Adam McDaniel

amcdan23@vols.utk.edu
adam-mcdaniel.net

Software Developer and Graduate Student at the University of Tennessee

EXPERIENCE

University of Tennessee, Knoxville — *Graduate Teaching Assistant*

JANUARY 2023 - PRESENT

Teaching students software engineering. Grading student submissions. Advising students on how to complete assignments and troubleshoot their programs during class and office hours.

University of Tennessee, Knoxville — *Undergraduate Teaching Assistant*

AUGUST 2021 - DECEMBER 2022

Teaching Junior level Computer Science lab classes. Advising students on how to complete assignments and troubleshoot their programs during lab and office hours.

Oak Ridge National Laboratory, Oak Ridge — *Software Developer Intern*

MAY 2019 - AUGUST 2019

Developed Rusty-CI, a general purpose GitHub and GitLab integration tool. Contributed to the ASGarD (Adaptive Sparse Grid Discretization) project, a partial differential equation solver for exascale architectures.

University of Tennessee, Knoxville — *Software Vendor*

SEPTEMBER 2018 - JUNE 2019

Helped develop the Simulated Electronic Fetal Monitoring app in JavaScript, and rewrote the application in Dart to run natively on mobile and desktop.

PROJECTS

Sage — Interactive compiler in a browser

github.com/adam-mcdaniel/sage

Created a compiler for a custom programming language with some experimental type system constructs. The compiler can run on the web, so Sage code can be compiled and executed in a browser. Wrote a website to compile and run Sage code interactively.

SKILLS AND ACHIEVEMENTS

Proficient in Rust, Python, C, C++, Bash, PowerShell, Git version control.

Daily Linux user.

Shell scripting experience.

Professionally experienced with both GitHub and GitLab.

Created multiple 600+ star repositories on GitHub.

3rd Place at VolHacks 2021 Hackathon.

Proficient in Spanish.

High school Valedictorian with 4.857 GPA.

EDUCATION

University of Tennessee, Knoxville — *Graduate Student*

JANUARY 2023 - PRESENT

Maintaining a 3.9 graduate GPA.

- COSC 462 - Parallel Programming
- COSC 522 - Machine Learning
- COSC 525 - Deep Learning
- COSC 527- Bio-Inspired Computation
- COSC 534 - Network Security

Dune — Portable, custom shell

github.com/adam-mcdaniel/dune

Implemented a shell with features such including: syntax-highlighting, tables, lists, standard library functions, lambdas, and macros. Dune runs on all major operating systems. Implemented a weather API in the shell script.

Harbor — High level language compiler to a 4 bit instruction set virtual machine

github.com/adam-mcdaniel/harbor

Wrote a compiler with procedures, nested scopes, compound types, type checking, tuples, arrays, pointers, and manual memory management using a 14 instruction virtual machine. Each instruction takes zero arguments.

Chess-Engine — Zero dependency chess engine for the web, the desktop, and embedded devices

github.com/adam-mcdaniel/chess-engine

Created a chess engine, which runs in the browser, without using the standard library. Also implemented a desktop GUI interface. The engine supports multiple chess variants, and can handle custom board states.

Adam's Bot — Chatbot, dungeon master

github.com/adam-mcdaniel/adams-bot

Made a Discord bot to run on my personal server. It's powered by GPT-2, and also acts as a dungeon master for a text adventure dungeon crawling game.

Wisp — A light Lisp for embedding in C++

github.com/adam-mcdaniel/wisp

Implemented an interpreter for a Scheme-like Lisp in C++. It supports functional programming, quoted expressions, and can optionally compile without support for floating point or the standard library.

Oak — Compiled programming language

github.com/adam-mcdaniel/oakc

Wrote a compiler from scratch for a C like language with structures, copy constructors, destructors, conditional compilation, and type checking. Created the virtual machine's custom instruction set.

Honeycomb — Parser combinator library that does not require a runtime

github.com/adam-mcdaniel/honeycomb

Wrote a parser combinator library which does not require the standard library or a runtime, only an allocator. Used it to implement a calculator, a

- COSC 566 - Software Security
- COSC 583 - Applied Cryptography

University of Tennessee, Knoxville — *Bachelor of Computer Science*

AUGUST 2020 - DECEMBER 2022

Graduated in December of 2022 with a 3.95 GPA.

Pellissippi State Community College, Knoxville — *Computer Science Major*

JANUARY 2019 - MAY 2020

Took 1.5 years of dual enrollment towards my Bachelor's degree at Pellissippi during high school.

JSON parser, a general purpose lexer for programming languages, and a parser for a markup language.