Vikrum Ravi

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SKILLS

- Proficient with C++ and Python, with experience in Java, and a strong understanding of object-oriented programming and design principles.
- Familiar with machine learning concepts and frameworks, including neural networks, deep learning, and model optimization techniques.
- Strong understanding of various data structures and algorithms, such as binary trees, hashmaps, and graphs.
- Seasoned in hardware description language (HDL) Verilog for hardware design and simulation.

EDUCATION

- Texas A&M University, College Station ***May 2026***
  - Bachelor's of Science in Computer Engineering | Minor in Mathematics
  - GPA: 3.333

EXPERIENCE

Undergraduate Research Assistant ***Oct. 2024 - Current***

- Simulating and testing ARM and x86 CPU architectures on the gem5 simulation platform in order to implement on-chip large language models (LLMs).
- Utilizing Verilog and the BOOM RISC-V processor core and data from gem5 simulations to design an LLM-centric processor.
- Focusing on CPU-based LLM simulations and identifying ongoing optimizations to develop AI-focused CPUs as cost-effective alternatives to GPUs.

PROJECTS

Deep Learning-Based MNIST Digit Classifier ***Jan. 2025***

- Developed a handwritten digit classification system using the MNIST data set, achieving an accuracy of 87.2%.
- Implemented a neural network from scratch in Python and NumPy, utilizing the ReLU and softmax activation functions, backpropagation, and gradient descent for weight optimization.
- Enhanced the model's performance through hyperparameter tuning and implemented He weight initialization for improved convergence and training efficiency.

Spades Hand Score and Detector ***Aug. 2024***

- Utilizes Python to use a pre-trained card object detector to rate a hand out of 10 for the card game "Spades."
- Uses the popular object detection model known as YOLO to detect the rank and suit of a card.
- The rating for a hand is calculated using various different variables stemming from the object detector.

Connect 4 With AI Opponent ***Jul. 2024***

- Employs Python to create a fully working game of connect 4.
- Player v. Player and Player v. AI Opponent are available.
- Designed and developed using Pygame and utilizes the minimax algorithm for the AI opponent

Chess ***Jun. 2024***

- Utilizes Python to create a fully working game of chess.
- The game itself is created using Pygame along with outside chess art assets, while using various algorithms to simulate the game and is played via a created dragging and dropping class.