

Alejandra Almonte

3almontealejandra@gmail.com | www.linkedin.com/in/alejandra-almonte- | +1 484-667-5094

EDUCATION

Princeton University	Expected June 2029
PhD in Civil and Environmental Engineering	
Northwestern University	June 2023
Bachelor of Science in Mechanical Engineering <i>Energy and Sustainability Concentration</i>	
Cumulative GPA: 3.6/4.0 Dean's List x6	
Université Sorbonne Nouvelle	August - December 2022
1 of top 5 students nominated to participate in the exchange program	

RESEARCH EXPERIENCES

Ka MoaMoa Lab , Research Intern	June 2022 - July 2023
<ul style="list-style-type: none">Conducted multi-month-long experiments to test the geometry and dimensions for cathodes and anodes in soil microbial fuel cells to power distributed sensor networks and low-power electrical transmission systemsDerived computational equations and programmed numerous models to mathematically represent electromagnetic energy harvesting behaviors undergoing human-motion or vortex-induced vibrations in streamsDesigned electromagnetic energy harvesters to power a health sensor by harvesting motion from a person walking	
McCormick Summer Research Fellowship	June 2021 - September 2021
<ul style="list-style-type: none">Awarded \$5000 for proposal: Designing a Subway Train to Reuse Wasted EnergyDesigned a bio-inspired acoustic energy harvesting device that mimics the impedance matching of human ear bonesMeasured wind speeds and sound intensity in NYC subways and determined sources of wind and acoustic energy to convert into usable electrical energyCreated a design of a subway system which incorporates my biomimetic acoustic energy harvester and includes designs to harness wind energy	

PROJECTS

Li-ion Backup Battery System	January 2023 - June 2023
<ul style="list-style-type: none">Designed and built a system to monitor grid power supply, store energy, and supply power to a custom PID controller in the event of any disruption to the grid power, while also providing app notification of disruptionResponsible for thermal analysis, with ANSYS, other computational thermodynamics, and experimental testing in order to design cooling systemMarket evaluation and competitive analysis of current Li-ion energy sources and conducted a global, societal, economic, and environmental analysis	
Ecollekt	January 2022 – March 2022
<ul style="list-style-type: none">Developed from ground up, a startup venture that leverages the advantages of compost, with 3 graduate studentsInvestigated and analyzed applicability of thermal energy harvesting practices to apply in compost processFormulated business model and techno-economic model of compost collection to create biogas and rich fertilizer	
Auto-aquaponic System	March 2020 - June 2023
<ul style="list-style-type: none">Collaborated in a multi-disciplinary team to construct a fully automated, sustainable farming systemCreated and implemented a sensor isolations system to eliminate electrical interference in a water tank	
Smart Tree	September 2019 - March 2021
<ul style="list-style-type: none">Designed a modular, weather resistant, mobile table space with solar powered outlets to be used by students	
Medela Pump In Style Recycling Protocol	April 2020 - June 2020
<ul style="list-style-type: none">Assembled a system to take apart and properly dispose of a Medela Pump, through material and process analysis and Life Cycle Analysis	
Magnetic Gloves for Individuals with Hemiplegia	January 2020 – April 2020
<ul style="list-style-type: none">Pitched a prototype, with 3 other engineering students, of a seamless, magnetically detachable glove for limited fine motor skilled hands	

Remote Controlled Hovercraft

August 2017 - June 2019

- Built a custom model RC hovercraft using 3D printing technology

Compost System

March 2018 - June 2018

- Developed, coordinated, and maintained a compost system for 1500+ people
- Presented a successful proposal to various parts of the administration, allowing me to initiate this compost program

EXPEDITIONS

World Circumnavigation, *Solo Expedition*

August 2023 – November 2023

- Started in the US to New Zealand (North and South Islands) to Australia to China to England returning to the US

Economic Study, *National Geographic*, Morocco

June 2019

1 of 10 students accepted globally

- Interviewed and surveyed locals in the High Atlas Mountains regarding their economic opportunities, focusing on the nomadic lifestyle and economy
- Built and planted a sustainable farm with traditional irrigation techniques
- Applied traditional building methods to construct a rest stop for nomad traders

Climate Change & Geology Study, *National Geographic*, Iceland

June 2017

1 of 20 students accepted globally

- Tracked and analyzed the status of bodies of water throughout Iceland based on PH, ppm, and chemical composition
- Interviewed local Icelandic population to contextualize the economic and societal implications of climate change

LEADERSHIP EXPERIENCES

President of Northwestern American Society of Mechanical Engineers

September 2020 – June 2021

- Introduced two new, relevant engineering projects for members to join to get real world experience
- Lead general member meetings, project meetings, and executive team meetings
- Coordinated bi-weekly workshops teaching students skills, tips for navigating the curriculum, and professional advice
- Facilitated and supported outreach campaigns, which more than quadrupled the club's size

Communications Chair for Northwestern University Outdoors Club

April 2020 – June 2023

- Sent out all communications on behalf of club
- Coordinated with exec team to lead and bring about weekly events and trips for Northwestern's community
- Created, organized, and led a kayaking trip that has secured permanent funding from our Associated Student Government
- Ran a social media campaign that increased engagement tenfold, with posts reaching more than 16k views

Intramural Chair for Willard Residential College

March 2020 – June 2021

- Coordinate intramural teams to compete in several different sports to represent a 200+ student residential college
- Captained each sports team and created leadership roles for members to take on

AWARDS & RECOGNITIONS

A Class of 2023 Grad to Watch in Energy and Sustainability

June 2023

Circumnavigator Grant *First Runner Up*

December 2021

- Proposed a research expedition to create a guidebook outlining a design process that centers processes found in nature
- Arranged collaborations with engineers and architects in Zimbabwe, Italy, Morocco, Bhutan, and New Zealand

Alliance Française French Alum Speaker

May 2023

- Chosen to speak on behalf of American exchange students in the French Embassy in Chicago

McCormick Design-A-Thon Finalist

November 2020

OTHER ACTIVITIES

Society of Professional Hispanic Engineers	September 2019 - June 2023
The Black Forest Summit, Karlsruhe, Germany, Model UN Conference	November 2022
• 1 of 23 students accepted, Economic and Financial Committee, Representative of la Sorbonne	
Northwestern University Art Union	September 2021 - June 2023
Northwestern Futsal IM Team Captain (x2)	Winter 2021, Winter 2022
U.S. Futsal Northeast Regional Champion	February 2018

Technical Skills: MATLAB, Python, Engineering Equation Solver (EES), NX, AutoCAD, SOLIDWORKS, Onshape, Thermal Energy Systems Design, Electronics Design, Statistical Mechanics, Science Embedded Programming, Machining (Mill/Lathe, Laser Cutter), GD&T, FDM 3D Printing, Electronic Schematics, Mechatronics, Microsoft & Google Office Suites

Research Skills: Scientific Writing, Literature Review, Grant and Fellowship Proposals, Design Sketching, Hazardous Material Training, Lab Safety, Data Analysis, Data Collection, Lab Instrument and Equipment Usage, Assembly of Force Measurement Instruments, Research Expedition Experience, Interviewing Methodology

Languages: English [Native Fluency], Spanish [Fluent], French [Advanced Proficiency (C1)], German [Elementary]