

# Luke Green

(435) 652-1759 • [lukegreen109@gmail.com](mailto:lukegreen109@gmail.com) • <https://lukegreen109.github.io/>

## EDUCATION

### Bachelor of Science, Mathematics

Brigham Young University

Apr 2024

Provo, UT

- GPA 3.95
- Full Tuition Scholarship
- Dean's List
- 3x Academic Award of Excellence (Linear Algebra, Math of Data Science and Abstract Algebra)

### Master of Science, Mathematics

Brigham Young University

Apr 2026

Provo, UT

- GPA 4.0
- Fully funded teaching assistant/research assistant position
- Relevant graduate level coursework:

Measure Theoretic Probability  
Mathematics of Deep Learning  
Bayesian Inference

Numerical Linear Algebra  
Matrix Analysis  
Functional Analysis

Advanced Deep Learning  
Abstract Algebra

## RESEARCH EXPERIENCE

### Online Batch Selection via Active Learning

Advisor: Prof. Kevin Miller

Aug 2024-Present

Brigham Young University

- Created a single code base for the state-of-the-art online batch selection methods using Pytorch
- Implemented several new batch selection methods/loss reweighting methods and compared performance in classification tasks across multiple datasets
- <https://github.com/lukegreen109/Online-Batch-Selection>

### Non-Backtracking Random Walks

Advisor: Prof. Mark Kempton

Feb 2023-Aug 2024

Brigham Young University

- Wrote Python code using NetworkX to generate and test millions of graphs
- Discovered two processes for constructing cospectral pairs of graphs with respect to the Non-Backtracking Adjacency Matrix

### Learning to Attribute Products to Prices in Retail Shelf Images

- Implemented deep hough transform heuristic and vision language model baselines using Pytorch
- <https://github.com/delicious-ai/price-net>

Jun 2025-Aug 2025

## PUBLICATIONS AND PRESENTATIONS

- Spencer Young, Preston Jenkins, Kevin Miller, and Porter Jenkins. 2025. *Learning to Attribute Products to Prices in Retail Shelf Images*. Submitted to SIGKDD 2025.
- Construction and Properties of Cospectral Non-Backtracking Matrices of Graphs. Joint Mathematical Meetings, January 2024.
- Construction and Properties of Cospectral Non-Backtracking Matrices of Graphs. BYU Student Research Conference, February 2024.

## RESEARCH INTERESTS

Machine Learning  
Randomized Methods

Dimensionality Reduction  
Adaptive Sampling

Uncertainty Quantification  
Graph Based Methods

## PROJECTS

- Implemented Prioritized Experience Replay Buffer and compared performance to various epsilon-greedy schedules on the cartpole problem <https://arxiv.org/abs/2511.03670>
- Evaluated Relative Trace Error of Randomized Pivoted Partial Cholesky on a variety of kernel matrices with an ablation study over the exponential
- Implemented a Neural Radiance Field to render 3D scenes with few 2D images

## TEACHING EXPERIENCE

### Instructor (Spring 2025)

Calculus 2

- 17 students - all students passed
- Taught 10 hours of lecture per week
- Wrote and graded all exams with another masters student

### Recitation Section Instructor (Fall 2024)

Calculus 1

- 68 students
- Taught 4 hours of lecture per week
- Graded all exams

### Recitation Section Instructor (Winter 2024)

Calculus 1

- 49 students
- Taught 4 hours of lecture per week
- Graded all exams

### Teaching Assistant (Fall 2025)

Algorithms and Optimization

- 49 students
- Graded all rigorous proofs and configured autograders
- Held 3 hours of office hours per week

### Utah Tech University Math Lab Tutor (Fall 2024)

- 10-20 hours per week while attending high school
- Tutored college algebra, statistics, and calculus

### ACT/SAT Personal Tutor (2019-2024)

- Tutored 14 students
- Qualified multiple students to receive full-tuition scholarships to the United States Air Force Academy, United States Naval Academy and United States Military Academy West Point

## SKILLS

- Proficient in Python (Pandas, NumPy, PyTorch, Scikit-learn, NetworkX), Latex, C++, Sage, and Java
- Speak Italian fluently

## WORK EXPERIENCE

### Corporate Strategy Intern

Aug 2024-Nov 2024

Qualtrics

Orem, UT

- Managed finances and wrote grant applications for 5 For the Fight
- Worked directly with board of directors to coordinate cancer research efforts

## **VOLUNTEER EXPERIENCE**

---

### **Full time Volunteer Representative**

**Jul 2020-Jul 2022**

*Church of Jesus Christ of Latter-Day Saints*

*Northern Virginia/Milan, Italy*

- Held a leadership position over hundreds of volunteers to coordinate service efforts for over a year
- Provided 20 hours a week of service to food pantries and thrift stores
- Constructed a barn from the ground up for A Farm Less Ordinary
- Provided ambulance and emergency services for non-profit organization La Croce di Misericordia