

Aaron Moseley

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PROFESSIONAL EXPERIENCE

Carlson Software

Machine Learning Engineer

August 2024 - Current

Machine Learning Engineer Intern

May 2024 - August 2024

- Leading development and release of multiple new full-length ML pipelines, including custom data annotation tools, model architectures, and post-processing steps, aimed at detecting the boundaries of materials, roadways, curbs, and paint lines in aerial images
- Designed two novel model architectures with PyTorch leveraging semi-supervised and multi-task learning, both resulting in more than a **20% improvement** over previous strategies
- Developing extensive tooling for ground-truth data creation using C++, PyQt, and SQL to transform dozens of drone-captured orthomosaics into usable labeled data for computer vision models
- Developed modular plugin system for a point cloud visualization software using C++ and ZeroMQ
- Created HTTP server, API, and web pages to automate and visualize ML model training, inference, and evaluation

Infineon Technologies

Computer Engineering Intern

May 2023 - August 2023

- Developed physical verification rules in SVRF and designed transistor-level validation cells for unit testing

University of Kentucky

Medical Imaging/Machine Learning Research Assistant

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](#) published at [ISBI 2024](#), poster presented at [CCS 2023](#), received Research Fellowship for Fall 2023

Lockheed Martin

Engineering and Technology Intern

May 2022 - August 2022

- Created **\$33,000** in annual savings and reduced report creation time by **90%** by building automation tools with VBA

FEATURED PROJECTS ([full portfolio](#))

[Context-aware Multitasking for Medical Image Segmentation](#)

- Novel multi-tasking framework that combines segmentation and classification for medical images
- Shows significant improvement over baseline and pre-trained models in Dice score and Haussdorf distance

[Vulkan Dynamic Lighting Demo](#)

- Modular Vulkan instance renderer written in C++ and HLSL
- Implements Blinn-Phong Lighting, allows for modifiable per-instance data, and adding/removing objects at runtime

[Shoulder-Mounted Space Program](#)

- A fully featured game built in Unity, releasing in December 2025, that features a custom realistic gravity simulation
- Successfully coordinated a small team of artists, playtesters, and a composer to get the game ready for release

FEATURED PAPERS

[PolyCL: Context-Aware Contrastive Learning for Image Segmentation](#) - Published at ISBI 2024, First Author

[HyPhy: A Skeletonization-Based Approach For Fungal Network Analysis](#) - Primary developer on this project

[Domain and Task-Focused Example Selection for Data-Efficient Contrastive Medical Image Segmentation](#)

EDUCATION

University of Kentucky - Bachelor of Science in Computer Science and Mathematics, Summa Cum Laude

Lexington, KY

August 2020-May 2024

- **GPA: 3.97 / 4.0**
- Lewis Honors College, Competitive Programming Team (placed 1st in Kentucky at ICPC Regionals 2024), Undergraduate Science Journal Club
- Department of Computer Science Award for Outstanding Academic Achievement, Dean's List for all 8 semesters
- Undergraduate teaching assistant for classes covering Linux, intermediate C++, and UI development
- Research assistant in nuclear physics where I deployed a [data acquisition firmware and software](#) on the J-PARC particle accelerator, presented project at [APS 2023](#) and [NCUR 2023](#)

TECHNICAL SKILLS

Languages: Python, Java, C#, C++, C, SQL, LaTeX

Frameworks/Libraries/Tools: PyTorch, PyTorch Lightning, HDF5Lib, Qt/PyQt, Vulkan, Unity