Cameron Egbert

(859) 402 4581 | egbertcm23@gmail.com | Lexington, KY

Personal Statement

Led by my curiosity, I have come across a breadth of disciplines and technologies and as a student of computer science and mathematics, I've found beauty in abstraction and rigor. I am dedicated to academics, have passion for creating and am rewarded by seeing people and projects evolve through time.

Education

University of Kentucky – Lewis Honors College – University Scholars Program — August 2021 – Present

B.S in Computer Science — May 2024

B.S in Mathematics — August 2024

M.S in Computer Science — May 2025

Overall GPA: 3.8

Skills

Python, C/C++, JavaScript, MATLAB, Java, Git/Github, CSS/HTML, Prolog, R, Linux, Express, OpenGL, MongoDB, SQL, Unity/C#, Verilog, Flex, Bison, Mathematica, LaTeX

Research Experience

R.E.U. at The University of Louisville - *Enhancing Resilience Against BUS-OFF Attacks: A Reset-Based Recovery Approach with Entropy Analysis for CAN BUS at Varying Communication Speeds*

- Investigated security vulnerabilities and attacks on Controller Area Networks
- Investigated and implemented security solutions on a Controller Area Network using Arduinos.
- Tested a security solution to verify its resiliency across differently configured Networks.
- Composed a summary paper and symposium presentation.

Math, Science, and Technology Center Capstone Research Project - *Regularizations of Classical Time Crystal Dynamics*

- October 2019 – May 2021
- Gained research experience working under the mentorship of Dr. Alfred Shapere.
- Conducted experiments to investigate the asymptotic nature of classical time crystal dynamics by analyzing the effects of regularizations on their equations of motion in mathematica.

Work Experience

University of Louisville – *Visiting Researcher [see research]* — 05/2023 – 08/2023

Self Employed – *Calculus and Physics Tutor* — 01/2023 – 05/2023

- Relearned, deconstructed, and effectively communicated difficult concepts with students.
- Networked and scheduled tutoring sessions with my clients.

Apple – *iOS Technical Support and Advising* — 05/2022 – 12/2022

- Learned to quickly research solutions to unfamiliar problems to provide efficient troubleshooting and issue resolution for customers, primarily through verbal communication.

Anderson Communities - *Apartment Repair Team Member* — 05/2021 – 08/2021

Arbys – *Cashier/Fry Cook* — 06/2020 – 05/2021

Projects

A* Megaminx Solver

- Modeled the Megaminx rubix puzzle and implemented functionality for it with a GUI.
- Wrote an A* pathfinding algorithm with original heuristics to solve randomized megaminx puzzles.
- Documented computation time and results of testing.

AI Chessbot

- A working chess GUI and working artificial opponent was built in a team of four.
- Python, C++, and OpenGL libraries were used to implement the machine learning and chess game.

Computer Vision

- Used MATLAB in conjunction with a camera apparatus to build a change counter able to recognize coins and calculate the total monetary value.
- Conducted additional research and composed a survey on state-of-the-art 3D reconstruction techniques.

Cryptology Suite

- Implemented many popular cryptology encryption and decryption methods such as RSA and the Vigenère Cipher.

Custom Shell

- Implemented a simple shell with executing functionality, file service functionality, and input and overwrite redirection functionality with C.

Full Stack Website

- Created a front-end using HTML/CSS/Tailwind and JavaScript.
- Utilized express.js, embedded JavaScript and MySQL to build a backend.
- Investigated various hosting and deployment options.

Neural Network Generator

- Studied machine learning algorithms and implemented neural network logic.
- Wrote a script to construct a neural network dependent on input size from scratch.
- Trained networks to evaluate Boolean expressions as a proof of concept.

Pong – Socket Programming

- Used Python Socket Programming and pyGame to build a pong game that can be played over the internet.

Rendering Engine

- Built a rendering engine using the OpenGL API and Java.
- Translated the engine to C++ to better optimize the original project.

RPC File Server

- Implemented a simple, stateful, network file server that supported a remote file service model.
- Used SunRPC's rpcgen to facilitate compilation of the client and server model.

The Bitter Aloe Project

- In collaboration with the history department at The University of Kentucky, a virtual memorial for Apartheid was built.
- The ongoing project uses unity for its implementation.

TypeSpec Compiler

- Using Flex, Bison, and C, a compiler for a simplified typescript language was constructed.