

Bianca Champenois

(650) 796-1808 — bchamp@mit.edu

Education

Massachusetts Institute of Technology — MS / PhD Mechanical Engineering

Sep 2020 -

University of California, Berkeley — BS Mechanical Engineering, 3.92 GPA

Aug 2016 - May 2020

Relevant Coursework:

Mechanics, Dynamics; Fluid Mechanics; Thermodynamics; Heat Transfer; Dynamic Systems and Feedback; Finite Element Analysis; Energy Conversion Principles; Mechatronics; Energy and Society; Engineering, the Environment, and Society; Stories of Sustainability; Three Dimensional Modeling and Design; Programming for Engineers; Structure and Interpretation of Computer Programs; Information Devices and Systems; Data Structures; Data Science

Work Experience

DAAD RISE / Research Assistant (Technische Universität Hamburg, Germany)

May 2019 - Aug 2019

Wrote control and reinforcement learning algorithms to maximize the power output from an Acrobot pendulum that is vertically excited by ocean waves. Used LabVIEW and Raspberry Pi to collect data on the performance of the pendulum.

Envtl. Fluid Mechanics and Hydrology Lab / Research Assistant (UC Berkeley)

Jan 2019 - PRESENT

Set up instruments and experiments to study the effect of surface flow on methane emissions from wetlands. Used Raspberry Pi to collect data on the relationship between the flow velocity and the rate of diffusion of gases.

Cal Energy Corps / Research Assistant (Tecnológico de Monterrey, México)

May 2018 - Aug 2018

Designed PCBs for power converters for renewable energy integration. Selected and assembled passive and active components for circuits. Tested the converter and gathered data on its performance at high voltages and currents. Used LabVIEW to simulate the converter and design controllers to adjust the duty cycle of the circuit.

BicyCAL / Head Mechanic (UC Berkeley)

Oct 2017 - PRESENT

In charge of running and maintaining a student-run bike shop, leading repairs and teaching customers how to fix their own bikes. Held weekly workshops for women to learn in an inclusive environment. Organized and taught a semester long class with lectures, worksheets, and assignments on bike repair and maintenance. Mentored students at Richmond High School through the process of building and designing an electric bike for a competition.

Activities and Projects

Mâché Machine, the Paper Downcycler

Aug 2019 - Dec 2019

Designed and built a mechatronic control device that produces new sheets of paper from recycled paper pulp. The aluminum machine uses stepper motors and pneumatic actuators to pour the pulp onto a screen, compress the pulp under a roller, flip the sheet of paper onto felt, and dry it. Finalist for CA Mechanics Design for Greater Good competition.

Pressure Field of a Heart Ventricle

Apr 2019 - May 2019

Used the Navier-Stokes equations to determine the relationship between velocity and pressure. Modeled the pressure field of a heart ventricle in FEniCS using data on the velocity of blood flow.

Jacobs Institute Innovation Catalysts Spark Grant: Binary Marbles

Jan 2019 - May 2019

Designed and manufactured a binary calculator that uses mechanical gates and marbles to represent electrical transistors and current. The final product teaches anyone interested in computer science about binary, computer architecture, abstraction, and logic in a unique and interactive way. Presented project at the Futures of Academic Making symposium.

Solar Spring Break / Fundraising Leader

Aug 2016 - May 2017

Led a team of 12 students to raise \$5,000 for Grid Alternatives. Installed solar panels on underserved Richmond residences over spring break while learning about the renewable energy industry.

Skills and Awards

Technical: Python, Java, MATLAB, Pandas, ROS, AutoCAD, SolidWorks, Fusion, KiCad, Machine Shop Trained.

Language: Fluent in French and Spanish.

Awards: National Science Foundation (NSF) Graduate Research Fellowship (2020)