Wyatt McCarthy

917-828-6668 | wmccarthy24@amherst.edu | https://wmccrthy.github.io/

EDUCATION

Amherst College, *Amherst, MA | BA in Computer Science* Expected December 2024

- **GPA:** 3.8/4.0 **SAT:** 1550/1600
- NESCAC All-Academic Student-Athlete on Men's Varsity Soccer, NCAA National Championship Runner-Up 2021, NESCAC Tournament Champion 2022, NESCAC Tournament Champion 2023, CSC Academic All-District Team 2023, NCAA National Championship Runner-Up 2023
- Extensive coursework in Math, Economics, and Computer Science (Industrial Organization, Microeconomics, Macroeconomics, Multivariable Calculus, Linear Algebra, Data Structures, Algorithms, Artificial Intelligence, Computer Systems, Networks, Databases)

The Beacon School, *New York, New York | High School Diploma* June 2020

- **Activities and Societies:** Varsity Soccer, High Honor Roll

RELEVANT COURSEWORK

Data Structures & Algorithms

- Data Structures Curriculum Focus: Lists, Stacks, Queues, Binary Search Trees, Hash Tables, Graphs, Dictionaries, Abstraction
- Algorithms Curriculum Focus: Algorithmic Paradigms (Divide and Conquer, Greedy, Dynamic Programming) and Implementation, NP Completeness

Artificial Intelligence Fall 2022

- Curriculum Focus: Search, Adversarial Search, Reasoning Under Uncertainty, Reinforcement Learning
- Projects Completed: Implemented algorithms for path-finding, adversarial search, reinforcement learning, and particle filtering to create artificial intelligence agents for Pacman in various observable and unobservable environments. Algorithms: A* search, Minimax, Q-Learning, Joint Particle Filtering

Computer Systems Spring 2023

- Curriculum Focus: C, Assembly, Linux, Git, ISAs, Virtual Memory, Caching, Memory Management, Threads and Synchronization, Virtual Machines, File Systems, Embedded Systems

Algorithms and Visualization Spring 2023

- Curriculum Focus: HTML, CSS, and JS, jQuery, Recursion and Dynamic Programming, Computational Geometry and Visualization, Graph Visualization

Databases Fall 2023

- Curriculum Focus: Entity-Relationship Model and Algebra, SQL, Relational Algebra Operation in DBMS, Disk Layouts, Query Planning, Concurrency Control

WORK EXPERIENCE

Roblox, *Incoming Software Engineer Intern* Summer 2024

Massachusetts Institute of Technology CSAIL, *Undergraduate Research Assistant in Regina Barzilay Group* Spring 2024

DegreeCat, *Software Engineer Intern* July 2023 - November 2023

- Responsible for brainstorming and participating in discussions regarding the development of DegreeCat's web application in the company's very early stages.
- Self-taught and worked in the MERN (MongoDB, Express JS, React, Node JS) stack to contribute to the early stages of DegreeCat's web app/website.

Amherst College, *Amherst, Massachusetts | Computer Science Teaching Assistant/Tutor* October 2022 - Present

- Assisted Professor Mihaela Malita in overseeing a lab period; assisted students with programming fundamentals in Java.
- Tutored students across Intro to Computer Science, Data Structures, Algorithms, and Artificial Intelligence, strengthening my mastery of programming fundamentals.

A2 Aviation, *New York, New York | Operational Manager and Tech Lead* June 2021 - Present

- Responsible for market research, negotiating sales and purchasing transactions, and handling relevant paperwork. Identified profitable purchases that met the company's and our clients' specifications; facilitated the purchasing and sales operations behind over $1 million in product sales.
- Wrote Python scripts and developed simple web applications with vanilla JavaScript to streamline our sales management processes. Scripts automated previously manual processes like the creation and maintenance of a company directory, sales and profit data log, and market pricing data log.

PROJECTS

Amherst Athletics Database 🔗 October - December 2023

- Developed ER model for Amherst athletes' Catapult Sports GPS data and created PostgreSQL database around said model.
- Built full-stack app with PERN (postgres, react, express, node) stack that interfaces with PostgreSQL database, providing users various means of visualizing existing data and uploading new data.
- Amherst Strength and Conditioning coaches hope to utilize the app for performance insights in upcoming collegiate seasons.

Pathfinding Algorithm Visualizer 🔗 November 2022/April 2023

- Applied fundamental concepts learned in Artificial Intelligence and Algorithms courses to create a program for visualizing pathfinding algorithms in Python. Have since remastered the project and reimplemented it using HTML, CSS, and JavaScript.
- Mastered the logic of these algorithms such that the program can demonstrate an algorithm's final product and how it produces such a result on an iterative and/or recursive level.

Checkers AI 🔗 November - December 2022

- Designed a checkers game in Python with pygame such that an AI agent to play against the user could be smoothly implemented.
- Implemented relevant logic to create an evaluation function/heuristic for the board state. Used evaluation function to implement the minimax and expectiminimax algorithms. Used presorting, alpha-beta pruning, and transposition tables to optimize minimax, increasing algorithm computation speed by over 10x.
- Wrote scripts to simulate games such that I could test the empirical efficiency of various minimax optimizations. Used test results to further refine, debug, and optimize the algorithm based on trends of worst-case and best-case runtimes.

SKILLS & INTERESTS

Proficient in: Java, Python, JavaScript, HTML, CSS, Excel/Google Sheets **Have Worked With:** Git, ExpressJS, NodeJS, Tailwind CSS, React, C/C++, jQuery, SQL, Assembly, Linux **Tools and Software:** VSCode, IntelliJ, MongoDB, Postman, PostgreSQL, QuickBooks Online

Soft Skills: Time Management, Tutoring, Leadership, Teamwork, Interpersonal Communication, Negotiation, Project Management, Work Ethic

Interests: I truly enjoy the way programming challenges you to problem solve and its unlimited creative potential. I have always been fascinated by algorithms and have found programming to be my greatest means of exploring and applying algorithmic thinking to creative expression/building projects. I am particularly interested in the development and application of algorithms. Outside of school, I am interested in soccer, calisthenics, rock climbing, and general health/wellness. I dedicate over 20 hours a week to my athletic pursuits and believe the maintenance of my physical health allows me to perform at my highest level in the classroom and workplace.