Howard Meng

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EDUCATION

University of California, Berkeley Graduated May 2024
Bachelor of Arts in Computer Science; Bachelor of Arts in Physics with Highest Honors **GPA: 3.92/4.0**

University of Illinois, Urbana-Champaign Graduating May 2026
Master of Science (MS) in Physics, Research in Computational Condensed Matter Physics (**Program Ranked #5**, U.S. News 2024)

Relevant Coursework: **Deep Learning**, Advanced Natural Language Processing, Operating Systems, Quantum Information Science.

Research Focus: Application of Machine Learning and AI to Computational Condensed Matter Physics, Quantum Information Science, and theory-driven approaches for advancing scientific discovery, including the development of **novel algorithms and data frameworks**.

SKILLS

Programming: C, C++, Python, Java, Go, JavaScript, SQL, React, Node.js, Express, Flask, Scikit-Learn, PyTorch, CUDA, ROOT, Pandas.
Technology: AWS, MongoDB, PostgreSQL, High-Performance Computing, Git, SLURM (Sbatch), LabView, LabWindows, Mathematica.
Language & Hobby: English (Native), Chinese Mandarin (Native), tennis, table-tennis, badminton, acoustic and classical guitar.

PROFESSIONAL EXPERIENCE

Commonwealth Fusion Systems Devens, MA
Contracted Project Manager & Full-Stack Software Engineer Jan. 2023 – May 2023

- Led a team of seven software engineers. Designed, developed, and deployed a robust manufacturing data portal that streamlined the process for global partners to upload test results directly to the CFS database, bolstering inter-company communication and data-sharing capabilities. Used React and MUI for the front-end, and AWS Lambda, API Gateway, and AWS RDS for the back-end.
- Automated notifications and alerts, enabling 24/7 real-time updates, which improved both customer satisfaction and employee efficiency. Leveraged AWS Simple Email Service (SES) and integrated front-end and back-end with modern RESTful API framework.

Dataherald San Francisco, CA
Full-Stack Software Engineer Intern Jun. 2021 – Jan. 2022

- Deployed 30 live-updating, customizable data visualization modules for journalism platforms, driving significant revenue through tailored client solutions. Utilized React and Pandas for real-time data integration, with PostgreSQL and MongoDB for data storage.
- Led an automated testing initiative and successfully reduced user-reported bugs by 90% and eliminated user complaints in long-terms. After identifying this need, developed and fine-tuned hundreds of auto-triggered behavioral test cases using Testrigor.

PlexTech, Berkeley, CA – *Vice President* Jan. 2022 – May 2024

- Led software engineering consulting student organization dedicated to delivering full-stack project solutions. Managed multiple teams to collaborate with diverse companies such as Atlassian, Zendesk, and Airbyte to engage in technical partnership projects.

TOPPA, Berkeley, CA – *President* Aug. 2021 – Dec. 2023

- In partnership with Google and university professors to promote leadership among Asians in tech by directing networking events, speaker series, professional development workshops, and hands-on software development teamwork experiences.

The Anthony J Leggett Institute for Condensed Matter Theory Urbana, IL
Researcher, Advisor: Bryan Clark Aug. 2024 – Present

- Researching on near-term quantum algorithm, the Variational Quantum Eigensolver (VQE), with an emphasis on applying machine learning and deep neural network techniques using PyTorch to optimize quantum computations for condensed matter models.

Condensed Matter Theory Center Berkeley, CA
Researcher, UC Berkeley Pi^2 Scholar, Advisor: Michael Zaletel May 2022 – May 2024

- Conducted rigorous computational physics research on the Surface Code for near-term quantum computing error correction.
- Authored a comprehensive research report and a poster. Simulated 2D lattices of up to 16x16 interacting spins using isometric tensor networks (isoTNS) and the imaginary time evolution block decimation algorithm (iTEBD^2), achieving exact representability.
- Continued research post-scholarship to explore the critical point of the Surface Code's topological phase transition under external magnetic fields, employing the Perlmutter supercomputer for computations to map a precise 2D phase diagram.

University of Michigan, Ann Arbor – Applied Physics Department Ann Arbor, MI
Researcher, National Science Foundation REU Scholar, Advisor: Lu Li Jun. 2023 – Aug. 2023

- Developed a visual computer program using LabWindows in C++ to streamline and control the capacitance bridge instrumentation, fully alleviating the need for manual operations in solving capacitance and significantly increasing operational efficiency.
- Engineered a new current-to-voltage converter to amplify magnetometry's operational frequency to 15 MHz with high quality, enabling the use of stronger magnets. Employed LTSpice, Altium Designer, and surface mount soldering to construct the device.