

Shiva Yeshlur

(307)-371-6153 | sy3099@columbia.edu

EDUCATION

University of Minnesota – Twin Cities

Ph.D., Mathematics

Twin Cities, MN

Expected May 2031

Columbia University

B.A., Mathematics

New York City, NY

May 2026

- GPA: 3.92
- Coursework: Applied Machine Learning, Group Theory, Ring and Field Theory, Real Analysis, Measure Theory, Algebraic Topology, Differential Geometry, Graduate Algebraic Topology I, Graduate Algebraic Topology II

Rock Springs High School

- GPA: 4.45, Valedictorian

Rock Springs, WY

May 2022

RELEVANT EXPERIENCE

AlQuraishi Lab, Columbia University Irving Medical Center

Research Assistant – Machine Learning

New York City, NY

January 2024 - Present

- Developing scalable graph-based clustering algorithms for benchmark dataset construction, improving state-of-the-art model accuracy by 12% on out-of-distribution protein-protein interaction tasks.
- Maintaining distributed training pipelines on multi-node GPU clusters (800+ compute hours) and implementing relevant DeepSpeed optimizations, enhancing pipeline throughput by 20%.
- Benchmarked transformer and GNN architectures; introduced a novel validation metric for measuring dataset–model distributional shifts given similarity thresholding of training data.
- Contributed benchmarking results to OpenFold, an open-source AlphaFold 2/3 implementation used by 10+ academic labs for protein complex modeling.

Columbia University Department of Mathematics

Research Fellow – Mathematics

New York City, NY

May 2024 - August 2024

- Led a cross-functional project optimizing urban infrastructure networks in New York City.
- Leveraged OpenStreetMaps API data to generate complex graphical representations of Manhattan's traffic network with detailed point-of-interest information.
- Presented project outcomes at the Jane Street Math Day and Columbia Undergraduate Symposium, emphasizing real-world policy implementation for key stakeholders, including urban planners.

Johns Hopkins Applied Physics Laboratory

Intern – Data Science, Systems Performance Evaluation

Laurel, MD

May 2023 - August 2023

- Reduced system inefficiencies by 45% via scheduling optimization and pipeline redesign.
- Engineered data workflows processing 100GB+ daily, enabling real-time decision-making.
- Identified and resolved system anomalies using advanced clustering techniques.

SKILLS

Programming Languages: Python | SQL | R

Machine Learning: Protein language models | GNNs | Transformers | Encoder-only architectures (e.g. ESM-2) | Representation Learning

High-Performance Computing: Multi-GPU training | DeepSpeed | Parallel computing | Slurm | PBS | Federal HPC systems (NERSC Perlmutter, ALCF Polaris) | Cloud computing

FELLOWSHIPS AND AWARDS

Kevin D. Eng & UnHae Song Foundation Fellow (2025) (\$4860)
Columbia Summer Undergraduate Research Experience in Mathematical Modeling (2024) (\$3500)
Rachelefsky Research Fellow (2024) (\$2990)
Dean's List (2022 - Present)
National Rural and Small Town Scholar, AP Scholar with Honor (2022)
National Speech and Debate Association Tournament x4 Qualifier (2018-2022)
 Top 60 World Schools Debate (2019)
 Top 40 International Extemporaneous Speaking (2020)
 Top 30 Policy Debate (2021)

PRESENTATIONS

Columbia Undergraduate Research Symposium, New York, NY, October 2024. **S. Yeshlur**; A. Chen; C. Pineda. "Reimagining Manhattan: A Mathematical Modeling Approach to Superblock Development." (poster)
Columbia Pathways Program Symposium, New York, NY, August 2024. **S. Yeshlur**; A. Chen; C. Pineda. "Reimagining Manhattan: A Mathematical Modeling Approach to Superblock Development." (poster)
Jane Street Math Day, New York, NY, July 2024. **S. Yeshlur**; A. Chen; C. Pineda. "Reimagining Manhattan: A Mathematical Modeling Approach to Superblock Development." (poster)

ACTIVITIES AND SERVICE

Rural Recruitment Committee, Officer (Aug 2023 – May 2026) – Supporting prospective rural students.
Music Performance Program, Piano (Aug 2023 – May 2026) – Studying under Reiko Uchida.
Columbia Q House, Member (Aug 2024 – May 2026) – Developing programming for Queer student events.
Columbia Political Review, Staff Writer & Junior Editor (Jan 2023 – Aug 2024) – Conducted research and published an article on the failure of the international community to address the 2022 Sudanese coup.
Columbia Wind Ensemble, Principal Saxophonist (Aug 2023 – Jan 2025)