

Cameron Mars

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Education

University of Colorado Boulder – College of Engineering & Applied Science

Graduating May 2027

Bachelor of Science in Mathematics

Bachelor of Arts in Computer Science

GPA: Overall 3.98 — Computer Science 4.0 — Mathematics 4.0

Notable Coursework: Data Structures, Algorithms, Computer Systems, Software Development, Linear Algebra, Discrete Math, Differential Equations, Calculus Series, Analysis, Abstract Algebra, Cybersecurity, Principles of Programming Languages

Work Experience

Calculus and Differential Equations Tutor – CU Boulder Athletic Department

June 2024 – Present

- Provide tutoring to college athletes across multiple levels of mathematics, focusing on Calculus, Differential Equations, and Linear Algebra
- Design mock exams and exam preparation courses
- Develop structured study plans tailored to course objectives

Student Researcher – CU Boulder Mathematics Department

May 2025 – Present

- Conduct original research in functional analysis on the classification of spatial partial isometries in finite-dimensional L^p spaces
- Proved that all partial isometries are spatial in this setting, extending classical operator theory results
- Developed new theorems including cardinality results for uniform partial isometries and generalizations of full isometry structure theorems

Algorithms Course Assistant – CU Boulder Computer Science Department

January 2026 – Present

- Course assistant for CSCI 3104: Algorithms
- Support student understanding of theoretical computation models, algorithmic complexity, dynamic programming, maximum flow algorithms, etc
- Assist with homework, study strategies, and exam preparation

Computer Systems Course Assistant – CU Boulder Computer Science Department

August 2025 – December 2025

- Course assistant for CSCI 2400: Computer Systems
- Support student understanding of binary operations, optimization, assembly, and machine-level programming
- Assist with homework, labs, study guides, and exam preparation

Algebra and Geometry Tutor – Manhattan School of Arts and Academics

January 2024 – May 2024

- Co-developed a Spanish-language tutoring program for middle school students
- Tutored disadvantaged grade 6–8 students in Algebra and Geometry
- Designed lesson plans focused on long-term academic success

Skills & Notable Projects

Linux File System Simulator

- Implemented a command-line file system simulator in C++ using an N-ary tree to represent directories and files
- Built a custom hash table with linear probing, quadratic probing, and chaining for fast file lookup
- Designed automated benchmarks to analyze collision rates, performance, and memory usage

SVD Decomposition Image Processor

- Compressed NOAA Mariana Trench depth data using incomplete SVD, reducing 1.9M points to 140K with $< 0.5\%$ error
- Applied eigenvalue decomposition and Gram–Schmidt orthogonalization
- Created MATLAB contour and surface plots to validate data fidelity

Revenge of Guts Game

- Developed a story-driven survival game in C++ with resource gathering, crafting, and boss combat
- Implemented object-oriented systems for inventory, training progression, and combat mechanics

Wheelchair-Accessible Camera Controller

- Engineered an Arduino-based joystick camera system for quadriplegic users
- Integrated mechanical and electrical components for smooth directional control
- Emphasized low-cost, inclusive, and user-friendly design

PowerPlay Website

- Built a web-based trading card game driven by real NBA/WNBA statistics
- Developed front-end UI and interactive battle logic in JavaScript
- Collaborated on full-stack features including authentication, trading, and game-state tracking

Technical: Scala, C/C++, HTML, CSS, JavaScript, SQL, Node.js, MATLAB, Arduino, Microsoft Office

Languages: Spanish, German

Leadership & Volunteer Experience

Theta Tau Engineering Fraternity

August 2024 – Present

- Support planning of service, professional development, and brotherhood events
- Mentor new members and provide peer tutoring in engineering coursework

CU Boulder Arts and Sciences Student Government

August 2023 – May 2024

- Assisted with allocation of student organization funding
- Participated in planning campus engagement and well-being initiatives
- Collaborated with administrators to address student concerns

CU Boulder Alternative Breaks

March 2024

- Traveled to New Mexico to support underprivileged immigrants
- Assisted with food preparation, facility maintenance, and technology education

Hobbies & Interests

Basketball, Muay Thai, Running, Skiing, Weightlifting, Philosophy, Classic Literature, Anime/Manga