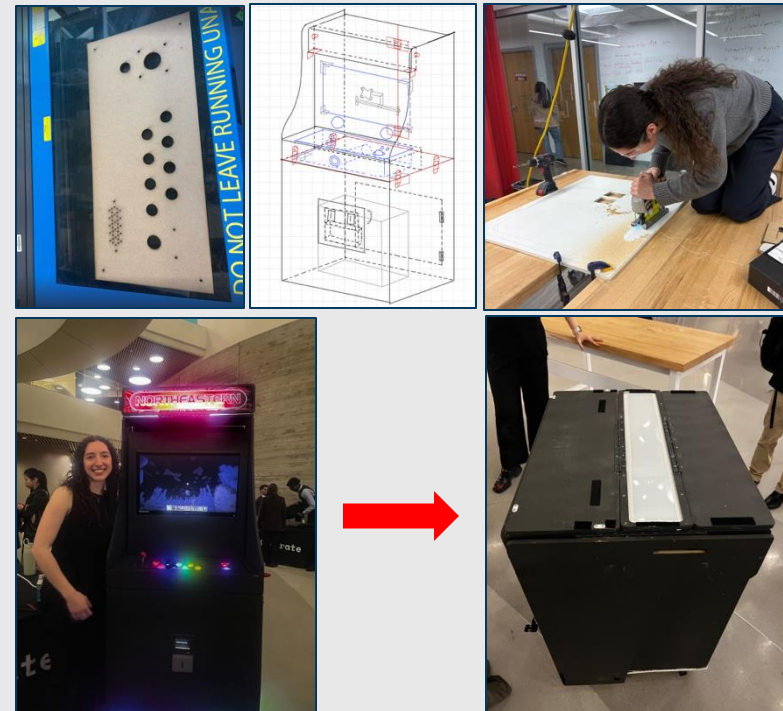
Locking  
casters

## Leadership & Product Delivery

- Analyzed weekly progress and delivered targeted action items to each member, balancing timeline and budget constraints
- Developed 3-week assembly plan and tracking system for subsystem completion status
- Presented functional arcade cabinet that transforms into transportable box at Generate Showcase event

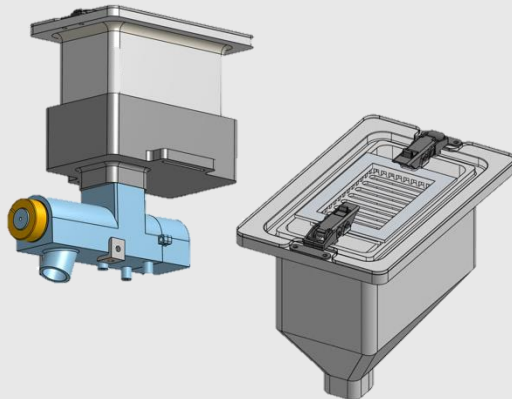
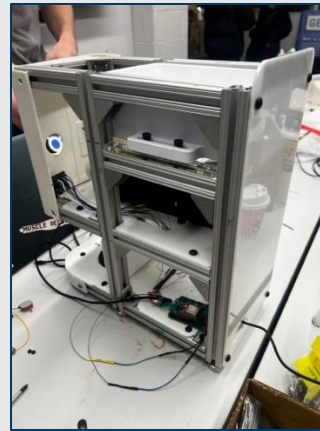
## Technical Contribution

- Sketched out and distributed workload across six mechanical subsystems after conducting pre-semester research and planning
- **Modeled and 3D printed** replacement connector pins when wooden ones failed
- Cut precision holes for electrical components
- Fabricated MDF woodworking jigs
- Managed master assembly in **Onshape** and simulated collapsing mechanism using fasten, revolute, and slider mates
- Acquired access to additional **industrial tools** from shop mechanics and engineering clubs to supplement laser cutting capacity



