Seiji Engelkemier

https://seijiengelkemier.net | seijieng@mit.edu

EDUCATION

PhD in Mechanical Engineering, MIT (Expected) 2026
MS in Mechanical Engineering, MIT 2023
BS in Mechanical Engineering, MIT 2019

EXPERIENCE

Atomistic Simulation and Energy Research Group Cambridge, MA
Research Assistant 2021 - Present

- Designing and testing high temperature (>1000°C) components for gas-solid separation in methane pyrolysis system for CO_2-free hydrogen production
- Characterizing particles with powder-flow experiments and parameter estimation (simulation & optimization) to infer hard-to-measure particle properties
- Simulating gas-solid flow with CFD-DEM to identify range of stable system operating conditions

Biobound Elements (MIT Climate & Energy Ventures Class) Cambridge, MA
Team Member Sep - Dec 2024

- Developed business plan for patent-pending engineered protein developed by MIT lab for separation of rare earth elements critical to energy transition and national security
- Conducted market research and built techno-economic model used for $2.5M DOE grant application

MIT Energy Initiative Cambridge, MA
Research Assistant 2019 - 2021

- Assessed strategic design trade-offs and conducted techno-economic analysis of energy storage systems
- Authored chapters on thermal and compressed air energy storage for *Future of Energy Storage* report; findings presented to AAAS, DOE, CSIS, FERC, and congressional staff

Cata Cooling Cambridge, MA / Houston, TX
Co-founder Jan - Dec 2020

- Providing heat safety solutions to industries with outdoor workers through wearable cooling-as-a-service
- Performed primary market research incl. competitor product testing and ran field trials throughout Texas
- Raised MIT Sandbox funds (non-dilutive) and angel investment, co-authored 2 provisional patents

Global Engineering (Senior Capstone) Cambridge, MA
Team Member Sept - Dec 2018

- Worked with Kenya-based startup for more affordable solar-powered drip irrigation systems
- Patented control algorithm to efficiently operate drip-coupled pump and co-authored ASME conference paper

Ecovative Design Troy, NY
Core Research Intern June - Aug 2018

- Designed, built, and operated lab scale solid-state fermentation reactor for high-throughput experimentation of mycelium used in products for sustainable packaging, building material, furniture
- Developed cost models to explore opportunities with potential clients and new markets

SKILLS

Computational MATLAB, Python, SolidWorks, C++ (Arduino)
Physical Lathe, Mill, Laser Cutter, 3D Printing, Injection Molding, Microcontroller, Bench tools
Langauges English (native), Japanese (beginner)