Aditya Krishnan

Research Scientist, Pinecone Systems
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Research Interests

Large-scale similarity search, sketching & streaming, numerical linear algebra, dimensionality reduction, coreset methods, scalable machine learning.

Experience

Research Scientist, Pinecone Systems — *2022 - Present*
Working on clustering and quantization based methods for state-of-the-art scalable vector similarity search.

Science Intern, Pinecone Systems — *2021*
Advisor: Edo Liberty, CEO and Founder of Pinecone
Designed and implemented a novel, product quantization based, algorithm for vector similarity search.

Education

Johns Hopkins University, Whiting School of Engineering — *2018 - 2022*
Ph.D. in Computer Science
Advisor: Vladimir Braverman
Thesis: Fast and Memory-Efficient Algorithms for Matrix Spectrum Approximation

Carnegie Mellon University, School of Computer Science — *2017 - 2018*
M.S. in Computer Science
Advisor: Anupam Gupta
Thesis: Pricing Online Metric Matching Algorithms on Trees

Carnegie Mellon University, School of Computer Science — *2013 - 2017*
B.S. in Computer Science and Minor in Engineering Studies

Awards

JHU MINDS TRIPODS Data Science Fellowship — *2022*
NeurIPS 2022 Top Reviewer — *2022*
JHU Computer Science Department Fellowship — *2018*

Publications and Preprints

Authors appear in alphabetical order as in the tradition of mathematics and theoretical computer science unless otherwise mentioned. Where applicable '' denotes equal contribution of authors.*

Projective Clustering Product Quantization, with Edo Liberty. *2022. In submission.*

Sublinear Time Spectral Density Estimation, with Vladimir Braverman and Christopher Musco. *ACM Symposium on Theory of Computing (STOC), 2022.*

Lifelong Learning with Sketched Structural Regularization, Haoran Li, A. Krishnan*, Jingfeng Wu*, Soheil Kolouri*, Praveen K. Pilly and Vladimir Braverman. *Asian Conference on Machine Learning (ACML), 2021.*

Near-Optimal Entrywise Sampling of Numerically Sparse Matrices, with Vladimir Braverman, Robert Krauthgamer, and Shay Sapir. *Conference on Learning Theory (COLT). PMLR, 2021.*

Schatten Norms in Matrix Streams: Hello Sparsity, Goodbye Dimension, with Vladimir Braverman, Robert Krauthgamer, and Roi Sinoff. *International Conference on Machine Learning (ICML), 2020.*

Competitively Pricing Parking in a Tree, with Max Bender, Jacob Gilbert, and Kirk Pruhs. *Conference on Web and Internet Economics (WINE), 2020.*

On Sketching the q to p Norms, with Sidhanth Mohanty and David P. Woodruff. *International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2018.*

Talks

Sublinear Time Spectral Density Estimation
STOC 2022, Rome, Italy *2022*
JHU CS Theory Seminar, Baltimore *2022*

Schatten Norms in Matrix Streams: The Role of Sparsity
ICML 2020, Online *2020*
JHU CS Theory Seminar, Baltimore *2020*

Pricing Online Metric Matching Algorithms on Trees
CMU, Pittsburgh *2018*

Teaching

Teaching Assistant
Introduction to Algorithms (JHU) Fall 2019, Spring 2020, Spring 2022
Approximation Algorithms (JHU) Spring 2021

Service

Seminar Co-Organizer
JHU Theory Seminar Fall 2021, Spring 2022

Conference Reviewer
NeurIPS 2022, 2021
ICML 2022, 2021
STOC 2022, 2021
SODA 2021
RSEML 2021, SOSA 2020, PODS 2020, CSR 2019

Skills

Python, LaTeX, Rust, C, Java

References

Edo Liberty, CEO and Founder, Pinecone
edo@edoliberty.com

Christopher Musco, Assistant Professor, New York University
cmusco@nyu.edu

Vladimir Braverman, Associate Professor, Johns Hopkins University
vova@cs.jhu.edu