Samson Zhou

Curriculum Vitae

▬▬ Background

2019-	**Carnegie Mellon University**, *Postdoctoral Fellow, Host: David P. Woodruff.*
2018-2019	**Indiana University**, *Postdoctoral Fellow, Host: Grigory Yaroslavtsev.*
Summer 2018	**Purdue University**, *Postdoctoral Fellow, Host: Jeremiah Blocki.*
2011–2018	**Purdue University**, *Doctor of Philosophy in Computer Science,* *Advisors: Greg Frederickson and Elena Grigorescu.*
2006–2011	**Massachusetts Institute of Technology**, *Master of Engineering in Computer Science, Advisor: Robert C. Berwick* *Bachelor of Science in Computer Science, Bachelor of Science in Mathematics.*

▬▬ Research

Journal Publications

2020   **Periodicity in Data Streams with Wildcards**,
Funda Ergün, Elena Grigorescu, Erfan Sadeqi Azer, Samson Zhou,
Theory of Computing Systems.

2019   **Nearly Optimal Sparse Group Testing**,
Venkata Gandikota, Elena Grigorescu, Sidharth Jaggi, Samson Zhou,
IEEE Transactions on Information Theory.

Structural Results on Matching Estimation with Applications to Streaming,
Marc Bury, Elena Grigorescu, Andrew McGregor, Morteza Monemizadeh, Chris Schwiegelshohn, Sofya Vorotnikova, Samson Zhou,
Algorithmica.

Conference Publications

2020   **Non-Adaptive Adaptive Sampling on Turnstile Streams** ,
Sepideh Mahabadi, Ilya Razenshteyn, David P. Woodruff, Samson Zhou ,
52nd ACM Symposium on Theory of Computing (STOC).

"Bring Your Own Greedy"+Max: Near-Optimal 1/2-Approximations for Submodular Knapsack ,
Grigory Yaroslavtsev, Samson Zhou, Dmitrii Avdiukhin,
23rd International Conference on Artificial Intelligence and Statistics (AISTATS).

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Data-Independent Neural Pruning via Coresets,
Ben Mussay, Margarita Osadchy, Vladimir Braverman, Samson Zhou, Dan Feldman,
8th International Conference on Learning Representations (ICLR).

Approximating Cumulative Pebbling Cost is Unique Games Hard,
Jeremiah Blocki, Seunghoon Lee, Samson Zhou,
11th Innovations in Theoretical Computer Science (ITCS).

Computationally Data-Independent Memory Hard Functions,
Mohammad Hassan Ameri, Jeremiah Blocki, Samson Zhou,
11th Innovations in Theoretical Computer Science (ITCS).

Memory-Efficient Performance Monitoring on Programmable Switches with Lean Algorithms,
Zaoxing Liu, Samson Zhou, Ori Rottenstreich, Vladimir Braverman, Jennifer Rexford,
SIAM Symposium on Algorithmic Principles of Computer Systems (APoCS).

Fast Fourier Sparsity Testing,
Grigory Yaroslavtsev, Samson Zhou,
3rd SIAM Symposium on Simplicity in Algorithms (SOSA).

2019 **Approximate $\mathbb{F}_2$-Sketching of Valuation Functions**,
Grigory Yaroslavtsev, Samson Zhou,
23rd International Workshop on Randomization and Computation (RANDOM).

Improved Methods on Time-Decay Streams,
Vladimir Braverman, Harry Lang, Enayat Ullah, Samson Zhou,
22nd International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX).

Data-Independent Memory Hard Functions: New Attacks and Stronger Constructions,
Jeremiah Blocki, Ben Harsha, Siteng Kang, Seunghoon Lee, Lu Xing, Samson Zhou,
38th Annual International Cryptology Conference (CRYPTO).

Adversarially Robust Submodular Maximization under Knapsack Constraints,
Dmitry Avdyukhin, Slobodan Mitrović, Grigory Yaroslavtsev, Samson Zhou,
25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD),
(Selected for Oral Presentation).

Relaxed Locally Correctable Codes in Computationally Bounded Channels,
Jeremiah Blocki, Venkata Gandikota, Elena Grigorescu, Samson Zhou,
2019 IEEE International Symposium on Information Theory (ISIT).

