



BENJAMIN MASTRIPOLITO

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51 Young Rd

Tijeras, NM 87059

USA

► EDUCATION

BS in Computer Science

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

May 2020

► WORK EXPERIENCE

Post-Baccalaureate Student

Los Alamos National Labs

June 2020 - Present

- 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

Los Alamos National Labs

June 2019 - Aug 2019

- 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

New Mexico Institute of Mining and Technology

Jan 2019 - May 2020

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

Student Worker - Mechanical Engineering Department

New Mexico Institute of Mining and Technology

Aug 2018 - Mar 2019

- 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

New Mexico Institute of Mining and Technology

May 2018 - Aug 2018

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

Grader - Intro to C Programming

New Mexico Institute of Mining and Technology

Sep 2017 - June 2018

- Graded students' code assignments in the Intro to C Programming course

► PROJECTS

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/webgl-cellular-automata>

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