CV

BENJAMIN MASTRIPOLITO

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USA

► EDUCATION

BS in Computer Science

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

MS in Computer Science

University of Utah May 2024 (Expected)
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► WORK EXPERIENCE

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
- Rewrote a multi-project Jenkins CI/CD pipeline in GitLab CI

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*)

Contract Programmer Jan 2019 - Current
New Mexico Institute of Mining and Technology

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

Student Worker - Mechanical Engineering Department Aug 2018 - Mar 2019
New Mexico Institute of Mining and Technology

- Worked with Dr. Ashok Ghosh (ashok.ghosh@nmt.edu) on contract work to develop a web-based monitoring system for sea vessels.

Student Worker - ITC May 2018 - Aug 2018
New Mexico Institute of Mining and Technology

- Performed duties for the Information Technology and Communications department (ITC) involving maintenance of IT infrastructure on campus at NMT.

► 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 wgpu.

Cellarium Ongoing

https://github.com/benpm/cellarium

WebGL cellular automata simulator which allows random generation of novel multi-state rules. Simulation is performed entirely within a 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.

► PUBLICATIONS

SIMD-Optimized Search Over Sorted Data November 2021

Los Alamos National Laboratory

Exploration of using instruction-level parallelism to enhance the performance of search algorithms over sorted data.

► SKILLS

Programming Languages	Confident in C, C++, Python, and Javascript. Some experience with Java, Rust, C#, and Typescript.
Software	Visual Studio, Unity 3D, Blender, GDB, Valgrind
Technologies	Linux, OpenGL, GitLab CI/CD, CUDA, CMake, Meson, OpenMP, Numpy, Vue.js
Notable Courses Taken	Intro to OpenGL, Algorithms & Data Structures, High Performance Computing, Software Engineering, Machine Learning