

# Wyatt McCarthy

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## 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, National Championship Runner-Up 2021, NESCAC Tournament Champion 2022
- Extensive coursework in Math and Economics (Industrial Organization, Microeconomics, Macroeconomics, Multivariable Calculus, Linear Algebra)

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

June 2020

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

## RELEVANT COURSEWORK

### Data Structures

Spring 2022

- Curriculum Focus: Lists, Stacks, Queues, Binary Search Trees, Hash Tables, Graphs, Dictionaries, Abstraction

### Algorithms

Fall 2022

- 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: Fundamentals of HTML, CSS, and JS, jQuery, Recursion and Dynamic Programming, Computational Geometry and Visualization, Graph Visualization

## WORK EXPERIENCE

**DegreeCat, Software Engineer Intern**

August 2023 - Present

- DegreeCat is a very early-stage start-up and we (the software engineering team) are still working on the foundational components of our product's development.
- 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 various components 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 CS 111 - CS 211 (Intro to Computer Science - Data Structures) utilizing and strengthening my own knowledge 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.
- Responsible for overseeing the integration of accounting and sales management software within our operations and training incoming employees in their use.

## PROJECTS

**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.
- Analyzed runtimes of the minimax algorithm with/without various optimization techniques over thousands of trials to determine the empirical correctness and efficiency of the methods. Used analysis results to further debug and optimize specific cases of the algorithm based on trends of worst-case and best-case runtimes.

**Personal Website**

March - April 2023

- Developed a website to display and track personal information about academic and personal endeavors.
- Utilized fundamentals of HTML, CSS, and JavaScript.

**Graham Scam Visualizer**

March 2023

- A webpage made with HTML, CSS, and JavaScript that allows users to visualize the finding of convex hulls via the Graham Scan algorithm. The program provides users with various means of stepping through and visualizing the algorithm, as well as configuring the set of points upon which the algorithm is run.

## SKILLS & INTERESTS

**Skills:** Tutoring, Time Management, Problem Solving, Microsoft Office, Object-Oriented Programming, Data Structures, Algorithms, Java, Python, HTML, CSS, JavaScript, React, Node JS

**Interests:** I truly enjoy the way programming challenges you to problem solve as well as its unlimited creative potential. It has become both a hobby and a passion since I first learned to code. I have always been fascinated by algorithms and have found programming to be my greatest means of exploring and applying algorithmic thinking. To date, I have extensive experience in both Java and Python though I have some experience with HTML, CSS, and JS. I am particularly interested in the development of artificial intelligence. Outside of school, I am interested in soccer, calisthenics, rock climbing, and general health/wellness.