

Jacob Parent

MIXED-SIGNAL CIRCUIT DESIGN · EMBEDDED SYSTEMS · MUSICIAN

Baton Rouge, Louisiana

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Summary

Tools & Frameworks: Altium, KiCAD, Fusion 360, OrCAD, SPICE, MATLAB, Git, Make, PySpark

Languages: C, C++ with STL, Verilog, ARM ASM, Python

Education

Louisiana State University

Baton Rouge, LA

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING

August 2021 - May 2025

- Expected graduation date of May 2025, minoring in Computer Science with a 3.93 GPA.
- S&B Engineering and Contractors Scholarship Recipient
- Founder and president of [Electronics Design Club](#)
- BMS Design Lead for [FSAE](#)
- Member of IEEE

Experience

LSU PCB Lab

Baton Rouge, LA

ANALOG AND DIGITAL ELECTRONICS ENGINEERING AND MULTI-LAYER PCB LAYOUT

Aug. 2022 - Present

- Researched the economic viability of open source CNC over ferric-chloride liquid etching for 2-layer PCB development
- Guided electronics related senior design projects with PCB design and prototyping, 3D printing, and soldering
- Specialized in electronics PCB design software using industry standard CAD tools such as Altium and Fusion360

BASF

Geismar, LA

DATA PROVISIONING & MACHINE LEARNING INTERN

May 2023 - August 2024

- Utilized FFT in order to create a robust algorithm to analyze periodic preventative equipment maintenance and optimize costly schedules
- Developed python scripts to create an intuitive Streamlit LLM UI
- Reduced annual SQL server cost by \$4200 and server size by 90%

Technical Projects

BMS Circuit Design and Data Acquisition

ALTIUM, SPICE, STM32, EMBEDDED C

May 2024 - Present

- Integrated an embedded system to monitor, balance, and collect data on the FSAE car accumulator
- Utilized USB 2.0 FS and the USB-C physical interface to power and collect data from the embedded system
- Interfaced ARM processor with SD flash memory

MIDI Guitar Interface

ALTIUM, SPICE, STM32, EMBEDDED C, DSP

December 2023 - Present

- Conceptualized embedded DSP system to extract pitch and velocity information using FFT and peak detection algorithm
- Designed analog audio effects circuitry to process 6 channels from a hex guitar pickup
- Utilized DMA to reduce ADC data acquisition latency
- Generated low latency data stream of MIDI packets for use in external audio hardware or software

ARM Embedded Web Server

STM32, EMBEDDED C, ARM ASM

- Implemented web server using a STM32 development board and the C programming language to learn how to bring up an embedded system from bare metal
- Utilized the mongoose network library to create a lightweight Web GUI for displaying humidity, temperature, and soil moisture information in order to track the health of my house plants
- Learned framework web development, rather than writing pure HTML, CSS, and JavaScript

Certifications

Switching Power Supply Design with Altium

ALTIUM, SPICE

July 2024

- Developed essential design skills with Altium and implemented a simple switching regulator

Mixed-Signal Hardware Design with KiCAD

KI CAD, SPICE

May 2024

- Refined my system-level design, component selection, analog and digital circuit design, simulation, PCB design, and 4 layer layout skills