Ayan Sarma

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SKILLS

- Quantum Optics (e.g. lasers, calibration, entanglement, precision measurements)
- Electronics Lab Experience (e.g. oscilloscope, spectrum analyzers, soldering, circuit design)
- Controls Systems Engineering
- FPGA Programming (e.g. Verilog, LabView, Xilinx)
- Embedded Systems Design
- Microcontrollers (e.g. PIC, Arduino, C, C++)
- Digital Electronics
- Data Analysis (e.g. Python, Pandas, advanced statistical knowledge, visualization software)
- Mathematical Modeling
- Software Development (e.g. Docker, Git, Bash)
- Web Tech (e.g. Express, VueJS, NGINX, SQL)
- Product Development

EXPERIENCE

Disproving Bell's Inequality **Sep. 2022– Jan. 2023**
Physics Capstone Project *Minneapolis, MN*

- Performed a Bell test to explore the nature of entangled photon states
- Assisted in engineering a photon detector that detected and digitalized double and triple counts of photons using FPGAs and Labview
- Calibrated lasers and optics to entangle photons with a crystal and detect correlations between different polarized light - determined that Bell's Inequality was violated by 8 standard deviations.

Rollup Skateboards **Jan 2023 – Aug 2023**
Student Entrepreneurship Project *Minneapolis, MN*

- Designed & engineered an ultra-portable bistable bendable skateboard that can roll up like a slap wrap bracelet.
    - Finite Element Analysis of residual strains in the board modeled in Solidworks
- Recipient of MVP Prototyping Grant from the MIN-Corps
- Recipient of UMN Anderson Lab's Taylor Project Student Fund

Teaching **Sep 2021 – May 2024**
Department of Physics *Minneapolis, MN*

- Taught & ran physics lab and discussion sections for 60 students in physics classes (Mechanics, E&M)

Department of Math

- Teaching assistant for the calculus sequence for students in the college of biological sciences.

Naval ROTC Tutor

- Ran tutoring hours for students in the Naval ROTC branch taking STEM courses at the University of Minnesota

RESEARCH + TALKS

Lie Groups and Lie Algebras	Directed reading program, Spring 22
Introduction to Clifford Algebras	Directed reading program, Fall 23
Introduction to Representation Theory	Directed reading program, Spring 23
Spin Groups and Quantum Mechanics	Math Capstone Project, Spring 24

EDUCATION

Bachelors of Science, University of Minnesota **May 2024**
Double Major: Applied Math and Engineering Physics *Minneapolis, MN*
Minor in Computer Science

- Interested in entrepreneurship, computing, running & sabre fencing
- Recipient of the Larry Rothenbuehler Scholarship