Caleb Biddulph

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Github | LinkedIn | Portfolio

EDUCATION

Cornell University
Computer Science, BS
- Expected May 2022
- GPA: 3.8 / 4.0
- Dean's List

COURSEWORK

Fall 2021
- Natural Language Processing
- Analysis of Algorithms
- Systems Programming

Spring 2021
- Reinforcement Learning
- Functional Programming
- Computer Vision
- UNIX Tools and Scripting

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

SKILLS

Languages:
Python • Java • C • OCaml • Swift
JavaScript • HTML • CSS • Ruby

Tools:
Vim • Git/Gerrit • IntelliJ • UNIX
Unity 3D • Elasticsearch • Xcode

CAREER INTERESTS

- Backend Development
- AI Research
- Data Science
- Full-Stack Development
- Algorithms

EXPERIENCE

THOUGHTSPOT | Software Engineer Intern (Search Team)
June 2021 – August 2021 | Sunnyvale, CA
- Built a graph in Elasticsearch linking past queries in our internal search engine to clicked results and accessed this data to enhance search rankings
- Clustered together sensibly-related queries and clicks in this graph with Python
- Affixed new types of messages and phased out old types with Elasticsearch/Java

CAPE CRYSTAL | Research Assistant
September 2020 – June 2021 | Ithaca, NY
- Classified crystal structures in Python based on Stukowski paper [arXiv]
- Implemented BFS to partition nearby particles of the same classification
- Classified more varied and complex structures using K-Means
- Processed data on lab's Linux cluster and analyzed it with Matplotlib

ECHOAR | Software Engineer Intern
September 2020 – November 2020 | New York City, NY
- Wrote backend functionality to download and zip associated files with Java
- Created a demo of the company's AR technology in Unity 3D [GitHub]

CORNELL AUTONOMOUS BICYCLE | Project Team Member
February 2020 – Present | Ithaca, NY
- Implemented Pure Pursuit to make our robotic bike autonomously follow a path
- Integrated VFH [paper] with Pure Pursuit to avoid obstacles using Python
- Converted routes from Google Maps API into a format readable by the bike

PROJECTS

"PHOTOSYNTHESIS" SIMULATOR [GitHub]
- Created a user interface for a board game with a team of 3 in OCaml
- Fully designed a colored ASCII renderer with layers and complex functionality
- Identified a use case of the Ford-Fulkerson algorithm to validate player moves

POLYGON ART GENERATOR [GitHub]
- Developed Python program that synthesizes polygon art from photos
- Reduced jagged edges with an algorithm that decreases color variance per triangle by more than 50% compared to the naive solution

NEURAL NETWORK / ADVERSARIAL ATTACKER [GitHub]
- Designed a white-box algorithm that adds noise to an MNIST image to fool a neural network into misclassifying it as a given digit
- Adversarial images differ from original by only 2% on average

LEADERSHIP/AWARDS

- President of the Cornell Effective Altruism club, Fall 2021 - Present
- Academic Officer in the Association of CS Undergraduates at Cornell
- Course staff for Functional Programming at Cornell, Fall 2021
- Cornell Orientation Leader, Fall 2020/2021 - mentored incoming students
- Eagle Scout, one of ~300 Scouts in history to earn every merit badge
- 1st place in the world - Destination Imagination Scientific challenge