ALMA BABBITT

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SUMMARY

Graduate computer engineer with research experience in machine learning, data web-scrapping, and data structures.
Project experience in accumulation of software and hardware design projects. Seeking full-time employment starting April 2025.

EDUCATION

BSE Computer Engineering | Arizona State University | May 2020 – Dec. 2024 **GPA: 3.62**

Arizona State University, Tempe, AZ
New American University Scholar
Relevant Coursework: Intro. to Machine Learning, Reconfigurable Computing, Analog and Digital Circuits

TECHNICAL SKILLS

Languages:	C/C++, Verilog, Assembly, Python, Bash, Tcl
Operating Systems:	Linux, Windows
FPGAs:	PYNQ-Z2, Kria K26C, Artix 7
Microcontrollers:	Arduino, FRDM KL46Z
Tools:	Git, LTSpice, MATLAB, Cadance, Vivado, Questasim

PROFESSIONAL EXPERIENCE

LLM Research Intern | Python, Bash, Verilog **Aug. 2023 – Dec. 2024**

- Collaborated weekly with my team of professors and graduate students to develop an open-source tool to generate verification tests for System Verilog designs and specifications
- Leveraged Github's API to download hundreds of Verilog/Systemverilog repositories
- Sorted the raw data into usable datapoints with python and bash scripting
- Utilized graph structures and regular expressions to recursively find file dependencies and the top module to create makefiles for each data point
- Set up batch processes on the ASU supercomputer to benchmark Llama 3.1 performance given a prompt and a data point.
- Iteratively tested different methodologies to extract the best prompt for generating test cases

PROJECTS

Differential Amp | Cadence **Nov. 2024**

- Constructed a differential amplifier with passive loads using non-ideal current sources
- Calculated theoretical differential gain, output swing and total current and compared to simulated results to confirm my design matches specification thresholds.
- Clearly documented my results and gave reasons for my chosen design parameters

MatMult Accelerator | C++ on Kria K26C **March 2024**

- Engineered a high-performance matrix multiplier accelerator IP on the Kria K26C FPGA using C++ for High-Level Synthesis (HLS)
- Optimized design performance by testing and applying HLS pragmas, including loop unrolling and pipelining, achieving a 10% improvement in throughput and latency compared to software-only implementations
- Implemented and validated communication between the built-in CPU and the IP using the AXI interface, ensuring seamless data transfer and integration

FRDM Robot | C on FRDM KL46Z **Sept. 2023**

- Engineered a robotic system using FRDM KL46Z microcontroller, integrating color sensors for path traversal
- Set up the I2C communication protocol to interface with external sensor for data transfer for system robustness
- Programmed and fine-tuned PWM timers for precise and smooth motor output through navigation
- Leveraged register-level debugging techniques to analyze program flow, identify issues, and optimize system behavior

WORK EXPERIENCE

Teacher Assistant | Arizona State University, Tempe, AZ | (10 hours/week) **Aug. 2023 - Dec. 2024**

- Worked in partnership with professors and graduate students daily to create programming assignments for 100+ students for the Data Structures and Algorithms class
- Participated in weekly meetings to assess curriculum, future assignment creation, and student progress

Retail Associate | Bass Pro LLC., Mesa, AZ | (10-30 hours/week) **June 2022 - Present**

- Maintained a customer-oriented work environment through diligent service while a full-time student
- Collaborated with my team to fulfill the high demand and workload that ultimately generated $10,000-$20,000 of weekly revenue in the hunting department