

RACHEL E JOHNSON

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EDUCATION

University of Notre Dame

BS in Physics and Mathematics, Glynn Family Honors Program

Aug 2020 - May 2024

Notre Dame, IN

Selected Coursework: Quantum Computing, Quantum Mechanics, Thermal Physics, Solid State Physics, Linear Algebra, Topology, Real Analysis, Circuitry and Electronics, Game Theory, Experimental Physics Lab, Archaeology of Hacking

SKILLS

Experienced: L^AT_EX, Linux, Python, Qiskit, Git, Bash, HTML, CSS

Familiar: SQL, Pytorch, Mathematica, C++, C#, Java, AWS, Apache, DNS, Soldering, IC Fabrication techniques, GIMP, Domino, Computer Networking, Computer Hardware, Experimental Nuclear Physics techniques, Swing Dancing

EXPERIENCE

Lockheed Martin Space

Quantum Computing Intern

May 2022 - Present

Sunnyvale, CA & Remote

Researching error mitigation techniques when applied to a quantum optimization algorithm and run on superconducting quantum computers. Writing paper with results.

Applied an error mitigation technique to generate improved energy expectation values and analyzed thermal errors across various quantum computing chips. Presented my research to quantum experts, to scientists, and to a general audience.

Art of Problem Solving Institute

Grader for USA Mathematical Talent Search

Oct 2023 - Present

Remote

Scored and wrote feedback for solutions to proof-based math problems.

Notre Dame High Energy Physics

ML Event Reconstruction Research Collaborator

Sept 2021 - May 2022

Notre Dame, IN

Collaborated across physics and computer science departments to work towards applying a transformer neural network to particle physics data from CERN's Compact Muon Solenoid (CMS) experiment to better classify top quark collisions.

The Observer (ND-SMC)

Systems Administrator

May 2021 - Jan 2023

Notre Dame, IN

Maintained WordPress website (over 2500 views per day) and troubleshooted computer issues for student-run newspaper. Initiated major website changes and assisted with purchase and setup of new computers for the office.

Lockheed Martin Space

Linux Systems Intern

June 2021 - Aug 2021

Littleton, CO

Supported the Geostationary Operational Environmental Satellite (GOES) IT team with various hardware and software needs such as independently creating an internal website for live streaming 4 camera feeds, setting up servers in the clean room, kickstarting RHEL machines, and mitigating critical vulnerabilities in preparation for the February 2022 launch.

PROJECTS

Nuclear Physics Research at Goethe Universität

Student Researcher

Goethe Universität | October 2022

Frankfurt am Main, Germany

Investigated the metallic composition of jewelry and coins by using a particle accelerator to inject the objects with high energy neutrons and then measuring the energy spectrum of electrons emitted from the radioactive materials.

Calculating e Using Monte Carlo Methods and Quantum Amplitude Estimation

Team Airier-Lei

iQuHACK | Jan 2021

MIT, MA (Remote)

Implemented a Monte Carlo simulation using Qiskit to estimate the mathematical constant, e and applied a quantum speedup algorithm to increase efficiency.

AWARDS & MEMBERSHIP

ND Swing Dance Club Treasurer

2022-Present

ND Tech Ethics Center Undergraduate Affiliate

2021-Present

Lockheed Martin STEM Scholarship Recipient

2020-Present

National Merit Finalist

2020