James Saslow

Curriculum Vitae

LinkedIn | 310-804-4477 | jamessaslow.com | james.saslow@sjsu.edu | GitHub

Skills

- Python | Qiskit | IBMQ | DWave Leap API | Flask | TensorFlow | PyTorch | C++ | OOP | Wolfram Language | Mathematica
- Qiskit Metal | Quantum Programming | Quantum Algorithms | Qubit Benchmarking | Combinatorial Optimization | QUBO
- Cloud Programming | Prompt Engineering | English, Spanish - *All Professional Proficiency or Above*

Research Experience

Quantum Engineering Traineeship — **NSF-NRT** — Golden, CO — 1/2024 - Present

- Engaged in an NSF-funded quantum traineeship program between San Jose State University and the Colorado School of Mines to prepare fellows to join the quantum workforce
- Collaborated with LLNL to design a superconducting chip and performed simulations via HFSS, q3d, and Maxwell 3D Ansys environments to research the iSWAP entanglement gate & other single qubit gates in quantum hardware

Quantum Foundations Researcher — **San Jose State University** — San Jose, CA — 12/2021 - 12/2023

- Performed simulations of spontaneous parametric down-conversion in Python to research entangled photon pairs
- Implemented Runga-Kutta 4th-order techniques to solve non-linear coupled differential equations

Quantum Algorithms Intern — **Air Force Research Lab** — Rome, NY — 6/2023 - 8/2023

- Researched amplitude amplification quantum algorithms for solving combinatorial optimization problems
- Performed benchmarking of amplitude amplification on IBMQ heavy-hexagonal superconducting quantum devices

Soft Matter Research Intern — **Brown University** — Providence, RI — 6/2020 - 8/2020

- Solved nonlinear differential equations to obtain the structure of a spherical colloidal membrane viral rod assembly
- Presented research to the Virtual Leadership Alliance National Symposium

Machine Learning Researcher — **San Jose State University** — San Jose, CA — 8/2019 - 5/2020

- Searched for clusters in PCA Ising model data by utilizing a Gaussian Mixture Model machine learning method

Teaching Experience

Teaching Associate — **San Jose State University** — San Jose, CA — 8/2023 - 12/2023

- Instructed an undergraduate-level introductory physics lab course (Phys 2A), graded problem sets, and fostered collaborative, team-based student learning

Grader — **San Jose State University** — San Jose, CA — 1/2021 - 5/2021

- Grader for Mathematical Methods for Physics course (Phys 130), graded problem sets, and assisted students with homework in Zoom breakout rooms

Tutor — **Independent Tutoring Service** — Remote — 2017-2020

- Started my own independent tutoring service catered towards high school and college students studying algebra, precalculus, calculus, and physics
- Facilitated both in person and online (Zoom/Discord)

Education

M.S., Quantum Technology — **San Jose State University** — San Jose, CA — 8/2023 - Present

- **Coursework:** Quantum Computing | Advanced Machine Learning | Quantum Programming | Quantum Information Science
- **GPA:** 3.90
- Co-founder of the Society of Quantum Engineers at SJSU
- **Advisors:** Dr. Hiu Yung Wong, Dr. Ken Wharton

B.S., Physics — **San Jose State University** — San Jose, CA — 8/2018 - 12/2022

- **Coursework:** Quantum Mechanics | Partial Differential Equations | Computational Physics
- **Upper Division Major GPA:** 4.0, Summa Cum Laude
- Accepted into the Society of Physics Students (SPS) in recognition of scholarly excellence
- **Advisor:** Dr. Ken Wharton

Projects

- Solving QUBOs on DWave's API
  - A tutorial series solving NP-Hard combinatorial optimization problems using DWave's quantum annealers

- Variational Quantum Eigensolver Tutorial
  - A Jupyter Notebook tutorial on performing VQE for an H2 molecule

- Transmon Qubit Emulator
  - Interactive simulator and Bloch Sphere visualization of the time evolution of a Transmon qubit interacting with microwave pulses

- Grover's Algorithm with an Imprecise Oracle
  - A quantum error correction model of Grover's algorithm to recover solutions of the marked state while still maintaining a quantum advantage

Presentations

- **Saslow, J.,** Koch, D., "Solving Combinatorial Optimization Problems using a Quantum Computer," San Jose State University Department of Physics and Astronomy Seminar, San Jose, CA, Oct 2023

- **Saslow, J.,** Koch, D., "Solving Cost Function Problems on IBMQ Devices," Griffiss Institute Poster Symposium, Rome, NY, July 2023

- **Saslow, J.,** Wharton, K., "Apparent Photons from a Classical Action Constraint," SJSU Student Research Showcase, San Jose State University Department of Physics and Astronomy Seminar, San Jose, CA, Sept 2022

- **Saslow, J.,** Stork, B., Wharton K., "Apparent Photons from a Classical Action Constraint," 17th Annual SJSU College of Science Student Research Day, San Jose, CA, May 2022

- **Saslow, J.,** Powers, T., "The Role of Tilt in Colloidal Membranes," Virtual Leadership Alliance National Symposium, Providence, RI, July 2020

Grants and External Funding

- A Program for Training a Quantum Workforce
  - Grant No. Award - 2125906
  - U.S. National Science Foundation
  - Period of Grant Award: 1/2024 - 5/2024

- Bioinspired Soft Materials
  - Grant No. MRSEC - 1420382
  - U.S. National Science Foundation
  - Period of Grant Award: 6/2020 - 8/2020
  - Project: The Role of Tilt in Colloidal Membranes
  - Role on Project: Soft Matter Research Intern, The Leadership Alliance Early Identification Program

Conferences Attended

- "Real World Quantum Computing @ LLNL," Livermore, CA, May 2024
- "NVIDIA GTC 2024 AI Conference and Expo", San Jose, CA, Mar 2024
- "Q2B23 Silicon Valley" (Quantum to Business), QC Ware, Santa Clara, CA, Dec 2023
- "Workshop on Quantum Computing: Devices, Cryogenic Electronics, and Packaging 2023", 2023 IEEE CASS Seasonal School, Silicon Valley, USA, Oct 2023
- "Q4I (Quantum for International) 5th Annual International Quantum Information Science Workshop," Griffiss Institute, Innovare Advancement Center, Rome, NY

Certifications

- IBM Introduction to Software Development (2024)
- The Leadership Alliance Virtual Professional Development Series (2020)
- LabView Programming, Troubleshooting, and Environment (2020)

Outreach & Professional Associations

- The Society of Quantum Engineers (SQE) at SJSU
  - Co-Founder
  - Treasurer Fall 2024 - Spring 2025
- Institute of Electronics & Electrical Engineers (IEEE)
  - Graduate Student Member
- Society of Physics Students (SPS)
  - Member

Media Coverage

- Featured in SJSU's News Center "A Quantum Leap into New Technology"