Jack Mangione

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EDUCATION

University of Notre Dame | Notre Dame, IN   May 2026
Bachelor of Science | Computer Science   *GPA: 3.63/4.0*

Notre Dame London Gateway | London, England   July-August 2023
Balanced two rigorous courses with cultural immersion, navigating language barriers in multiple countries.

Relevant Coursework
Fundamentals of Computing, Data Structures Intro. to Linear Algebra & Differential Equations, Discrete Mathematics, Intro. to Probability, Systems Programming, Logic Design
Online Courses: Python for Data Science and Machine Learning Bootcamp, Udemy   June-July 2023

PROJECTS

Website Exploring the Development of Deep Learning | Notre Dame, IN   December 2023-Present
- Researched historical machine learning models (Perceptron, Adaline, Madaline), as well as the modern feedforward network, and implemented each of them in Python without utilizing machine learning libraries. Historical models trained on toy data; feedforward neural network trained on MNIST.
- Coded and hosted a website with detailed explanations of each model while also providing historical context, comparative analysis, and example step-throughs of each model's training algorithm. Website is currently incomplete.
- Developed my own visualizations for each algorithm utilizing free draw websites, Matplotlib, and CalcPlot3D, and linked to their sources for interactivity with the website.

Replicated tinyVGG CNN in PyTorch| Notre Dame, IN   March 2024
- Coded and trained a Convolutional Neural Network, inspired by the tinyVGG architecture, on the FashionMNIST dataset, reaching 88% test accuracy in three training epochs.
- Tested model training on T4 GPU and a CPU, on average, the GPU reduced model training time by 74%
- Demonstrated a 5% increase in test accuracy over a feedforward neural network with comparable training time

Python Based Web Crawler   March 2024
- Utilized the requests library and regular expressions in a Python script to identify the desired file types on web pages
- Implemented file download in parallel on four CPU cores using functional programming and concurrency.

VOLUNTEER PROJECTS

DePaul Coding Club | CS for Good - Notre Dame, IN   February 2024 - Present
- Collaborating with a team of peers to teach computer science principles to teenagers in DePaul Academy using Python, fostering an interest in the subject and building programming skills
- Constructed lesson plans, built slideshows & code examples, and lectured at DePaul Academy

Alora Finance| CS for Good - Notre Dame, IN   November 2023 - March 2024
- Collaborated with a team of peers to develop a website aimed at teaching personal financial principles to high school students
- Contributed to site's frontend and backend, programming an API call to display an image, creating a model to track topics, then an API GET Request to get all topics

PROFESSIONAL EXPERIENCE

Fulfillment Expert, Target   Summer 2023
- Provided efficient order fulfillment and personalized guest assistance

Lifeguard, Schuyler Meadows Club & Tri City Rentals   Summers 2019-2022
- Ensured safety through surveillance, rule enforcement, injury treatment, and equipment maintenance

Languages, Frameworks & Tools

Proficient: Python, C, PyTorch, Linux, Git, HTML, CSS | **Familiar:** TensorFlow, Keras, JavaScript, React, C++, scikit-learn