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 cutting-edge 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 Summer 2024
Covar *Durham, NC*

- 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 research-driven development and implementation

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

- 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 functional prototype to WindAid's engineering team; reduced reliance on on-site diagnostics for turbines maintained by nontechnical rural users

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

- Independently taught undergraduate courses including Applied Calculus and Calculus I across multiple terms
- Supported 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 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 - *Ph.D. Mathematics* 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 Distinction* May 2020
Thesis: *Computing Values of Symmetric Square L-Functions using Ichino's Pullback Formula*
PRUV Research Fellow, Advisor: Dr. Aaron Pollack