# Fitolux

Automated protein powder dispensing device for precise and convenient supplement storage and dosing

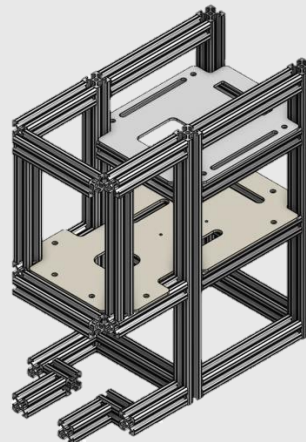


## Hopper

- Designed custom protein powder storage hopper with integrated **3D-printed** desiccant cage to prevent moisture buildup
- Created removable hopper system featuring a permanent connector to auger screw for easy maintenance and refilling
- Optimized internal geometry for consistent powder flow

## Structural Frame

- Utilized **cold saw** to efficiently cut framing pieces to size
- Selected T-slot **80/20 hardware** for structural modularity and support capabilities
- Utilized **Onshape** frame tool to model structure, prioritizing hopper support and space for subsystem integration
- Redesigned with indented front corners after enclosure aesthetic requirements conflicted with initial design

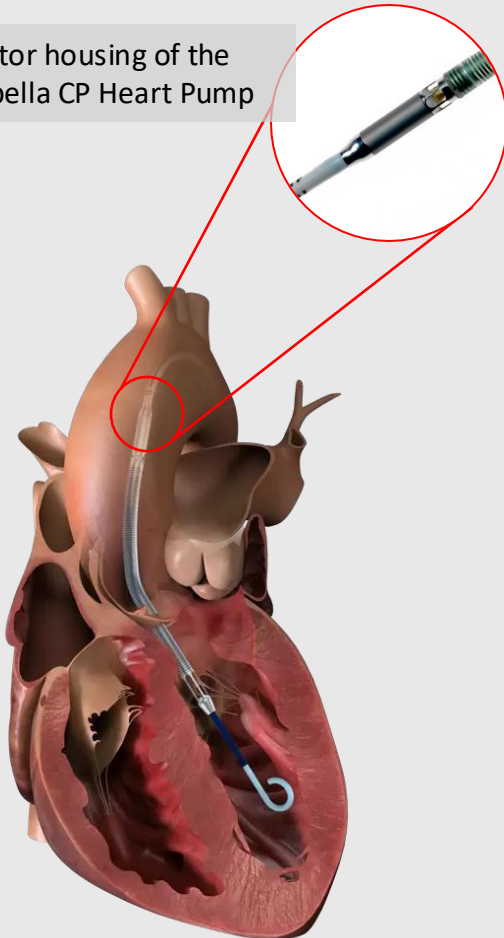


## Outer Enclosure

- Performed **tolerance stack-up** analysis to determine dimensions
- Combined 3D-printed components and **laser-cut** acrylic paneling for sleek product appearance
- Developed assembly sequence and process plan; simplifying flow, preventing potential mistakes, and enabling smooth final assembly

# Yield Improvement Project @ J&J

Motor housing of the  
Impella CP Heart Pump



## Data Collection & Defect Analysis

- Analyzed thousands of dollars of scrapped motor housing parts to identify defect patterns and categorize failure modes
- Established trending data and quantified common defect areas
- Met with operators at each process bench to understand manufacturing nuances from their perspective

## Root Cause Investigation

- Hosted weekly scrap review meetings with international colleagues to compare data and align on findings
- Collaborated with manager on root cause analysis using **fishbone diagram** to map potential causes from statistical data, operator insights, and scrap reviews
- Implemented and tested multiple solutions across different defect areas, using failed attempts to eliminate potential root causes and guide next steps

## Results & Impact

- Achieved **20% yield improvement** in motor housing process through systematic defect reduction sprints across five months
- Established sustainable data collection methodology for ongoing yield monitoring
- Documented actions to provide incoming production engineers with critical process context and decision rationale