Ethan McCartney

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Education

Rensselaer Polytechnic Institute (GPA: 3.41) — Aug. 2021 - May 2025, *Troy, NY*

- B.S. Computer Science - (*with a strong foundation in Engineering)*
  - Completed coursework equivalent to ~2 years in Mechanical Engineering in addition to 2 years of Computer Science.
- Dean's Honor List & Member of National Society of Leadership and Success (NSLS).

Work Experience

Potdevin Machine Systems Engineer - *(Internship)* — May 2023 - Aug. 2023, *Madison, CT*

- Constructed a bill of materials database containing information on raw materials, manufactured parts, routing information, and vendors.
- Programmed a Python script that expedited the migration of legacy files to a format seamlessly compatible with the new database, speeding up the database construction process by ~ 400%.
- Designed and implemented a new part numbering system that is compatible with the old numbering system, while also organizing parts into categories based on their material and shape.

Physics I & II Tutor - *(Leadership Position)* — Dec. 2022 - May 2023, *Troy, NY*

- Provided weekly drop-in tutoring sessions with physics I and II students. Reviewed lecture material & homework, covered practice exams, and addressed any academic challenges encountered by students.

Physics I Mentor - *(Leadership Position)* — Aug. 2022 - Dec. 2022, *Troy, NY*

- Prepared lessons and conducted two weekly classes of 10-15 students each, reviewing Physics I lectures, practice problems, and quizzes.
- Coordinated meetings with struggling students to help them keep up with academic responsibilities.
- Proctored several practice exams to help students prepare for exams.

Projects

Natural Language Processing AI - *(Personal Project)* — Jul. 2023 - Aug. 2023, *Madison, CT*

- Designed and deployed a Natural Language Processing (NLP) AI in Python utilizing state-of-the-art transformer architecture using the PyTorch library. Employing a supervised learning technique, the model was able to achieve a 1.52 cross-entropy loss on the validation set.

Mini-BLAST Algorithm Implementation — Apr. 2023 - Apr. 2023, *Troy, NY*

- Designed an extremely efficient miniature version of the Basic Logical Alignment Search Tool (BLAST) in C++ that implements a custom hash function & table to search a large DNA sequence for similar matches within a user-defined error range.

Recursive Cross-Word Puzzle Algorithm — Mar. 2023 - Mar. 2023, *Troy, NY*

- Engineered a recursive algorithm in C++ to generate all possible crossword puzzles from a user-defined list of included words, excluded words, and puzzle dimensions.
- Leveraging a dynamic blend of depth-first and breadth-first search techniques, along with strategic symmetry utilization, the algorithm achieved remarkable computational efficiency, outperforming 80% of benchmarked algorithms in speed and performance metrics.

Wordle Solver - *(Personal Project)* — Nov. 2021 - May 2022, *Troy, NY*

- Programmed an algorithm in Python capable of achieving 100% accuracy in solving the "Wordle" puzzle from The New York Times, completely independent of any external information.

Web Scraper Bot - *(Personal Project)* — Feb. 2021 - Nov. 2021, *Madison, CT*

- Developed a self-sustaining web scraping bot in Python that autonomously monitored websites, successfully securing the availability of high-demand Graphic Processing Units (GPUs) during a global shortage on two occasions.

Other Skills & Interests

Technical

Python, C++, C, R, HTML5, CSS, Object Oriented Programming (OOP), Linux, MacOS, Windows, Siemens NX, Solidworks, Microsoft suite

Interests

Learning new things, programming, AI, robotics, camping, fishing, soccer