2018 **Bandwidth-Hard Functions: Reductions and Lower Bounds**,
Jeremiah Blocki, Ling Ren, Samson Zhou,
26th ACM Conference on Computer and Communications Security (CCS).

Nearly Optimal Distinct Elements and Heavy Hitters on Sliding Windows,
Vladimir Braverman, Elena Grigorescu, Harry Lang, David P. Woodruff, Samson Zhou,
21st International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX).

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Relaxed Locally Correctable Codes in Computationally Bounded Channels,
Jeremiah Blocki, Venkata Gandikota, Elena Grigorescu, Samson Zhou,
45th International Colloquium on Automata, Languages, and Programming (ICALP),
(Brief Announcement).

Periodicity in Data Streams with Wildcards,
Funda Ergün, Elena Grigorescu, Erfan Sadeqi Azer, Samson Zhou,
The 13th International Computer Science Symposium in Russia (CSR).

On the Computational Complexity of Minimal Cumulative Cost Graph Pebbling,
Jeremiah Blocki, Samson Zhou,
22nd International Conference, Financial Cryptography and Data Security (FC).

On the Economics of Offline Password Cracking,
Jeremiah Blocki, Ben Harsha, Samson Zhou,
39th IEEE Symposium on Security and Privacy (S&P, Oakland).

2017   **Streaming for Aibohphobes: Longest Palindrome with Mismatches**,
Elena Grigorescu, Erfan Sadeqi Azer, Samson Zhou,
37th IARCS Annual Conference on Foundations of Software Technology and Theoretical
Computer Science (FSTTCS).

On the Depth-Robustness and Cumulative Pebbling Cost of Argon2i,
Jeremiah Blocki, Samson Zhou,
15th IACR Theory of Cryptography Conference (TCC).

Longest Alignment with Edits in Data Streams,
Elena Grigorescu, Erfan Sadeqi Azer, Samson Zhou,
54th Annual Conference on Communication, Control, and Computing (Allerton).

Streaming Periodicity with Mismatches,
Funda Ergün, Elena Grigorescu, Erfan Sadeqi Azer, Samson Zhou,
21st International Workshop on Randomization and Computation (RANDOM).

2016   **Nearly Optimal Sparse Group Testing**,
Venkata Gandikota, Elena Grigorescu, Sidharth Jaggi, Samson Zhou,
54th Annual Conference on Communication, Control, and Computing (Allerton).

Manuscripts

2019   **On Locally Decodable Codes in Resource Bounded Channels**,
Jeremiah Blocki, Shubhang Kulkarni, Samson Zhou.

Numerical Linear Algebra in the Sliding Window Model,
Vladimir Braverman, Petros Drineas, Jalaj Upadhyay, David P. Woodruff, Samson Zhou.

2017   **Optimal Parametric Search for Path and Tree Partitioning**,
Greg Frederickson, Samson Zhou.

Awards

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2018   Purdue Sigma Xi Research Award, Poster Competition Winner (Engineering)

2016   Graduate TA of the Year

2006   Siemens Award for Advanced Placement

        University Interscholastic League, General Mathematics, Texas State Champion

Invited Talks

2020   **Numerical Linear Algebra in the Sliding Window Model**, *February 19*, Theory Lunch, Carnegie Mellon University.

        Numerical Linear Algebra in the Sliding Window Model, *February 6*, Information Theory and Applications Workshop, ITA.

        Computationally Data-Independent Memory Hard Functions, *January 13*, 11th Innovations in Theoretical Computer Science, ITCS.

        Fast Fourier Sparsity Testing, *January 6*, 3rd SIAM Symposium on Simplicity in Algorithms, SOSA.

2019   **Approximate $\mathbb{F}_2$-Sketching of Valuation Functions**, *September 20*, 23rd International Workshop on Randomization and Computation, RANDOM.

        Numerical Linear Algebra in the Sliding Window Model, *April 29*, Theory Seminar, Purdue University.

        Numerical Linear Algebra in the Sliding Window Model, *April 17*, Theory Seminar, Indiana University.

        Adversarially Robust Submodular Maximization under Knapsack Constraints, *March 20*, Center for Algorithms and Machine Learning, Indiana University.

