

Kailan Mao

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EDUCATION

Carnegie Mellon University

May 2026

B.S. in Information Systems, Double Major in Computer Science | GPA: 4.00

Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Functional Programming, Differential and Integral Calculus, Database Design and Development, Application Design and Development

TECHNICAL SKILLS

Programming: Python, C/C++, Java, OOP, Standard ML, SQL, HTML, CSS, JavaScript

Frameworks / Tools: React, jQuery, MySQL, PostgreSQL, Tkinter, OpenCV, AWS, Linux

PROJECTS

C0 Virtual Machine

Spring 2023

- Developed a virtual machine using C for the language C0, a subset of C used in introductory programming courses. The virtual machine can successfully execute arbitrary C0 bytecode.
- Created an operand stack and frame mechanism to effectively manage the state and execution flow within the virtual machine.
- Implemented bytecode execution mechanisms, enabling mathematical operations, logical statements, memory allocation, array operations, function invocation, and generic pointers.

Pac-Man in Python

Fall 2022

- Recreated the classic game Pac-Man using **Python** with intuitive player controls, a scoring system, and smooth animations to enhance user experience.
- Implemented ghosts that use depth-first-search pathfinding to pursue the player, increasing the game's challenge.
- Developed original game graphics using Tkinter.

Movie Review Sentiment Analysis

Fall 2022

- Implemented a sentiment analysis application in **Python**, using the Natural Language Toolkit (NLTK) library to assess the sentiment of movie reviews webscraped from Rotten Tomatoes.
- Created a mini game allowing users to compare their movie taste with Rotten Tomatoes reviews, providing an interactive experience.
- Developed a search tool to retrieve the sentiment of movies, enabling users to quickly evaluate film reception.

Flower Classifier using K-Nearest Neighbor Algorithm

Fall 2022

- Implemented a machine learning model in **R** to classify iris flower species with k-nearest neighbor algorithm.
- Trained and evaluated the model using the iris dataset from UCI Machine Learning Repository.
- Achieved >97% accurate predictions on test sets by optimizing the choice of hyperparameters using k-fold cross-validation.

Star Fighter: A Space Shooter Game

Spring 2022

- Implemented a space shooter game using **Java** with engaging gameplay and challenging enemy AI.
- Developed game logic and designed user interface, including player controls over movement and shooting, and randomly generated aliens.
- Incorporated features such as a scoring system, multiple lives, and bonus enemies to enhance gameplay.

VOLUNTEER EXPERIENCE & ACTIVITIES

Volunteer Web Developer

May 2023 - Present

Re:Bloom, Pittsburgh, PA

- Developed a responsive, user-friendly website for a small business using Wordpress.
- Collaborated with the client and team on implementing design choices and search engine optimization, boosting website traffic and enhancing online presence.
- Created training materials and video tutorials to help clients effectively manage and update their new website.

HONORS & PROFESSIONAL MEMBERSHIP

- Dean's List, High Honors
- Women in Information Systems Club Mentor
- Society of Women Engineers Member

Fall 2022, Spring 2023