

# Nathaniel Holguin

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## EDUCATION

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**B.S. in Mechanical Engineering** – **Northern Arizona University** – **Expected May 2026**

## PROJECTS

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**Capstone Project – Hydropower Collegiate Competition** – [Project Website Link](#) – **August 2025 – May 2026**

- Study and analyze hydropower to select an existing dam that could be implemented with hydropower system
- Full feasibility assessment of site to generate between 1 MW - 10 MW of energy
- Conceptual design of hydropower implementation onto selected dam site
- Interviews with industry professionals to understand, access, and try to fix industry problems
- Create a website for the team to provide all the information regarding the capstone project
- 50 page report detailing information found, work done, and team conclusions throughout the project
- Model a scaled down version of our selected turbine, set up and test its potential generated power by creating a Prony brake system and testing it in the fluids lab
- Gantt chart, BOM, Analyses, machine work, 3D printing, evaluating code, data collection and representation

**Wind Speed and Surface Factor Experiment** **October 2025 – December 2025**

- Create an experiment to calculate the local surface factor of our campus to understand how the wind speeds are affected by the surrounding trees and buildings of the campus at different heights

**Machine Design Gear Box** **January 2025 – May 2025**

- Design and create a fully functioning gear box within limited dimensions and required load

**Ultrasonic Sensor** **January 2023 – May 2023**

- Saw a problem in industry sinks so made a solution in an arduino sensor that could read when water levels were too high and automatically turn off the water

**Toy Project** **August 2017 – May 2021**

- Worked with my mother to create a program linked with my high school that creates toys for less fortunate children in a local hospital

## WORK EXPERIENCE

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**Manager – Yogurt Jungle** – [facebook.com/YogurtJungle](https://facebook.com/YogurtJungle) – **July 2019 – July 2024**

- Supervise and support five employees in completing responsibilities, including teaching new employees, providing feedback, and building community.
- Lead shop closes, ensuring that the register is balanced, the shop is clean, the electricity is off, all employee tasks are complete, and the doors are locked.
- Communicate promptly and regularly with employer about updates, issues at the shop, and feedback
- Stock ingredients, take inventory, and maintain knowledge of item prices and quantities.
- Maintain a clean and friendly environment at the shop.
- Complete cashier duties, including greeting customers, handling cash and credit card transactions, advertising new products and sales, and ensuring customer satisfaction.
- Stock ingredients, take inventory, and maintain knowledge of item prices and quantities.