**Minghan Sun**

425-269-4412 **|** sunmi@seas.upenn.edu **|**  <https://github.com/minghansun1> **|** [minghansun.com](http://minghansun.com/) | https://www.linkedin.com/in/minghan-sun-46a591236/

**Education**

**University of Pennsylvania** 3.85 GPAClass of 2027

Computer Science, Bachelor of Science in Engineering

**Courses**: Introduction to Computer Programming, Programming Languages and Techniques I&II, Mathematical Foundations of Computer Science, Computer Systems, Automata/Computability/Complexity, Big Data Analytics

**Work Experience**

**Machine Learning Research Intern, University of Pennsylvania** Jan 2024-Present, Philadelphia, PA

* Implemented Shapley Values, LIME, and Anchor explanations in the STREAMLINE AutoML pipeline to help clinicians understand the decision-making process of their models
* Created visualizations for feature correlations and feature importance, used by over 70 clinicians
* Analyzed the performance of 5 popular explanation frameworks using to understand their best uses cases
* Added recommendations to help users select the optimal explanation frameworks for different data patterns

**Intern, Pactera Edge** Jul-Aug 2022, Bellevue, WA

* Trained a machine learning model to detect gun violence
* Implemented computer vision algorithms like gradient descent, convolutional neural networks, and transformers
* Became familiar with PyTorch, CVAT (Computer Vision Annotation Tool), Microsoft Azure, and Docker

**Projects**

**Algorithm Visualizer** (Django, React, PostgreSQL) June-July 2024

* A full stack web app designed to help Penn CS students understand algorithms taught in the class CIS 1210
* Used React to dynamically display how data structures changes as an algorithm runs
* Developed Django REST API to handle HTTP requests from React frontend
* Maintained database to allow visualizations to run on user-provided data and enable users to save their work
* Implemented JSON Web Token authentication for cutting-edge security and data privacy features

**Recipe Price Calculator** (Node JS, HTML, CSS) April-May 2023

* A web app to compute the price of a list of food ingredients and help users reduce time spent planning groceries
* Built web scraper to extract price data from Amazon.com’s HTML data
* Created and maintained a database of previously searched items to reduce time spent web scraping
* Implemented a text relevance algorithm to select closest matching item from collected data

**Operating System Simulator** (C) April 2024

* A project which simulates the device-level behavior of the LC4 operating system. Can run all 36 LC4 instructions
* Created a binary parser to translate machine language into Assembly and store instructions in memory

**QR Code Merger** (Python) September 2023

* A program that uses computer vision to detect cut-up pieces of a QR code and virtually assemble them.
* Used techniques like noise reduction, image sharpening, image alignment, and pattern recognition

**Skills**

**Programming Languages:** Java, Python, JavaScript, C, HTML, CSS, OCaml

**Technologies:** Numpy, Scipy, Pandas, Scikit-learn, Pytorch, OpenCV, Puppeteer, Java Swing, SQLAlchemy, Django, React, Flask, Git, Docker, Bash, Jupyter Notebook, PostgreSQL, Machine Learning,

**Awards**

* 4-time American Invitational Mathematics Examination Qualifier , 2023 National Merit Finalist