CV

BENJAMIN MASTRIPOLITO

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USA

► EDUCATION

Masters of Science in Computing

University of Utah — May 2024 (Expected)
3.9 GPA

Bachelors of Science in Computer Science

New Mexico Institute of Mining and Technology (NMT) — May 2020
3.79 GPA

► WORK EXPERIENCE

Research Assistant — Fall 2023 - May 2024
University of Utah

- Research assistant under Dr. Cem Yuksel (*cem@cemyuksel.com*) working on polygon-agnostic 3D modeling research in OpenGL and C++

Post-Baccalaureate Student — June 2020 - July 2022
Los Alamos National Laboratory

- Research on parallel interpolation algorithms for physical equation-of-state data under mentorship of Dr. Daniel Sheppard (*danielsheppard@lanl.gov*)
- Developed Python plotting package for physical equation-of-state data

Parallel Computing Summer Research Internship — June 2019 - Aug 2019
Los Alamos National Laboratory

- Worked as a student in the Parallel Computing Summer Research Internship at LANL researching performance analysis techniques on parallel algorithms, under mentorship of Dr. Rao Garimella (*rao@lanl.gov*)

Research Assistant — Jan 2019
New Mexico Institute of Mining and Technology

- Worked with Dr. Denis Cohen (*denis.cohen@gmail.com*) in developing a parallel, unstructured-mesh-based program for simulation of landslides using C++ and OpenMP

► PUBLICATIONS

SIMD-Optimized Search Over Sorted Data — November 2021
Los Alamos National Laboratory

► PORTFOLIO

Petting Zoo Ongoing

https://github.com/TheFutureGadgetsLab/PettingZoo

Machine learning environment with procedurally generated platformer levels. Supports training various types of neural networks with genetic algorithms.

Petri Ongoing

https://github.com/TheFutureGadgetsLab/Petri

High performance parallel particle simulator and renderer written in Rust with WebGPU backend.

Cellarium Ongoing

https://github.com/benpm/cellarium

WebGL cellular automata simulator which allows random generation of novel multi-state rules. Simulation is written in an optimized GLSL fragment shader, allowing for large simulations. Web app UI built with Vue.

CUDA / OpenGL Raytracer 2020

https://github.com/benpm/cuda-raytracer

Created a parallel raytracing program using NVIDIA CUDA C++ and OpenGL. Supports refractive materials, diffuse lighting, antialiasing, and emissive materials.

LD48 Recursive Puzzle Game 2021

https://github.com/benpm/ldjam48

Puzzle game where the level structure is manipulated through interactive objects, allowing for levels which contain themselves. Made in 72 hours for the 48th Ludum Dare game jam, where it won 2nd place in the Innovation category out of almost 4000 submissions.

► SKILLS

C / C++	Extensive experience working in the C and C++ programming languages in both academic and professional settings.
Graphics APIs	Experience with creating complex applications OpenGL, WebGL, WebGPU, CUDA, DirectX 12. Working knowledge of Linear Algebra in the context of computer graphics.
Interpersonal	Multiple years of experience working directly with students tutoring mathematics and computer science. Experience working in a professional context with a moderate sized team of software engineers.
Machine Learning	Experience with machine learning techniques and frameworks such as PyTorch, TensorFlow, and Keras.
Parallel Computing	Experience with parallel computing techniques and frameworks such as OpenMP, MPI, and CUDA on very large compute clusters at Los Alamos National Laboratory.