Ashmit Dutta

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Education

University of Illinois Urbana-Champaign *(2023–2027)* **Urbana-Champaign, IL**

BS in Computer Engineering and Statistics

GFX Careers Scholar

High School Dual Enrollment Coursework

- Math 213 (Analytic Geometry & Multivariable Calculus, George Mason University)
- Math 214 (Elementary Differential Equations, George Mason University)
- Math 125 (Discrete Mathematics, George Mason University)
- Stat 346 (Probability for Engineers, George Mason University)
- Math 1473 & Math 2471 (Linear Algebra & Differential Equations, University of Minnesota)

Research

NVIDIA

Research Assistant May 2023–Present

- I will be assisting NVIDIA Researcher Dr. Branislav Kisacanin by utilizing Neural Radiance Fields (NeRFs) and applying shape analysis.

George Mason University

Research Assistant May 2023–Present

- I will be assisting Dr. Michael Jarret by working on various projects related to quantum computation. I am currently attempting to find the optimal "circuit synthesis" algorithm for 2 qubit quantum circuits.

Experience

Unitsec Technologies

Intern May 2023–Jun 2023

- Worked at Unitsec Technologies as a 2 week intern in the Information Technology software product development team.
- Developed and coded machine learning algorithms to support product development initiatives.
- Utilized webscraping techniques to gather relevant data and support decision-making processes.

Online Physics Olympiad

Co-Founder & Lead Problem Writer Jan 2020–Present

- Co-founded an annual 501(c)(3) non-profit physics competition/organization during COVID-19.
- After 2 years, the competition has gotten over 4000 competing members from 60+ different countries, as well as a working crew of 20 members.
- Personally helped in leadership, problem writing, and logistics. I graded hundreds of papers over 4 years, and talked with companies to get sponsorships on top of writing challenging original problems.
- The OPhO is endorsed by the International Physics Olympiad Committee as well as partnered with Online Physics Brawl.

Quantum School for Young Scientists

University of Waterloo, Institute for Quantum Computing Jun 2022–Jul 2022

- QSYS is an exceptional enrichment program designed for high school students offering a unique blend of expert lectures, small group discussions, problem-solving sessions, and opportunities for mentoring and networking with world-leading quantum researchers.
- I had the privilege of attending lectures by researchers from the University of Waterloo on topics in quantum computing such as quantum key distributions (QKD) and cryptography.

– I gained valuable insights into various aspects of quantum computing, including algorithms and current research trends. Additionally, I was able to apply my knowledge to solve challenging problem sets on quantum mechanics using Python.

Awesome Math Academy

Teaching Assistant May 2020–May 2022

– TA in the Physics 3 course at Awesome Math taught under Dr. Branislav Kisacanin.
– Topics cover: Mechanics, Electricity and Magnetism, Thermodynamics, Fluids, Relativity, Waves, Optics, and Nuclear and Atomic Physics.
– I helped by grading students work and answering their questions.

Volunteering

Physoly

Organization Founder Mar 2020–Present

– Organizes large community projects on the website physoly.tech
– Manages a large online community with 8000+ physics students preparing for olympiad physics (official partners with discord) and a YouTube channel with 700+ subscribers.

Everaise Academy

Physics Head and Executive Board Member Mar 2020–Present

– Part of the leadership team of a non-profit online STEM school that offers courses in Math, Physics, Biology, and Astronomy.
– Created and conducted course content and office hours for the Physics course.
– Wrote and edited over 5 chapters of published physics textbook on Amazon.
– Program received over 15k USD in sponsorships.

Projects

MIT OCW 8.03 and 8.04 Solutions

Self Study May 2020 – Aug 2021

– I have been working through MIT OCW's 8.03 (Vibrations and Waves) and 8.04 (Quantum Mechanics 1) as part of my self study out of school.
– I am currently in the process of writing solutions in LaTeX because the problem sets have none. This can help others who are also self-studying the course.
– I am currently 1/2 way done through 8.03 and 3/4 way done through 8.04. I have made the project open source on GitHub.

Honors and Awards

USA Computing Olympiad, Gold Rank 2022
Online Physics Brawl, Top 4/667 high school teams and top 12/793 teams including undergraduates 2022
Physics Unlimited Premier Competition, Honorable Mention (top 15 US); 2x Recipient 2021, 2022
Honorable Mention (top 40 international/1000+ competitors), Physics Cup 2021
Top 20 Internationally Shortlisted Teams in the Beamline for Schools Particle Physics Competition by CERN 2020