Hanzhe (Klaus) Zhang

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I am a second-year Computer Science student at Boston University with a strong passion for software development and artificial intelligence. I have created numerous personal projects, including websites, artificial neural networks, and games. I am seeking a challenging internship in software development to apply my programming skills.

Education:

Boston University, MA.
B.A. in Computer Science, Expected June 2027, GPA 3.82/4.0

Relevant Coursework:
Intro to Computer Science (Python), Problem Solving I (C++), Problem Solving II (C++), Object-Oriented Design (C++), Linear Algebra, Differential Equations, Probability and Statistics, Discrete Mathematics, Muti-variable and Vector Calculus, Foundations of Data Science, Analysis of Algorithms, Principles of Machine Learning.

Skills:

• **Programming Languages:** Proficient in C++, Python, HTML, Java, Javascript, and R.
• **Machine Learning:** Experienced in designing and implementing models, including linear regression, logistical regression, and convolutional neural networks using PyTorch.
• **Data Structures and Algorithms:** Familiar with the concepts and applications of binary trees, maps, hash tables, iterators, stack, heap, priority queues, graphs, BFS, and DFS.
• **GitHub:** Familiar with GitHub for version control and collaboration.
• **3D Printing & CAD**: Experienced in 3D printing; skilled with CAD software such as Solidworks.

Projects:

[Portfolio Website](#): www.klauszhang.com
• Designed and developed a personal website to showcase my projects and skills.
• Integrated features and functionalities such as file downloads, user input forms, and navigation to additional pages and external websites.

Maze Game with DFS Algorithm
• Utilized Pygame, a Python library, to develop a maze game, in which the player navigates to find an exit.
• Implemented a Depth-First Search (DFS) algorithm to ensure the randomly generated maze always contains a valid path from the starting point to the destination.

Research Experience:

Undergraduate Research Assistant | UCSB Janusonis Lab (October 2024 - January 2025)
Professor Janusonis was interested in innovating artificial neural network (ANN) architectures using inspiration from neuroscience, and I was responsible for implementing and testing his ideas in PyTorch:
• I developed a Convolution Neural Network (CNN) to evaluate the effectiveness of a novel dropout mechanism based on fractional Brownian motion (FBM), which simulates the movement of stochastic axons in biological neural networks.
• Demonstrated that the FBM dropout achieves at least the same accuracy improvement as standard random dropout when the axons expand concurrently across all feature maps of a single sample.
• Renovated the CNN to allow the axons to move independently across each feature map.