


# Joe Suk

 [joesuk.github.io](https://github.com/joesuk)

 [joesuk](https://github.com/joesuk)

 [Google Scholar](https://scholar.google.com/citations?user=joesuk)

 [j.suk@nyu.edu](mailto:j.suk@nyu.edu)

 U.S. Citizen

## EMPLOYMENT

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### New York University Stern School of Business

July 2025 – June 2026

Postdoctoral Researcher under Prof. Yaqi Duan working on post-training for LLM's.

### Columbia University Statistics Department

Jan. 2025 – June 2025

Postdoctoral Research Scientist under Prof. Samory Kpotufe working on efficient online outlier detection.

## EDUCATION

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### Columbia University

2018–2024

PhD in Statistics

• Advised by Prof. Samory Kpotufe, working on machine learning theory.

### Stony Brook University

2014–2018

B.S. in Mathematics, magna cum laude

• PhD-Level Coursework: Algebraic Geometry, Smooth Manifolds, Riemann Surfaces, Algebraic Topology, Complex Analysis, Real Analysis I-II, Algebra I-II, Algorithms, Numerical Analysis, Machine Learning, Mathematical Statistics.

## PREPRINTS AND PUBLICATIONS

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1. [Optimization Dynamics of RLVR: Gradient Gap and Step Size Scaling](#)  
Joe Suk, Yaqi Duan. *NeurIPS 2025 Workshop on Foundations of Reasoning in Language Models*.
2. An Efficient Variant of One-Class SVM with Lifelong Online Learning Guarantees  
Joe Suk, Samory Kpotufe. *Preprint in Preparation*.
3. [Tracking Significant Shifts in Infinite-Armed Bandits](#)  
Joe Suk, Jung-hun Kim. *International Conference on Machine Learning (ICML) 2025*.
4. [Adaptive Smooth Nonstationary Bandits](#)  
Joe Suk. *SIAM Journal on Mathematics of Data Science (SIMODS)*.
5. [Nonstationary Dueling Bandits with a Weighted Borda Criterion](#)  
Joe Suk, Arpit Agarwal. *Transactions on Machine Learning Research (TMLR)* ("Featured Certification").
6. [When Can We Track Significant Preference Shifts in Dueling Bandits?](#)  
Joe Suk, Arpit Agarwal. *Advances in Neural Information Processing Systems (NeurIPS) 2023*.
7. [Tracking Most Significant Switches in Nonparametric Contextual Bandits](#)  
Joe Suk, Samory Kpotufe. *Advances in Neural Information Processing Systems (NeurIPS) 2023*.
8. [Tracking Most Significant Arm Switches in Bandits](#)  
Joe Suk, Samory Kpotufe. *Conference on Learning Theory (COLT) 2022*.
9. [Self-Tuning Bandits over Unknown Covariate-Shifts](#)  
Joe Suk, Samory Kpotufe. *International Conference on Algorithmic Learning Theory (ALT) 2021*.
10. [Dihedral Sieving Phenomena](#)  
( $\alpha - \beta$ ) Sujit Rao, Joe Suk. *Discrete Mathematics*.
11. [Factorizations of  \$k\$ -Nonnegative Matrices.](#)  
( $\alpha - \beta$ ) Sunita Chepuri, Neeraja Kulkarni, Joe Suk, Ewin Tang. *Journal of Combinatorics*.

## EARLIER RESEARCH EXPERIENCE

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### Data Science Intern at Institute for Pure and Applied Mathematics (IPAM)

Summer 2018

• Developed data science pipeline in MATLAB & Python to model microstructure evolution in 3D printing.

### Undergraduate Mathematics Honors Thesis advised by Prof. Chris Bishop

2017–2018

• Developed algorithm to approximate planar trees using harmonic measure and dessins d'enfant.

### University of Minnesota Twin Cities Combinatorics NSF REU

Summer 2017

• Worked on two published research projects in combinatorics and representation theory.

### Stony Brook University Geometry/Topology NSF REU

Summer 2016

• Developed algorithm to count the mapping class group orbits of geodesics on the hyperbolic punctured torus.

## ACADEMIC SERVICE AND OUTREACH

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- Reviewing/Refereeing (69 papers in total):
  - Journals: Enumerative Combinatorics and Applications, JRSS-B, TMLR, IEEE Trans. Inf. Theory.
  - Conferences: NeurIPS ("Top Reviewers" in 2023), AISTATS, ICML, IJCAI, ICLR, COLT.
- Designed and taught core competency exam [review sessions](#) for Columbia PhD Statistics students in 2021 and 2022.
- Graduate student mentor for [Columbia Summer REU in Mathematical Modeling](#) in 2021 and 2022.
- Teaching Assistant for 20 undergrad/grad courses in statistics and mathematics across Columbia and Stony Brook.

## AWARDS/HONORS

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- DeepMind student travel grant for COLT 2022.
- William Lowell Putnam Math Competition Top 500.
- Kuga-Sah Memorial Award in Mathematics for outstanding junior, senior math major at Stony Brook University.
- Srivastav, Tucker & Weitzman Scholarship in Applied Mathematics.

## SKILLS

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- Programming: Python, Julia, Bash, R.
- Other Technical: SLURM, git, Linux sysadmin (Artix/Arch Linux and Ubuntu),  $\LaTeX$ .