# Aaron Moseley

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## TECHNICAL SKILLS

**Languages:** C++, C#, Python, Java, C, HTML, CSS, JavaScript, PHP, LaTeX, AMPL, Bash, MATLAB, SVRF
**Frameworks/Libraries:** .NET, PyTorch, sklearn, D2L, H5py/HDF5Lib, NiBabel, ROOT
**Tools:** Google Colab, Git/GitHub, Linux, Unity, Arduino, Anaconda, RapidAPI, Vim, Weights and Biases

## EDUCATION

**University of Kentucky - Bachelor of Science in Computer Science and Mathematics**
Lexington, KY, August 2020-May 2024 (Anticipated)

- **GPA: 3.96 / 4.0**
- Lewis Honors College, Competitive Programming Team, Undergraduate Science Journal Club
- Dean's List Fall 2020-Spring 2023, Provost Scholarship, Lester Engineering Scholarship

**Liberal Arts Academy at Henry Clay High School**
Lexington, KY, August 2016-May 2020

## FEATURED PROJECTS (portfolio)

**Hyperbolic Semantic Search**

- Semantic search model developed in Pytorch leveraging SentenceBERT embeddings and hyperbolic geometry
- Shown to improve semantic representations of sentences by a factor of 2 over baseline Euclidean models

**Phantom Mansion: First Place Winner MLH Hackathon**

- Roguelike game that uses graph traversal algorithms to randomly generate levels and control enemy AI
- Includes multiple user customization options that impact level generation and enemy behavior

**Hydraulic Erosion Simulation**

- Realistically simulates gradual hydraulic erosion in real time on randomized or user-defined terrain
- Implements a Perlin noise procedural generation algorithm that allows for user customization

## PROFESSIONAL EXPERIENCE

**Infineon Technologies - Computer Engineering Intern**
Lexington, KY - May 2023-August 2023

- Developed physical verification rules in SVRF and designed transistor-level validation cells for unit testing
- Utilized computer engineering expertise to resolve physical verification discrepancies in new hardware devices
- Created comprehensive Vim syntax highlighter for SVRF using Vimscript

**Lockheed Martin Missiles and Fire Control - Software Engineering Intern**
Lexington, KY - May 2022-August 2022

- Built data analysis and report automation tools using .NET framework and Microsoft Excel
- Completed projects creating $33,000 in annual savings and reducing time spent generating reports by 90%
- Held secret-level US security clearance (renewable until August 6, 2024)

**University of Kentucky - Medical Imaging/Machine Learning Research Assistant**
Lexington, KY - January 2023-Current

- Using PyTorch to develop a novel training approach for image segmentation models that has shown significant improvements over baselines up to 22% across multiple metrics
- Paper submitted to SPIE Medical Imaging 2024

**University of Kentucky - Nuclear Physics Research Assistant (poster)**
Lexington, KY - August 2022-Current

- Utilized C++, ROOT framework, and H5py to create high-speed data acquisition system for NOPTREX experiment investigating gamma radiation emissions from decaying neutrons
- Presented at NCUR 2023 and APS April Meeting 2023, project used at J-PARC and Los Alamos National Laboratory

**University of Kentucky - Introductory/Intermediate C++ Teaching Assistant**
Lexington, KY - January 2022-May 2023

- Gave weekly lectures to multiple lab sections on topics including intermediate C++, Unix, and Bash
- Provided individualized help for students during lab and outside of class time
- Held weekly office hours and graded classwork and exams for more than 30 students