# Andy J. Goldschmidt

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## EDUCATION

**University of Washington** — Seattle, WA
**Ph.D., Physics** — Aug 2022
Thesis: Data-driven modeling and control of quantum dynamics (Advisor: J. Nathan Kutz)
Awards: NSF Quantum Information Science & Engineering Network Fellowship

**The Ohio State University** — Columbus, OH
**B.S., Math and Physics** — Jun 2016
GPA 3.7 | magna cum laude
Awards: Full Fellowship (100% tuition), Phi Beta Kappa. Leadership: Undergraduate Research Advisory Committee

## EXPERIENCE

**University of Chicago** — Chicago, IL
**Postdoctoral researcher, Computer Science, with Fred Chong** — Sept 2022-present
Automating calibration and control of quantum technology using optimal control and machine learning.

- Career metrics: >8 publications (>600 citations), >20 conference presentations.
- Recent work: *Quantum Iterative Learning Control, Crosstalk-Robust Gatesets, Quantum Trajectory Bundles*
- Awards: Intelligence Community Postdoctoral Research Fellowship (up to 3 yrs.)
- Co-founder: Harmoniqs, offering subscription and open source access to state-of-the-art quantum optimal control & calibration.

**University of Washington** — Seattle, WA
**Graduate research assistant, Applied Mathematics, with Nathan Kutz** — Sept 2017-Sept 2022
Physics-informed machine learning for dynamical systems (modeling, sensing, and control).

- Positions: NSF AI Institute for Dynamic Systems (fellow, 1 yr.), Lawrence Livermore National Lab (quantum group, 2 yr.), Pacific Northwest Research Institute (genetics group, 1 yr.), Teaching Assistant (physics, 1 yr.)
- Software: *derivative* (Python, numerical differentiation of noisy data, part of the PySINDy ecosystem), *pyprotoclust* (C++ / Python, unsupervised learning using hierarchical clustering with prototypes)

**Battelle Memorial Institute** — Columbus, OH
**Research associate** — Sept 2016-Sept 2017
Software developer (C++, C#, F#, Python) modeling complex systems (e.g. civil infrastructure, supply chains, industrial processes).

- Part of a 4-person team that developed a new data-driven model of foodborne illness outbreaks for a corporate client.
- Secret clearance. Part of a team running risk models and statistical analysis for US Dept. of Defense. Led a complete upgrade of the test infrastructure for the existing C++ ecosystem (majority of the codebase).

**Lawrence Livermore National Laboratory** — Livermore, CA
**Summer Undergraduate Laboratory Internship** — Jun 2015-Aug 2015
Applied high-performance computing to nuclear physics simulations.

- Selective summer internship (<10% acceptance). Best Poster Award (top 10% of 250 participants).

**Frankfurt Institute for Advanced Studies** — Frankfurt, Germany
**Visiting research assistant** — Jun 2014-Sept 2014
Contributed collision initialization to SMASH, a major C++ software for collider physics, as part of a 15-person scientific team.

- Self-identified research opportunity. Funding secured through university grants (4 awards, $12k total) plus housing support from host institution. Poster at Quark Matter 24 in Darmstadt (world's pre-eminent nuclear physics conference).

## LEADERSHIP AND SERVICE

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| Organizer, JuliaCon Mini Symposium (Quantum Computing) | 2025 |
| Organizer, IEEE Quantum Week Workshop (Quantum Optimal Control and Calibration) | 2024 |
| Lecturer, Numerical Methods in Quantum Information Science (QNumerics) Summer School | 2024, 2025 |
| Research mentor, Illinois Mathematics and Science Academy (1 credit SIR program) | 2024, 2025 |
| Organizer, SIAM CSE Mini Symposium (Data-driven Methods for Quantum Dynamics and Control) | 2021 |
| Organizer, UW Career Development Networking Days (Annual multi-day, industry-sponsored networking event) | 2018, 2019 |