

Jacob Betsworth

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Recent Computer Engineering Master's Graduate looking for industry experience in logic design using C/C++/VHDL/Verilog to design and plan ASIC, CPU, and GPU designs. Seeking work that will challenge me to keep growing and find new methods to fix emerging problems.

Education

MASTER OF SCIENCE | COMPUTER ENGINEERING | IOWA STATE UNIVERSITY AUGUST 2021- MAY 2023

- GPA 3.44/4.00
- Focus in storage systems, fault handling, and logic design.

BACHELOR OF SCIENCE | COMPUTER ENGINEERING | IOWA STATE UNIVERSITY 2017-2021

- GPA 3.15/4.00

Experience

OPERATIONS MANAGER | MR. PICNIC OMAHA | MAY 2016 – CURRENT

- Communicated with customers to deliver according to their schedule so there was no confusion.
- Charted out routes that would be most efficient for drivers to keep drive time to a minimum.

RESEARCH ASSISTANT | DATA STORAGE LAB, IOWA STATE | SPRING 2023

- Conducted literature reviews over research papers to find relevant information for upcoming projects and to increase personal and group knowledge of a technology or method.
- Experimented with different software and virtual machines to evaluate platforms for distributed systems experiments that would require multiple independent machines.

TEACHING ASSISTANT | IOWA STATE UNIVERSITY | FALL 2021 – FALL 2022

- Embedded Systems Lab Assistant: Fall 2022
 - Steered students through the debugging process of their C code that would be uploaded to a test embedded system provided, Roomba.
 - Corrected students when their understanding of the problem wasn't right or if they were moving in the wrong direction.
- Senior Design Assistant: Fall 2021-Spring 2022
 - Polished student documents and gave them notes on what to improve in their design documents to make them easier to understand.

LOGIC DESIGN INTERN | MICRON TECHNOLOGY | SUMMER 2022

- Pathfound for a future project using SystemVerilog to model a current design to evaluate what needed improvements and where to focus efforts.
- Marshalled meetings with relevant engineers to get a full picture of the project's functional and non-functional requirements and what resources could be drawn upon for upgrades.

NETWORK SOLUTIONS INTERN | PRIME COMMUNICATIONS, INC. | SUMMER 2019

- Learned about the communication infrastructure in use and being upgraded in schools and businesses.

- Transported equipment efficiently that allowed the upgrade project to advance ahead of schedule allowing for more of a buffer period for stability tests.

Projects

CENOD – CUSTOMIZABLE ENEMY N’ OBJECT DETECTION | SPRING 2022

- Created an app in Python that utilized OpenCV and video detection techniques for identification.
- App could be configured to different targets and games allowing versatile use cases.

BASIC GPU DESIGN | RASTERIZER SUPPORT & OPENGL DEVELOPMENT | SPRING 2021

- Studied GPU architecture as my group developed the GPU hardware in VHDL and various programs and drivers for it in C.
- Tested with OpenGL programs loaded onto a FPGA running the VHDL code. Done using remote access during COVID.

PROCESSOR DESIGN SIMULATOR| USER INTERFACE DEVELOPER | FALL 2020-SPRING 2021

- Senior Design project to help students learn the structure and elements inside a CPU.
- Developed in a five-person team; personal task was creating elements for user interaction such as the switches and different controls with Javascript.
- Developed a website page with HTML, CSS, and Javascript.
- <https://www.ece.iastate.edu/~alexs/classes/i281/index.html>

MIPS PIPELINE PROCESSOR DESIGN | FALL 2019

- Learned about CPU elements like ALUs, logic control, and pipeline registers before designing them in Verilog and testing them on a Xilinx FPGA.
- Created schematics for different design elements to keep the group unified on the design intention with the instruction set based on MIPS assembly.

CLUSTERCORE, AN ANDROID APP | USER EXPERIENCE DEVELOPER | FALL 2019

- Designed an android multiplayer game that had a SQL database for account details on the backend and a Java based frontend for the user.
- Oversaw user interface and development of the user experience to facilitate navigation through the game.

Skills

Programming Languages: C, C++, VHDL, Verilog, SystemVerilog, Python, MATLAB, MIPS Assembly, Javascript,

Tools & Services: Git, Linux, Xilinx Vivado, Cadence Virtuoso, Ghidra, Microsoft Office, Adobe Photoshop

Knowledge: Machine Learning, VLSI Design, Caches, Memory, RTL Design, RTL Simulation, Debugging, Logic Design, Xilinx & Altera FPGAs, Technical Documentation, Constructive Feedback