Samantha Pease (She/Her)

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SUMMARY

Ph.D. in Mathematics with expertise in the local Langlands program, integrating number theory, representation theory, and geometry. Practical experience conducting machine learning R&D, including implementing cuttingedge models in computer vision and 3D rendering. Seeking research or engineering roles that value mathematical rigor, implementation skills, and research-driven problem solving.

SKILLS

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

EXPERIENCE

Machine Learning Engineer Intern

Covar

- · Conducted R&D with state-of-the-art ML models, integrating Segment Anything (SAM) and Gaussian Splatting for segmented differentiable 3D rendering across 10+ video scenes (2K-10K frames each)
- · Processed video datasets and built structure-from-motion pipelines generating 100+ camera positions; cleaned and prepared data for Gaussian Splatting rendering
- Synthesized insights from 20+ research papers; implemented code from 5+ models across CV and 3D rendering
- · Presented results to internal teams and an external client, highlighting technical implementation and researchdriven development

Wind Turbine Engineering Intern

WindAid

- · Designed and prototyped an IoT-based monitoring system using a Particle Electron to transmit wind turbine performance data (voltage, current, windspeed) from a remote installation
- · Delivered a working prototype that reduced reliance on on-site diagnostics for nontechnical rural users

Math Instructor

- Duke University & Rutgers University-Newark Durham, NC & Newark, NJ
- · Independently teach undergraduate courses including Applied Calculus and Calculus I across multiple terms
- Support large-lecture courses (100+ students) in Precalculus, College Algebra, and Applied Calculus as a TA; tutored advanced topics including Linear Algebra and Multivariable Calculus
- · Recognized for clear communication and support, with strong feedback from students and faculty

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

Additional Projects

- Built an image classification neural net in pure NumPy; analyzed architectural tradeoffs (ML course project)
- · Applied persistent homology to LiDAR forest canopy data to differentiate forests (TDA research project)

EDUCATION

Rutgers University–Newark - Ph.D. Mathematics		${\rm Oct}~2025$
Thesis: The Local Gan-Gross-Prasad Conjecture for General Spin Groups	Advisor: Dr.	Chen Wan
Duke University - B.S. Mathematics & Computer Science, with Distinct	ion	May 2020

Thesis: Computing Values of Symmetric Square L-Functions using Ichino's Pullback Formula PRUV Research Fellow, Advisor: Dr. Aaron Pollack

Summer 2024 Durham, NC

Summer 2017

Trujillo, Peru

2017–Present