

Adam J. Keith

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EDUCATION

Purdue University

B.S. in Computer Engineering

West Lafayette, Indiana

Expected Graduation, May 2025

- o **Concentrations:** Hardware Design and Embedded Systems
- o **GPA:** 3.17/4.00
- o **Related Coursework:** ASIC Design Lab, Intro to AI, Microprocessor Systems, Data Structures & Algorithms, Computer Graphics, Probabilistic Methods in ECE, Digital Logic Design, Advanced C Programming

EXPERIENCE

West Virginia Office of Technology

Programmer Analyst I

Charleston, WV (hybrid)

Dec 2023 – Present

- Develop framework for state government's adoption and regulation of artificial intelligence tools
- Explore methods for streamlining business processes using machine learning and data analysis
- Improve a legal tracker for legislators in collaboration with Google using Looker Studio

Purdue University

ECE 27000 (Digital Logic Design) Lab Teaching Assistant

West Lafayette, IN

Jan 2024 – Present

- Educate students on appropriate lab practices and fundamentals of System Verilog and hardware design
- Debug breadboard prototypes and verify proper circuit behavior using waveform tools

PROJECTS

STM32 Video Game Configuration

- Configured STM32 DMA and SPI to stream data between a debounced keypad and LCD display to allow the user to play a game where the number 'x's' collected affects the score displayed on seven segment displays
- Built KiCad schematic and breadboard prototype then programmed using STM32 System Workbench

Image Edge Detection ASIC

- Implemented FIR-Filter architecture through RTL diagrams and System Verilog to detect edges through pixel sampling
- Created an exhaustive testbench and synthesized the design in QuestaSim to optimize timing, area and power

Number Base Converter

- Programmed number base conversion tool through Flask framework using Python, HTML and CSS
- Capable of decimal, binary and hexadecimal conversions within a responsive, user friendly interface

Credit Card Fraud Detection

- Implemented grid search to optimize K Nearest Neighbor estimator hyperparameters using cross validation
- Achieved over 90% testing accuracy and 95% training accuracy on credit card PCA values

Audio Equalizer

- Prototyped an audio equalizer that utilized low, band and high pass filters to allow adjustable levels of treble and bass and utilized OP Amps to amplify the signals to a speaker to play audio input

Serial Timing Recovery RTL

- Designed comprehensive hierarchical RTL representation of a timing recovery circuit to use for serial communication

ACTIVITIES

Autonomous Motorsports Purdue

STM32 Electrical Subteam

West Lafayette, IN

Aug 2023 – Current

- Investigate methods to optimize an autonomous kart's embedded system (STM32 microcontroller)
- Streamline peripheral communication by migrating to SPI over I2C for the kart's serial communication

SKILLS

Software Development: C, Python, Azure DevOps, Agile, HTML, CSS, Flask, Matlab, Google Colab

Hardware Design: System Verilog, STM32 IDE, Testbenches, KiCad, QuestaSim, RISC-V Assembly, RTL Design

Electrical Engineering: MOSFETs, Filters, Oscilloscopes, Breadboarding, Fourier Transforms, Op-amps