Ryan Shaffer

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EDUCATION (overall GPA 3.92/4.00)

Ph.D., Physics, University of California, Berkeley — December 2022
Thesis Title: Efficient and trusted operation of quantum computers and quantum simulators [pdf]
M.A., Physics, University of California, Berkeley — December 2018
M.S., Engineering and Management, Massachusetts Institute of Technology — February 2015
M.S., Computer Science (concentration in Computer Security), Boston University — May 2011
B.S., Electrical Engineering (concentration in Computer Engineering), Grove City College — May 2008

INDUSTRY EXPERIENCE

Applied Science Manager, Amazon Web Services (New York, NY) — 2022 – Present
- Managing a team of scientists and engineers building tools for writing and running programs on quantum computers through Amazon Braket. Led the creation of AutoQASM, a library for imperative quantum programming (`Python`).

Software Engineer, Facebook (San Francisco, CA) — 2021 – 2022
- Designed and implemented reliability logging and monitoring for Facebook Reels delivery in News Feed, which provided actionable insights leading to reduced compute costs and increased usage of Reels (`C++`, `Hack`).

Software Engineer and Manager, Microsoft (Cambridge, MA and Redmond, WA) — 2006 – 2021
- *Software Engineer, Azure Quantum (2020-21):* Designed, built, and released Python and Jupyter clients for quantum program execution on Azure Quantum; work featured at Microsoft Ignite and IEEE Quantum Week (`Python`, `C#`).
- *Engineering Manager, Office (2014-18):* People manager for a team of 10+ engineers building cloud-enabled sharing and collaboration experiences for Word, Excel, and PowerPoint across desktop, mobile, and web (`C++`, `C#`).
- *Software Engineer, SharePoint (2008-14):* Built the first version of OneDrive for Business in the browser. Designed and implemented modern, simplified UX for collaboration and social features across the full stack (`C++`, `C#`, `JS`).
- *Engineering Intern, Office (2006-07):* Built Office file previewers and automatic crash recovery for Groove (`C++`).

RESEARCH AND TEACHING EXPERIENCE

Graduate Student Research Intern, OVER-QC Group, Sandia National Laboratories, Livermore, CA — 2021 – 2022
Graduate Student Researcher, Häffner Ion Trap Group, UC Berkeley, Berkeley, CA — 2017 – 2022
Graduate Student Instructor, Physics Department, UC Berkeley, Berkeley, CA — 2019
Research Assistant, Engineering Systems Division, MIT, Cambridge, MA — 2014
Teaching Assistant, Physics and Engineering Departments, Grove City College, Grove City, PA — 2005 – 2007

SELECTED PAPERS AND PUBLICATIONS

Sample-efficient verification of continuously-parameterized quantum gates (Shaffer et al.) [Quantum] [code] — 2022
Surrogate-based optimization for variational quantum algorithms (Shaffer et al.) [Physical Review A] [code] — 2022
Practical verification protocols for analog quantum simulators (Shaffer et al.) [Nature npj QI] — 2021
Characteristics and enablers of transparency in product development risk management (Shaffer et al.) [ICED] — 2015
Why software firms build hardware, and what Microsoft is doing about it (Shaffer) [MIT thesis] — 2015

SELECTED TALKS AND PRESENTATIONS

Invited seminar, Institute for Robust Quantum Simulation, College Park, MD — September 2022
Contributed talk, SC20 First International Workshop on Quantum Computing Software (virtual) — November 2020
Guest lecture, MIT 15.358 Platform Strategy and Entrepreneurship, Cambridge, MA — April 2020
Contributed talk, Assessing Performance of Quantum Computers workshop, Estes Park, CO — September 2019
Contributed talk, 20th International Conference on Engineering Design, Milan, Italy — July 2015

PATENTS AND PATENT APPLICATIONS

Graphical user interface facilitating uploading of electronic documents to shared storage — US10154078B2
Graphical user interface facilitating sharing and collaborative editing of electronic documents — US20170003829A1
State-specific ordering in collaboration services — US20170003835A1

HONORS AND AWARDS

NSF Quantum Information Science & Engineering Network (QISE-NET) Fellow — 2021 – 2022
DoD National Defense Science & Engineering Graduate (NDSEG) Fellow — 2017 – 2021
UC Berkeley Outstanding Graduate Student Instructor (top 10% of GSIs) — 2019
Microsoft Emerging Leader Bench (high-potential early career employees) — 2012 – 2014
Boston University Science and Engineering Day Applied Science Award — 2011
Grove City College Roger Clark Dawes Engineering Award (top engineering graduate) — 2008
Grove City College Trustee's Academic Scholarship recipient (full tuition) — 2004 – 2008