Benjamin Wong

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EDUCATION

University of British Columbia

- Master of Applied Science in Mining Engineering — Sep 2021 – Present
  Research thesis on using computer vision and numerical optimization to assist with ore sorting and classification.
- Bachelor of Applied Science in Mining Engineering — Graduated May 2021

PROGRAMMING PROJECTS

GradientDescentPlayground | Python — Aug 2021

- A case study into gradient descent, a numerical optimization algorithm. Built to better understand the mathematics behind certain machine learning algorithms.

Renderer | Java — May 2021

- Built a 2D graphics rendering pipeline. Polygons can be created and deployed on a plane, which the user can pan, rotate, and zoom in or out of.

Snakeinator | Java — Feb 2021

- A '*Snake*' clone with added features including poison bottles, the ability to cut off its own tail, and wrapping around the game map.
- Built to experiment with handling various user inputs and used Java's Swift library for graphics manipulation.

UBCHelios | Python — Jun 2019

- A script to perform calculations for required energy constraints and volatile procurement for the paper '*Project HELIOS Phase I: The Extraction of Helium-3 in Lunar Regolith for Aneutronic Nuclear Fusion*'.

ChickenSim | Java — Oct 2017

- An iterated prisoner's dilemma simulator where custom strategies are pitted against each other in a genetic programming model in which successful strategies eventually become more common.

EXTRACURRICULAR ACTIVITIES

Director of Project HELIOS, UBC Mars Colony — November 2018 – March 2020

- Managed day-to-day operations and developed long term plans for Project HELIOS, an engineering design team focused on mining lunar regolith for isotopic helium.
- Led the team to deliver a conference paper on lunar mining at the International Astronautical Congress.

PUBLICATIONS & AWARDS

Primary Author, Project HELIOS Phase I: The Extraction of Helium-3 in Lunar Regolith for Aneutronic Nuclear Fusion — Oct 2019

- *17th IAA Symposium on Visions and Strategies for the Future.*
- *70th International Astronautical Congress 2019, Washington, D.C.*

Finalist, Innovation Onboard Startup Competition — Feb 2018

- Modelled the framework for an identity protocol built on Ethereum.
- Designed for use by governments and private entities for trustless information sharing.