

# Samantha Pease (She/Her)

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## SUMMARY

PhD in Mathematics with hands-on experience in ML research and implementation. Seeking roles in ML research and engineering, where mathematical rigor and technical insight are valued.

## SKILLS

Python, PyTorch, Sage, NumPy, Jupyter, NetworkX, Git, data scraping, community detection, graph analysis, Computer vision, GNNs, optimization, Segment Anything, Gaussian Splatting, data visualization

## EXPERIENCE

**Machine Learning Engineer Intern** Summer 2024  
*Covar* *Durham, NC*

- Conducted R&D with state-of-the-art machine learning models, including foundational models like Segment Anything (SAM) and optimizable 3D rendering techniques such as Gaussian Splatting.
- Analyzed and synthesized current research papers to maintain up-to-date knowledge of advancements in machine learning and image processing techniques.
- Collaborated on engineering tasks typical of an ML engineering internship, contributing to both the development and implementation of cutting-edge solutions.
- Presented research findings and project outcomes to the entire company and to customers, effectively communicating complex technical concepts to diverse audiences.

**Wind Turbine Engineering Internship** Summer 2017  
*WindAid* *Trujillo, Peru*

- Conducted research and contributed to design improvements for wind turbines
- Designed an Arduino circuit to monitor and report data from remote wind turbine locations

**Math Instructor** 2017-Present  
*Duke University & Rutgers Newark* *Durham, NC & Newark, NJ*

- Taught Calculus and TAed college algebra, multivariate calculus, and proof based linear algebra
- Achieved an above-average pass rate and received excellent reviews from students

## PROJECTS

**Instagram Network Analysis** Summer 2025

- Scraped mutual follow data from Instagram to construct a directed social graph and visualized with PyVis
- Applied GNNs (PyTorch Geometric) for link prediction; analyzed communities via Louvain clustering

### Other Select Projects

- Built a neural net in NumPy for image classification; explored effects of architecture (ML course project)
- Applied persistent homology to LiDAR forest canopy data to differentiate forests (TDA research project)

## EDUCATION

**Rutgers University–Newark** October 2025  
Ph.D. in Mathematics 4.0/4.0 GPA  
Advisor: Dr. Chen Wan  
Thesis: *The Local Gan–Gross–Prasad Conjecture for General Spin Groups*

**Duke University** May 2020  
B.S. in Mathematics & Computer Science, with Distinction 3.7/4.0 GPA  
Advisor: Dr. Aaron Pollack  
Thesis: *Computing Values of Symmetric Square L-Functions using Ichino’s Pullback Formula*  
PRUV Research Fellow – Applied advanced linear algebra and Sage to analyze L-function data from mathematical databases; presented findings to both technical and general audiences; earned graduation with distinction