Aaron Moseley

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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 (placed 1st in Kentucky at ICPC Regionals 2024), Undergraduate Science Journal Club, nominated for Diachun Research Award
- Department of Computer Science Award for Outstanding Academic Achievement, Dean's List Fall 2020-Fall 2023, Provost Scholarship, Lester Engineering Scholarship

Henry Clay High School
Lexington, KY *August 2016-May 2020*

FEATURED PROJECTS (full portfolio)

Hyperbolic Relevance Estimation for Improved 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 using 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

- Realistic simulation of gradual hydraulic erosion in real time on randomized or user-defined terrain
- Implements a Perlin noise procedural generation algorithm and 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
- Led multiple projects creating $33,000 in annual savings and reducing time spent generating reports by over 90%
- Held secret-level US security clearance (active until August 6, 2024)

University of Kentucky - Medical Imaging/Machine Learning Research Assistant
Lexington, KY *January 2023-January 2024*

- Used PyTorch to develop a novel training approach for image segmentation models, shown to improve over baselines by up to 32.4% across multiple metrics and datasets
- Full paper accepted to ISBI 2024, poster presented at CCS 2023
- Received Undergraduate Research Fellowship for Fall 2023

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

- Used C++ and HDF5Lib to create a high-speed data acquisition system for the NOPTREX experiment investigating gamma radiation emissions from decaying neutrons
- Presented at NCUR 2023 and APS April Meeting 2023, project used to collect data from a particle accelerator at the Japan Proton Accelerator Research Complex

University of Kentucky - Introductory/Intermediate C++ Teaching Assistant, Graphics and UI Grader
Lexington, KY *January 2022-May 2023, January 2024-Current*

- Gave weekly lectures to multiple lab sections on topics including intermediate C++, Linux, and Bash
- Provided individualized help for students during lab and outside of class time
- Holding weekly office hours and grading coursework and exams for up to 60 students

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