

JACKSON WALTERS

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

Skilled machine learning professional with a background in research mathematics and scientific programming.

WORK EXPERIENCE

Managing Member

Jackson Walters, LLC

Nov 2022 – Present

Washington, DC

- Computed dimensions of simple modules of symmetric group in positive characteristic when $p|n!$ (pulled into SageMath)
- Constructed discrete Fourier transform of the symmetric group in positive characteristic when $p|n!$ (pulled into SageMath)

QA Engineer

Power Auctions, LLC

Oct 2020 – Jan 2021

Washington, DC

- Performed testing for FCC auction 107, the 5G wireless license auction. Closed at 80bil (clock) + 300mil (combinatorial)
- Generated bid data with extreme mean and std. dev., revealing subtle bugs in MILP solver. Fixed bugs, wrote CI tests
- Wrote and presented white paper regarding floating point issues in Gurobi, an industrial optimization solver

Teaching Fellow

Boston University

Aug 2013 – May 2019

Boston, MA

- Conducted five undergraduate math discussions per week for twelve semesters
- Taught four summer math courses (Calculus I, II, Multivariable Calculus, Linear Algebra) as full instructor
- Performed math research resulting in two publications in top journals. Presented work at conferences

PROJECTS

operations-research | <https://github.com/jacksonwalters/operations-research>

Oct 2024

- Optimization and modeling examples in Python using Gurobi and cvxpy

open-encrypt | <https://github.com/jacksonwalters/open-encrypt>

Sep 2024

- Encrypted messaging webapp prototype using latticed-based methods in Python+PHP+SQL

natural-language-processing | <https://github.com/jacksonwalters/natural-language-processing>

Sep 2024

- NLP examples and practice projects including sentiment analysis, topic modeling, hate speech detection, and more

finance | <https://github.com/jacksonwalters/finance>

Sep 2024

- Financial modeling in Python including time-series (ARIMA) and machine learning models (XGBoost, PINN)

cryptography | <https://github.com/jacksonwalters/cryptography>

Aug 2024

- Cryptography in Python including elliptic curves and lattice-base methods (NTRU, ring-LWE, module-LWE)

machine-learning | <https://github.com/jacksonwalters/machine-learning>

Mar 2024

- Used SAMHSA mental health client-level data to produce novel t-SNE plots with k-means labeling

PUBLICATIONS

Advances in Mathematics | Volume 386, 107799. Toroidal prefactorization algebras associated to holomorphic fibrations and a relationship to vertex algebras Aug 2021

Annals of Statistics | Volume 48, Number 1 (2020), 514-538. Averages of Unlabeled Networks: Geometric Characterization and Asymptotic Behavior Feb 2020

arXiv Preprint | The Modular DFT of the Symmetric Group [<https://arxiv.org/abs/2404.05796>] Apr 2024

EDUCATION

Doctorate of Philosophy in Mathematics

Boston University

May 2019

Bachelor of Science in Mathematics, Physics. Minor in Computer Science

Virginia Tech

May 2013

Study Abroad

Victoria University of Wellington

July 2011

CERTIFICATIONS

Machine Learning Professional | IBM

Mar. 2024

Advanced Data Science Specialization | IBM

May. 2024

Rust Fundamentals | Duke University

May 2024

SKILLS (1-5)

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|----------------|-------------------|-------------------|------------------------|
| – Python (4) | – SageMath (5) | – LaTeX (3) | – Machine Learning (4) |
| – PHP (3) | – Mathematica (4) | – Ubuntu/Unix (3) | – NLP (3) |
| – Java/C++ (2) | – MATLAB (3) | – SQL (2) | – Cryptography (3) |