Jack Dinsmore

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Links

Github: jack-dinsmore
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Skills

PRIMARY LANGUAGES
Python, C++, Rust

OS
Linux, Windows

OTHER SKILLS
Mathematica, Java, C, Bash, LaTeX, Tensorflow, Git, HTML, DirectX, OpenGL, Google Cloud, Matplotlib, Microsoft Office, various Python data analysis tools

INTERESTS
CUDA, Javascript, Web development, Cryptography, Game development

Education

MIT '22
Major: Physics
Minors: Astronomy, Math
GPA (unweighted): 5.0/5.0
Avg. workload: 60 hrs / week

HIGH SCHOOL '18
Amherst Regional High School
GPA (unweighted): 3.998/4.0

GRE SCORES
Quantitative Reasoning: 170/170
Verbal Reasoning: 167/170
Analytical Writing: 6.0/6.0

Coursework

PHYSICS & ASTRO
General Relativity (Grad)
Quantum Field Theory (Grad)*
Quantum Physics I, II, III
Classical Mechanics I, II, III*
Statistical Physics I, II*

MATH & CS
Real & Complex Analysis
Algebra I
Probability
Mathematics for CS
Intro to Algorithms
Intro to Data Science*
*prospective

Research Experience

2021– **Tidal Torque Reveals Asteroid Shape and Density (MIT)**
Designing, implementing, and analyzing a fast simulation of asteroid flybys and an algorithm to fit a shape and density model. Github — *MCMCs, Advanced Mathematics* | `C, C++, Python, Mathematica`

2020– **Modeling the Galactic Center Excess (MIT)**
Analyzing a millisecond pulsar explanation for the Galactic Center Excess and contrasting studies found in the literature. Github — *Data analysis, Simulation, Plotting* | `Python, C++, Mathematica`

2020– **Ensemble Photometry on Open Clusters (Lehigh U)**
Extracted error-corrected luminosity fluctuations from large images of unresolved open clusters drawn from astrophysics databases. Github — *Data analysis & cleaning, Database queries* | `Python`

2019–20 **Machine Learning & Big Data (MIT)** ML: Sci. Tech.
Built a dense Neural Network on GPUs and TPUs to reconstruct events in the Large Hadron Collider faster than the nominal method. Github — *ML, Large collaborations* | `C++, Python, Bash`

2017–18 **Black Hole Thermodynamics (UMass Amherst)** CQG
Performed numerical and analytical calculations to demonstrate the existence of a Schottky anomaly analog in Schwarzschild-de Sitter black holes. — *Mathematics, Plotting, Interdisciplinary research* | `Python`

Solo Projects

2021– **Throrgan**
A customizable music compiler that reads custom-formatted music notation files and produces a `wav`-formatted recording of the piece. Github — *Mathematics, High performance* | `Rust`

2020–21 **Vokdh**
A word processor designed for the conlang "Fi Tobair" that I created, containing a searchable and editable dictionary and other UI advantages. Github — *UI, Memory optimization* | `C++, WinAPI`

2020–21 **Poetron**
A Discord bot that repeats any messages that conform to a poetic meter with line breaks in the correct places. Github — *UI, Memory optimization* | `C++, Windows Graphics API` — *Web apps* | `Python`

2014– **Computer Games**
Several space-themed 3D video games I wrote in high school to learn C++, constituting thousands of lines of code and graphics engines I wrote. — *Graphics, Performance* | `C++, Python, OpenGL, DirectX`

Other Activities

Copy editor for *The Tech*, 4th place winner of 2019 MIT Pokerbots competition, Physics grader, Teacher for MIT ATI program, Member of the Unitarian Universalist Society of Amherst Board of Trustees, High school representative to the school committee, Kung Fu assistant instructor.