# Caleb Biddulph

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Github | LinkedIn | Portfolio

## SUMMARY

Cornell student with 5 years of experience creating innovative programming projects, interested in further developing skills through a challenging internship

## EDUCATION

**Cornell University**
Computer Science, BS
Expected May 2023 | Ithaca, NY
College of Engineering
Dean's List
GPA: 3.706 / 4.0

## COURSEWORK

Spring 2021
Computer Organization
Probability and Statistics
Fall 2020
Machine Learning
Computer Organization
Probability and Statistics
Spring 2020
Object-Oriented Programming
Linear Algebra
Differential Equations
Fall 2019
Discrete Structures
Multivariable Calculus
Operations Research
High School
Data Structures
Mobile App Development
Video Game Design

## SKILLS

Languages:
Java • Python • C# • Ruby • Swift
HTML5 • CSS • JavaScript • SQL

Tools:
Visual Studio • Ruby on Rails
Unity Game Engine • Xcode
Windows Command Line • Vim

## CAREER INTERESTS

Software Engineering
Artificial Intelligence
Algorithm Design
Modelling/Simulation

## EXPERIENCE

### ECHOAR | Software Engineer Intern
September 2020 – November 2020
- Assisted in the development of a cross-platform real-time cloud engine
- Created tools and infrastructure to help developers build AR/VR applications
- Wrote backend functionality to download and zip associated files with Java

### CAPE CRYSTAL | Research Assistant
September 2020 – Present | Ithaca, NY
- Wrote an algorithm in Python to classify 3D crystal structures
- Implemented BFS to partition nearby particles of the same grain
- Used SSH to access data from Linux cluster and analyzed it with Matplotlib

### CORNELL AUTONOMOUS BICYCLE | Project Team Member
February 2020 – Present | Ithaca, NY
- Implemented the pure pursuit path-following algorithm in Python, allowing the team's robotic bike to drive without human intervention
- Wrote code to convert routes from Google Maps API into a list of coordinates

### THREE BEARS | Software Engineer, Entrepreneur
May 2020 - August 2020
- Developed a website in Ruby on Rails that allows users to record events
- Designed an interactive timeline interface in HTML/CSS/JavaScript
- Presented a business plan in a pitch competition as part of ORIGIN Bootcamp, a summer program for startups

## PROJECTS

### POLYGON ART GENERATOR [link]
- Developed a program in Python that automatically synthesizes visually-pleasing polygon art from photos
- Program reduces unappealing jagged edges by decreasing color variance per triangle to under 50%, compared to the naive solution

### NEURAL NETWORK / ADVERSARIAL ATTACKER [link]
- Implemented a neural network in Python that recognizes handwritten digits using the MNIST dataset with up to 95% accuracy
- Designed a white-box algorithm that adds noise to an MNIST image to fool the neural network into identifying it as the wrong digit
- Adversarial images differ from original by only 2%

### "CAMEL UP" AI PLAYER [link]
- Hand-coded an AI in Java to play a strategy board game
- Solution uses Monte Carlo analysis to choose ideal moves given board layout and past behavior of other players

## LEADERSHIP/AWARDS

- Academic Officer in the Association of CS Undergraduates at Cornell
- Cornell Orientation Leader, Fall 2020 - mentored incoming students
- 1st place in the world - Destination Imagination Scientific challenge
- Eagle Scout, one of ~300 Scouts in history to earn every merit badge
- Rookie All-Star and Highest Seed Award - FIRST Robotics Competition
- 4th place of 22 - Games Factory Jam 5