

Prerit Bucha

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EDUCATION

University of California, Berkeley

Expected May 2029

Bachelor of Arts in Physics, Bachelor of Arts in Applied Mathematics

GPA: 3.6

Relevant Coursework: Abstract Linear Algebra; Introduction to Quantum Computing (Audited); Multivariable Calculus; Honors Intro Mechanics; Introduction to Quantitative Finance DeCal; Signals, Dynamical Systems, and Information Processing; Honors Intro Electromagnetism; Structure and Interpretation of Computer Programs

PROJECTS

Almgren–Chriss Optimal Execution Model

Dec 2025

- Implemented the Almgren–Chriss optimal execution framework in Python (NumPy, SciPy, Pandas, Matplotlib), modeling market impact under a mean–variance cost objective; Verified results numerically through Monte Carlo simulation of execution costs
- Compared results against other time-weighted average price and volume-weighted average price strategies

Feedforward Neural Networks for Chemical Property Prediction & De Novo Molecular Optimization

Researcher

December 2022 – January 2025

- Authored paper applying FFNNs for property prediction and de novo molecular generation
- Combined cheminformatics encoding with processing to recover 1k+ viable molecules from kaggle datasets

Optimal Division of a Heterogeneous Resource: Balancing Recipient Satisfaction and Slice Minimization

Researcher

January 2024 – December 2024

- Co-authored a theoretical math paper on heterogeneous cake-cutting with three international collaborators.
- Investigated algorithms balancing recipient satisfaction and slice minimization; drafted formal proofs.

Beyond Physics

Founder, Director

May 2023 – Dec 2025

- Created and published tutorials for 25+ advanced physics projects and simulations, including a Nuclear Magnetic Resonance (NMR) Quantum Computer, Peltier Cloud Chamber, Brownian Motion Smoke Cell etc
- Engineered custom control software for a two-qubit NMR spectroscopy device, detecting NMR events
- Coded website with 10,000+ active users from 40+ countries worldwide; earned UNESCO recognition

LEADERSHIP

Unique World Robotics, CROWN Robotics

Dubai, UAE

Founder, Captain, Lead Programmer

December 2023 – June 2025

- Founded UAE's first and only student-led FIRST Tech Challenge team, secured 10 sponsors, raising \$20,000
- Developed autonomous and tele-op control code in Java, implemented computer vision for object detection, optimized drivetrain. Innovate Award (Pune); Rank 1, Think Award (Dubai); Judges' Choice Award (APOC)

AWARDS

International Physics Olympiad UAE Team Member (Top performer in UAE training camp)

June 2025

International Logic Olympiad Silver

June 2024

British Mathematics Olympiad Round 2 (USAMO+ equivalent) Merit

Jan 2024, Jan 2025

ADDITIONAL INFORMATION

Skills: Python, Java, C++, MySQL, Scheme, Hindi, French, Intermediate Arabic, Microsoft Office

Interests: Guitar, Basketball, Tinkering, Prediction Markets, Reading, Making sweets