2018   **Recent Results in Hierarchical Clustering**, *November 28*, Center for Algorithms and Machine Learning, Indiana University.

        Nearly Optimal Distinct Elements and Heavy Hitters, *August 22*, 21st International Workshop on Approximation Algorithms for Combinatorial Optimization Problems, APPROX.

        Password Hashing and Graph Pebbling, *April 13*, Midwest Theory Day, Toyota Technological Institute at Chicago.

        On the Computational Complexity of Minimal Cumulative Cost Graph Pebbling, *January 22*, Theory Seminar, Purdue University.

2017   **Pattern Matching over Noisy Data Streams**, *November 29*, Theory Seminar, Johns Hopkins University.

        Streaming Periodicity with Mismatches, *August 16*, 21st International Workshop on Randomization and Computation, RANDOM.

        Streaming for Aibohphobes: Longest Near-Palindrome under Hamming Distance, *February 10*, Theory Seminar, Indiana University Bloomington.

Streaming for Aibohphobes: Longest Near-Palindrome under Hamming Distance, *February 9*, Theory Seminar, Purdue University.

On the Computational Complexity of Minimal Cumulative Cost Graph Pebbling, *January 23*, Theory Seminar, Purdue University.

2016 **Recent Results in Group Testing**, *October 13*, Rutgers University.

Nearly Optimal Sparse Group Testing, *September 28*, 54th Annual Conference on Communication, Control, and Computing, Allerton.

Nearly Optimal Sparse Group Testing, *September 23*, Theory Seminar, Purdue University.

Structural Results on Matching Estimation with Applications to Streaming, *September 9*, Theory Seminar, Purdue University.

Posters

2019 **Numerical Linear Algebra in the Sliding Window Model**, *April 26*, Midwest Theory Day, Purdue.

Adversarially Robust Submodular Maximization under Knapsack Constraints, *April 26*, Midwest Theory Day, Purdue.

2018 **Nearly Optimal Distinct Elements and Heavy Hitters on Sliding Windows**, *June 14*, Workshop on Local Algorithms, MIT.

Password Hashing and Graph Pebbling, *February 21*, Purdue Sigma Xi Poster Competition.

2017 **Streaming Algorithms for Strings with Mismatches**, *September 8*, Purdue CS Student Research Showcase.

Streaming Algorithms for Strings with Mismatches, *June 22*, 49th Annual ACM Symposium on the Theory of Computing, STOC.

Professional Service

Program Committee Member for:
o International Conference on Artificial Neural Networks (ICANN) 2019

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Reviewer or External Reviewer for:
o ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems (PODS) 2020
o International Symposium on Algorithms and Computation (ISAAC) 2019
o Conference on Neural Information Processing Systems (NeurIPS) 2019
o Conference on Integer Programming and Combinatorial Optimization (IPCO) 2020
o International Conference on Machine Learning (ICML) 2019
o International Conference on Artificial Intelligence and Statistics (AISTATS) 2019
o Innovations in Theoretical Computer Science (ITCS) 2019, 2020
o Financial Cryptography and Data Security (FC) 2019
o European Symposia on Algorithms (ESA) 2018, 2019
o International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2018
o International Colloquium on Automata, Languages, and Programming (ICALP) 2018
o IEEE International Symposium on Information Theory (ISIT) 2018, 2019, 2020
o ACM Symposium on Theory of Computing (STOC) 2018, 2019, 2020
o Latin American Theoretical INformatics Symposium (LATIN) 2018
o ACM-SIAM Symposium on Discrete Algorithms (SODA) 2018, 2019, 2020
o ACM Symposium on Parallelism in Algorithms and Architectures (SPAA) 2017, 2019
o IEEE Symposium on Foundations of Computer Science (FOCS) 2017, 2019
o International Computer Science Symposium in Russia (CSR) 2017, 2019
o International Workshop on Randomization and Computation (RANDOM) 2016, 2019
o Algorithmica
o IEEE Transactions on Information Theory
o ACM Transactions on Algorithms
o SIAM Journal on Computing

Organizer of the Convex Optimization Reading Group, *Indiana University*, Fall 2018.

Organizer of the Theoretical CS Reading Group, *Purdue University*, August 2016-December 2017.

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