

# Wyatt McCarthy

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## EDUCATION

**Amherst College, Amherst, MA** | *BA in Computer Science*

Expected May 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

**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** | *Purchasing Specialist*

June 2021 - Present

- A2 Aviation is a specialist in the supply, exchange, and repair of commercial aircraft spare parts.
- Responsible for market research, negotiating purchase agreements, and completing purchase orders.
- Identified profitable purchases that met the specifications of the company and our clients; facilitated the purchase and receipt of over \$150k of product.

## 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 related to 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.

## LEADERSHIP EXPERIENCE

**Soccer Hamptons, New York, New York** | *Founder*

May 2020 - Present

- Launched soccerhamptons.com, a soccer instruction service curated to clients' individual needs. Developed business from conception to execution at the beginning of the COVID pandemic, recognizing a need in the community for this type of service.
- Analyzed the fixed and variable costs of our service to set profitable but market-competitive prices.
- Networked to build a core client base that rapidly expanded. Developed and maintained lasting relationships with clientele.
- Generated revenue of \$10k within the initial four months.

## SKILLS & INTERESTS

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

**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 very interested in soccer, calisthenics and general health/wellness.