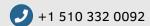
Zhenyang Zhang

Ph.D. Student. Department of Mathematics, University of California, Davis



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Research Interests

Optimization, data-driven algorithm design, modeling and applied geometry.

Technical Skills —

Proficient in Data Analytics, Optimization Algorithms and Statistical Modeling (Linear Regression, Time Series, Stochastic Process and Neural Networks).

Programming Languages -

Python	• • • • •
R	• • • • •
Java	• • • • •
Matlab	• • • • •

Languages



Education

2022

2017 -**Graduate Program in Math** PhD expected: Advisor: Jesús De Loera.

B.A. in Applied Math and 2013 - 2017

University of California, Berkeley **B.A.** in Statistics Dean's Honor List in Fa13, Sp14, Fa14, Sp15, Fa15 and Sp16. Research Advisors: David Aldous (Statistics), Yan Zhang (Combina-

University of California, Davis

Working Experience

2021.6 -Research assistant Pingcap Inc. 2021.9 Writing drafts for dynamic sharding strategies in TiDB. Helped building optimization models for strategies to migrate hot regions.

Research Experience

Conducted research on linear optimization and machine learning algorithms applied on the efficiency of it.

Following papers submitted for publication

2019 Diameters of Cocircuit Graphs of Oriented Matroids: an update Collaboration with Ilan Adler, Jesús De Loera and Steven Klee

> This paper studies open problems on the diameter of oriented matroids. Oriented matroids are combinatorial structures that generalize linear programs and have played a key role in the theory of linear optimization.

Submitted to the Electronic Journal of Combinatorics

2020 Enumerative problems for arborescences and monotone paths on polytopes

Collaboration with Christos Athanasiadis and Jesús De Loera

We study the behavior of the simplex method. Every linear functional induces an orientation on the graph of a polytope. This paper discusses the maximum and minimum numbers of paths and an estimation of number of pivot rules on this directed graph.

Journal of Graph Theory. https://doi.org/10.1002/jgt.22725

2021 (Machine)Learning to Improve the Empirical Performance of Discrete Algorithms

Collaboration with Imran Adham and Jesús De Loera

We improved the performance of two algorithmic case studies: the selection of a pivot rule for the Simplex method and the selection of an all-pair shortest paths algorithm. Multilayer perceptron and gradient boosted tree models were trained in these experiments.

American Mathematical Society Fall Eastern Sectional Meeting Spe-

Submitted to CPAIOR

Invited Talks

May 2019	Poster: "On the Diameter of Oriented Matroid Programs" IPCO 2019 (Integer Programming and Combin	Ann Arbor, MI
Sep 2019	"On the Diameter of Oriented Matroids" Tenth Discrete Geometry and Algebraic Combi	South Padre Island, TX natorics Conference
Oct 2019	"On the Diameter of Oriented Matroids"	Binghamton, NY

cial Session: Oriented Matroids and Related Topics

Teaching Experience

2015, 2016 Undergraduate student instructor (TA) for Berkeley Math Department on Math 54 (Linear algebra) and Math 172 (Combinatorics)
 2017-Now Teaching Assistant for Davis Math Department on Calculus Series, Math 22A (Linear algebra) and Math 258A (Graduate Discrete Optimization)
 Summer Associate Instructor for Math 21D (Multivariate Calculus). Fully in charge of writing syllabus, homeworks, exams and giving lectures.