Mechanical Engineer with expertise in structural design and analysis, and design for manufacture and assembly (DFMA). Master’s Degree in Mechanical Engineering with a thesis focused on finite element analysis of nanomaterials with both numerical and laboratory research work. I aim to use my research, design, and analysis backgrounds to develop the next generation of sustainable technologies.

# EDUCATION

## MASTER OF SCIENCE IN MECHANICAL ENGINEERING *Sep 2020 – Mar 2023*

***University of Washington, Seattle, WA***

### Thesis: Large Strain Finite Element Analysis of Spinodal Shell Structures

* Created finite element analysis (FEA) models in Abaqus to replicate experimental results, helping to study fundamental material behaviors.
* Developed Python scripts for FEA postprocessing, to quantify structural behavior, stress distribution, and damage localization.
* Used MATLAB to generate FEA shell meshes of complex nano-architected materials.
* Studied nanomaterial behavior in harsh environments using dynamic and thermal FEA.

### Courses and Projects:

* Courses: Renewable Energy, Battery and Solar Cell Manufacturing, FEA, Elasticity, Composite Design and Analysis, Nanocomposites and Biocomposites.
* Research projects: Self-assembly and 3D printing of lithium-ion battery electrodes. Manufacturing and material properties of fungus and bacterial cellulose-based biocomposites.

## BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING *Sep 2002 – Jun 2006*

***University of Washington, Seattle, WA***

* Projects: Formula SAE drivetrain design, Fuel cell manufacturing capstone.

# WORK EXPERIENCE

## DISCRETE LATTICE INDUSTRIES, Seattle, WA *Jun – Sep 2021*

### Mechanical Engineer

* Conducted trade studies on the use of an injection molded composite lattice structure in wind turbine blades.
* Performed FEA in Ansys and hand stress analysis to determine blade deflection and optimal structural parameters of a lattice-based wind turbine blade.
* Developed Python and MATLAB scripts for structural calculations and Ansys postprocessing.
* Used NuMAD for 3D modeling of the wind turbine blade and OpenFAST to conduct aerodynamic simulations.

## KATERRA, Seattle, WA *Mar 2019 – Jun 2020*

### Manufactured Assemblies Design Engineer

* Developed bathroom kits for residential buildings, to support factory assembly and cost reductions. Used SolidWorks to provide 3D models, BOMs and drawings.
* Built bath kit prototypes to test functionality, strength, and manufacturability.
* Used Catia 3DExperience scripting to automatically generate CAD models, drawings, and CNC files for factory-built, mass-produced wall panels.

## SAFRAN AEROSYSTEMS, Everett, WA *Apr 2015 – Mar 2019*

### Design and Integration Engineer

* Led design work on the 737 Airstair, developing design solutions within difficult constraints, and conducting prototyping and testing of the design to support on-time delivery.
* Conducted root cause analysis of failed aircraft waste valves using tolerance analysis and disassembly of failed parts, and developed test plans to validate the revised design.
* Designed an aircraft galley drain system integrating structure, sensors, and plumbing.

## BOEING COMMERCIAL AIRPLANES, Everett, WA *Sep 2006 – Nov 2012, Sep – Dec 2014*

### Structural Design Engineer

* Designed structural parts and assemblies on 747-8 and 767, using CATIA V5 to define 3D models and 2D drawings.
* Coordinated with production facilities, applying DFMA from concept to production.
* Worked with cross-functional teams to manage design completion and define interfaces.
* Developed design solutions to factory production problems.

## KVICHAK MARINE INDUSTRIES, Seattle, WA *Nov 2012 – Jan 2014*

### Project Engineer

* Developed structure and systems designs for aluminum hulled boats, for use in extreme environments.
* Worked from concept to production, providing designs and drawings in Solidworks.

# SKILLS AND INTERESTS

* Finite element analysis (Abaqus, Ansys)
* Composite design and stress analysis
* Python, MATLAB
* Validation test design
* Mandarin Chinese professional working proficiency
* Mechanical design and CAD modeling (Solidworks, CATIA), GD&T
* Dedicated to working toward the clean energy transition