

Stefano Park Kim

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Education

University of Illinois at Urbana-Champaign

Bachelor of Science in Computer Engineering, Minor in Statistics

Urbana, Illinois

4.0/4.0

Dean's List

Coursework: Computer Organization and Design, Computer Systems Engineering, Algorithms & Models of Computation, Data Structures

Work Experience

MutuAI

AI Research & Development Intern

Jun 2023 - Aug 2023

- Conducted in-depth research and competitive analysis of AI agent products, identifying key differentiators to inform product strategy.
- Developed RAG-base AI agents by interfacing Pinecone vector database and OpenAI API.
- Engineered prompts to minimize hallucination in RAG-based agents, improving the accuracy and reliability of AI-generated outputs.
- Assisted in the development of a bidirectional judge system, simultaneously preventing prompt-based attacks by users and hallucinatory output from the LLM.
- Performed product testing and debugging, delivering detailed feedback to enhance functionality and user experience.

Projects

Direct Digital Synthesizer

Apr 2025 - May 2025

- Built a direct digital synthesizer system on the Ubrana FPGA board using SystemVerilog.
- Created a 10 bit phase oscillator with 32 bit accuracy, capable of generating all 88 notes of a piano keyboard in four different waveforms.
- Designed and implemented graphical user interface with 31 different sprites, displaying the output settings and notes being played.
- Designed and implemented digital IIR filters such as a low-pass filter, bit-crush filter, and ladder filter to create cool sound distortions.

3D Laser Manufacturing Verification

Jan 2024 - May 2024

- Utilized public datasets from the National Institute of Standards and Technology (NIST), including images of manufactured parts and laser gcode, to develop machine learning models for defect detection.
- Trained the YOLOv8-cls model to classify defective and non-defective parts from part images, achieving a 92% accuracy rate.
- Trained a Support Vector Machine (SVM) model using motor movement and laser power data, predicting potential part defects with 90.4% accuracy.

6502 based 8 bit computer

May 2024 - Aug 2024

- Built a custom 8-bit computer based on the 6502 microprocessor, with 32KB of RAM for system subroutines and 8KB of ROM.
- Created a serial communication interface using the 6551 ACIA chip, enabling data transmission between the computer and external IO devices.
- Optimized bus timings between the memory and the processor to successfully increase the clock speed from the standard 1 MHz to 4 MHz.
- Installed and configured the APPLE I operating system (Wozmon) for basic system management and machine-level program execution.

Automatic Wire Dispenser

Jan 2024 - May 2024

- Developed an automatic wire dispenser by designing a 6-state Finite State Machine (FSM) to manage machine states and process user input for wire length customization.
- Designed a primitive servo controller utilizing the 555 timer chip and MOSFETs to control the PWM width to the servo based on the FSM output.
- Utilized Fusion 360 to design the mechanical components, including wire extruding gears and casing.

Skills

Technical Skills: SystemVerilog, C, C++, RISC-V Assembly, Python, Git, KiCAD, Vivado

Languages: Korean, Spanish