

Zach Gillette

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SWE and Data Engineering Intern Studying at Vanderbilt University

Education

- B.A. Applied Mathematics, Computer Science, *Vanderbilt University* | *Nashville, TN* 2023-2025
B.A. Computer Science, Linguistics, *Swarthmore College* | *Swarthmore, PA* (transferred) 2021-2023
Diploma, *Belmont High School* | *Belmont, MA* 2017-2021

Courses (math): Differential Equations, Linear Algebra, Multivariable Calculus, Graph Theory, Discrete Mathematics

Courses (computer science): Algorithms, Machine Learning, Artificial Intelligence, Software Design, Programming Languages

Experience

Software Engineering Intern, *John Hancock* Summer 2024

- ❖ Utilized SQL in Azure Synapse and Python to identify and correct data inconsistencies in ingestion pipelines, ensuring accurate data for business analysts.
- ❖ Enhanced a data validation tool for multiple databases (Synapse, DB2, Oracle, SQL Server), automating the validation process and eliminating manual effort, thereby preventing human error.
- ❖ Improved the tool's GUI and added features such as new file type support, row/column selection, filtering, and sample output.

Software Engineering Intern, *Care by Clay* Summer 2022, 2023

- ❖ Developed product that creates educational lesson plans and identifies associated state standards and guidelines - applied vector embeddings to enhance GPT-4 using Python.
- ❖ Trained models for early versions of Clay's chatbot to guide users to relevant educational resources - SparkNLP, Annotation Lab.

Academy Instructor, *iD Tech* Summer 2023

- ❖ Led project-based courses in machine learning, computer vision, and C++ programming to classes of 8-10 high-school students.
- ❖ Due to courses' emphasis on original code, the role required an advanced ability to quickly read, implement, and debug code.

Researcher, *Xiaodong Qu Research Group* Spring 2022 - Spring 2023

- ❖ Led study using machine learning and brain-computer interfaces to analyze teenage sleep habits.
- ❖ Published paper in 2022 HCI International Conference that describes an algorithmic approach to optimizing teenage sleep health.

Data Engineering Intern, *Broad Institute of MIT and Harvard* Summer 2020

- ❖ Assessed computational approaches to normalize protein expression data using R.
- ❖ Worked Closely with members of Broad's proteomics team, regularly presented findings.

Skills

Programming Python, C/C++, Java, Javascript, OCaml, CSS, R, SQL, Golang, GIT, Scripting (BASH), LaTeX

Software & Libraries Django, Tensorflow, Pytorch, Keras, Scikit-learn, Pandas, OpenCV, C++ STL, Azure Synapse

Experience Areas Machine learning, automation software, algorithm design, data analytics, financial engineering

Projects (demos & code on website)

Trading Engine, *Personal* Completed

- ❖ Allows users to simulate trading on historic market data for live backtesting feedback, built in OCaml.

Machine Learning Visualizer, *Personal* Completed

- ❖ Implements and visualizes the mathematical foundations of KNN and SVM ML models.

Algorithm Visualizer, *Personal* Completed

- ❖ Developed real-time visualizer in Python showcasing BFS, DFS, and A* algorithms in both grid and graph/node layouts.

Wordle AI, *Personal* Completed

- ❖ Designed algorithm to play the game of Wordle, averaging 3.7 guesses per round.
- ❖ Includes UI reconstruction of Wordle, original algorithm to optimize word guesses, and a simulation program to evaluate accuracy.

Optimal Sleep Algorithm, *Xiaodong Qu Research Group* Completed

- ❖ Collected sleep data over 40 nights using EEG hardware and designed algorithm to determine optimal bed and wake times.