Jackson Walters

Arlington, VA | 703-915-6542 | jacksonwalters@gmail.com | https://jacksonwalters.com

Ph.D.-level machine learning engineer, cryptography specialist, and applied mathematician with a strong record in scientific programming, data science, and higher education. Skilled in lattice-based cryptographic systems, machine learning, and optimization. Published author in the Annals of Statistics and Advances in Mathematics. Seeking data science, QA, or applied cryptography roles combining research depth and software engineering expertise.

Work Experience

Cryptography Fellow *Nov 2024 – May 2025*
Zaiku Group, Ltd. Remote (based in Liverpool, UK)

- Collaborated with mathematicians in the Homotopic Minds math-to-industry transition program applying lattice-based methods to post-quantum cryptography.
- Implemented ring-LWE, module-LWE, NTT, and ML-KEM encryption primitives in Rust; compliant with FIPS 203 and NIST PQC guidelines.
- Published production cryptographic crates to Crates.io [`ring-lwe`, `module-lwe`, `ntt`, `mlkem-fips203`].
- Delivered public technical talks and authored educational blogs promoting open-source cryptography awareness.
  Blog: A Practical Introduction to Lattice-Based Cryptography [https://jacksonwalters.com/blog/?p=1]
  Talk: Lattice Cryptography in Rust [https://www.youtube.com/live/BTsz6-ZPYmM]

QA Engineer *Oct 2020 – Jan 2021*
Power Auctions, LLC Washington, DC

- Performed QA testing for FCC Auction 107 (5G wireless licenses), contributing to a $80B + $300M system close.
- Designed extreme-value bid simulations to uncover numerical stability issues in MILP solvers (Gurobi); coordinated debugging and CI regression tests.
- Authored white paper on floating-point limitations in optimization software and proposed mitigations for solver reliability.

Teaching Fellow *Aug 2013 – May 2019*
Boston University Boston, MA

- Taught undergraduate mathematics courses and led multiple discussion sections each semester.
- Conducted mathematical research leading to publications in top-tier journals.
- Presented work at international conferences (BU–KEIO) and mentored undergraduate research in machine learning.

Projects

Lattice-based Labs (https://github.com/lattice-based-labs)
- Open source post-quantum cryptography software and tools written in pure Rust and published to Crates.io.
- *Repositories*: **ring-lwe**, **module-lwe**, **mlkem-fips203**, **ntt**

Walters Labs (https://github.com/walters-labs)
- Applied research and open-source software affiliated with Walters Consulting, LLC. Includes physics-informed neural networks for options pricing, encrypted messaging app prototypes, natural language processing toolkits, signal intelligence tools published to PyPI, a functional implementation of Shor's algorithm in QisKit, AES block ciphers in C, analysis of brain scans in MATLAB, and more.
- *Repositories*: **open-encrypt**, **wordchef**, **PINN**, **SIGINT**, **shors-algorithm**, **machine-learning**, **neuroimage-analysis**, **aes-block-cipher-modes**, **natural-language-processing**, **finance**, **optimization**

Personal (https://github.com/jacksonwalters)
- Personal projects, teaching, and math research including capstone project for The Data Incubator correlating corpus of SCOTUS opinion with public opinion data.
- *Repositories*: **scotus-v-public**, **cryptography-basics**, **math-research**

Publications

Advances in Mathematics | Vol. 386 (2021), 107799. *Toroidal prefactorization algebras associated to holomorphic fibrations and a relationship to vertex algebras.* *Aug 2021*
Annals of Statistics | Vol. 48, No. 1 (2020), 514–538. *Averages of Unlabeled Networks: Geometric Characterization and Asymptotic Behavior.* *Feb 2020*
Preprint | The Unitary and Modular DFT of the Symmetric Group. Submitted to *Journal of Algebraic Combinatorics*. arXiv:2404.05796 *Apr 2024*

Education

Doctor of Philosophy in Mathematics *May 2019*
Boston University

Bachelor of Science in Mathematics and Physics; Minor in Computer Science *May 2013*
Virginia Tech

Study Abroad *Jul 2011*
Victoria University of Wellington

Certifications

Machine Learning Professional | IBM *Mar 2024*
Advanced Data Science Specialization | IBM *May 2024*
Fundamentals of Quantitative Modeling | Wharton School *Aug 2025*
Introduction to International Criminal Law | Case Western Reserve University *Mar 2024*
Rust Fundamentals | Duke University *May 2024*
Certificate of Completion | The Data Incubator *Aug 2018*

Skills (1-5 scale, 1=weak, 5=strong)

- Python (5)
- Rust (4)
- C (3)
- SageMath (5)
- Mathematica (4)
- MATLAB (3)
- Unix/Linux (3)
- SQL (3)
- PHP (3)
- Machine Learning (4)
- Cryptography (4)
- NLP (4)