Jackson Luna-McCrocklin

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Education

B.S. in Computer Engineering | Purdue University Main Campus **Aug 2020 – May 2024**

Minor in Management

GPA: 3.44

Relevant Coursework: Microprocessor Systems and Interfacing, Operating Systems Engineering, Intro to Compilers and Translation Engineering, Object-Oriented Programming, Intro to AI, Intro to Digital Design, Circuit Analysis

Honors: Dean's List (2x), Semesters Honors (4x), 21st Century Scholarship (4x), Purdue Marqui Scholarship (4x), Paul J Gripshover Memorial Scholarship (4x), David M Hodgin Scholarship (1x)

Projects

Embedded Systems Role-Playing Game Board **Oct 2023 – June 2024**

- Prototyped an infinitely customizable electronic game board that reduces the workload of the DM and the learning curve for players, creating a unique experience not seen in any product currently on the market.
- Designed and developed the PCB, firmware, and packaging, incorporating KiCad, STM32 microprocessor programming principles, and CAD to create a cohesive product that catches consumer attention.
- Created the system requirements and assisted debugging the Unity-based companion application for customizing and exporting maps and characters to the game board.

UNIX Operating System **Jan 2024 – May 2024**

- Implemented advanced memory management techniques, including segmentation, paging, and virtual memory to optimize system performance and resource utilization.
- Improved file system efficiency and access scheduling through use of algorithms specified for block-structured storage management.

Java-Based Compiler **Aug 2023 – Dec 2023**

- Developed a C language to RISC-V Assembly compiler in Java from scratch, utilizing parsing and ASTs to read and convert the code.
- Optimized the compiler utilizing computer architecture techniques, specifically in limitations regarding register allocation and memory access speeds.

Embedded Systems Audio Player **Mar 2022 – May 2022**

- Programmed an STM32 microprocessor in C to develop a user-interactive audio player, allowing for .wav files to be imported and played on a speaker.
- Installed buttons for user manipulation of selecting and replaying songs, using an LCD to display result of manipulation, all wired on a breadboard.

Professional Experience

Substitute Teacher | Kelly Services | Terre Haute, IN **Sep 2024 – Jan 2025**

- Implemented lesson plans across a variety of STEM subjects and adapted to different classroom environments.

Team Member | Azzip Pizza | Terre Haute, IN & Lafayette, IN **May 2022 – Jan 2024**

- Provided personalized customer service while efficiently completing their order to enhance overall experience.

Technician | Rose-Hulman | Terre Haute, IN **Oct 2016 – Mar 2020**

- Elected Technician for FIRST Robotics Club, where I led team meetings discussing prototyping different designs, emphasizing importance of Cost-Performance Tradeoff and Value Engineering.
- Designed, constructed, and repaired robots for competitions, using both mechanical and electrical tools.

Skills

- Programming: C, C++, Python, Java, RISC-V Assembly, ARM Assembly, OpenGL, System Verilog, MATLAB
- Embedded Systems: SPI, I2C, UART, DMA, DAC, ADC
- Software: KiCad, AutoCAD, STM32CubeIDE, System Workbench, Git, WSL2
- Hardware Development: PCB Design, Testing, & Soldering
- Lab Equipment: Oscilloscope, Multimeter, Waveform Generator, Power Supply, 3D Printing
- Software Debugging: Valgrind, GDB