JONAH SACHS

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GitHub: https://github.com/Jsachs14/Sachs-Github; Website: https://www.jonahmsachs.com/

EDUCATION

Washington University, St. Louis, MO 2021 – May 2025
GPA: 3.80
Double Major in Computer Science (McKelvey School of Engineering) and Physics (College of Arts & Sciences)
Double Minors in Quantum Engineering and Nanoscale Science and Engineering

- Coding Language Experience: Python, Arduino C, MATLAB, Java, C++, R, LaTex
- Computer Science Project Experience: Data Science and Visualization, Embedded Systems Software and Control Systems, Machine Learning for Quantum Computers and Physical Systems, Physical Modeling using C++, Firmware and Full Stack Development for FSAE Vehicles and Quantum Systems.
- Fabrication Instruments Used: AJA E-Beam Evaporator, Asher, Dicing Saw, Elionix Electron Beam Lithography (EBL), Heidelberg Laser Writer, Kloe Mask Aligner, Oxford ICP/RIE, Profilometer, Spin Coater, Scanning/Tunneling Electron Microscope

EXPERIENCE

QuEra Computing Inc., Boston, MA June 2025 – September 2025
Software Engineering Intern

- Helped design the calibration software stack for improved autonomous behavior for QuEra's next generation of quantum devices.
- Constructed a Dash Python application for managing machine calibrations and visualizations with a fully RESTful API and pydantic DAG.
- Contributed to the embedded systems software stack and to the production of online technical resources on quantum systems and physics.

WashU Department of Chemical Engineering and Mathematics (Mentor: Dr. Grigoriy Yablonsky) Spring 2024 – Present
Academic Research in Data Science and Chemical Engineering

- Working with statistical analysis and the visual modeling of chemical kinetic systems. Focusing on the conservatively perturbed equilibrium (CPE) chemical event with applications to joint kinetics.
- Published and in process of preparing further publications with professors in both Chemical Engineering and Mathematics.
- Also exploring applications of quantum computers to chemical kinetics, including the inverse problem and HHL for ODEs.

WashU Department of Physics and Institute of Materials Science (Mentor: Dr. James Buckley) Summer 2024 – Summer 2025
Fabrication of Josephian Parametrized Amplifiers and a Shot Noise Tunnel Junction

- Learned and optimized an established Dolan Bridge procedure for fabricating nanoscale Josephson Junctions (JJs).
- Created and optimized a procedure for microscale JJs, designing a shot noise-based noise source.
- Prototyped and packaged JJs for cryogenic environments to improve readout for the ADMX experiment @ WashU.

WashU Racing (FSAE), St. Louis, MO Fall 2022 – Summer 2025
Lead of the Electronics and Data Acquisition team

- Managed a team of 12 engineers creating the electronics and data acquisition subsystem for a Student Formula Vehicle (FSAE).
- Ran the design and buildup of custom PCBs, communication systems, and a wiring harness with over 50 attached sensors.
- Gained skills in firmware production, electrical debugging and prototyping, and engineering design processes and system management.
- Notable Projects: Live Telemetry, Error Detection and Digital Circuit Breaking, Improved Data Analysis, Control Systems.

WashU Department of Computer Science (Mentor: Dr. Ron Cytron) Fall 2023 – Summer 2024
Academic Research and Independent Study in VQE and other algorithms for NISQ Applications

- Research surrounding Variational Quantum Eigensolvers (VQE) and other hybrid algorithms using Qiskit and D-Wave.
- Prepared and taught academic Tex-based materials for an introductory quantum computing course in the basics of quantum ML.

NDSU Department of Computer Science, Fargo, ND (Mentor: Dr. Danling Wang) Summer 2023 – Spring 2024
Machine Learning Research Experience Undergraduate

- Worked in data preparation, analysis, and regression and classification models for an experimental diabetes sensor.
- Designed and ordered sensor prototypes using *Altium Designer*. Built up the PCB prototype for use in a clinical study.

Washington University Learning Center/Undergraduate Student Services, St. Louis, MO Fall 2021 – Summer 2025
Academic Support Positions

- Teacher's Assistant: Introduction to Intelligent Agents Using Science Fiction, Introduction to Quantum Computing, Chemical Kinetics and Catalysis
- Academic Mentor/Engineering Tutor: Introductory Physics, Introduction to Computer Science

PUBLICATIONS

Josephson Junctions: Fabrication and Applications for the Axion Dark Matter eXperiment (Sachs 2025)

- WashU Open Scholarship: https://openscholarship.wustl.edu/undergrad_etd/72/ May 2025

Conservatively perturbed equilibrium and perturbation: Linear case (Sachs 2025, et al.)

- Chemical Engineering Journal (CEJ)- https://www.sciencedirect.com/science/article/pii/S1385894725021059?via%3Dihub March 2025

Quantum Applications in the Automotive Industry (Sachs 2025)

- Quantum Computing Report (QCR)- https://quantumcomputingreport.com/quantum-applications-in-the-automotive-industry/ January 2025

Between Research and Responsibility: The Invention of Dynamite (Sachs 2024)

- Substantia: An International Journal of the History of Chemistry- https://riviste.fupress.net/index.php/subs/article/view/2536 September 2024

Applications of Quantum Computers to Optimization Problems (Sachs 2024)

- Tech Writing Competition Nominee- https://www.jonahmsachs.com/Applications_of_Quantum_Computers_to_Optimization_Problems.pdf May 2024