

# Yijun Dong

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## Research Interests

Randomized numerical linear algebra, Learning theory, Optimization

## Education

Ph.D. in Computational Science, Engineering, and Mathematics      2018-present  
Oden Institute, The University of Texas at Austin      Austin, TX

- Advisors: Per-Gunnar Martinsson and Rachel Ward
- Relevant coursework: Statistical Models for Big Data, Combinatorial Optimization, Large-Scale Optimization, Machine Learning, Randomized Algorithms, Theory of Probability, Scientific Computing in Machine/Deep Learning, Numerical Analysis: Linear Algebra, Numerical Analysis: Partial Differential Equations, Functional Analysis in Theoretical Mechanics

B.S. in Applied Mathematics and Engineering Science      2014-2018  
Emory University, Phi Beta Kappa, Magna Cum Laude      Atlanta, GA

- Advisors: Effrosyni Seitaridou and Eric Weeks
- Thesis: Crystals and Liquids in Gravitationally Confined Quasi-2D Colloidal Systems

## Research Experience

Graduate Research Assistant      2019-present  
Oden Institute, UT Austin      Austin, TX

- Randomized algorithms for low-rank matrix decompositions
- Theory on the consistency regularization with data augmentations

Research Assistant      2016-2018  
Weeks Lab, Emory University      Atlanta, GA

- Decoupling of 2D translational and rotational diffusion near glass transition
- Quasi-2D phase behaviors of gravitationally confined colloidal systems

Research Assistant      2015-2016  
Seitaridou Lab, Emory University      Oxford, GA

- Correlation between biofilm formation and Brownian motion of particles in the biofilms

## Industry Experience

Research Intern      May-Aug 2021  
Dell Technologies      Remote, TX

- Lightweight streaming time series compression algorithms for telemetry data on the edge devices

## Teaching Experience

Teaching Assistant	2020, 2021
Department of Mathematics & Oden Institute, UT Austin	Austin, TX
<ul style="list-style-type: none"><li>• Numerical Analysis: Linear Algebra (Fall 2021, graduate)</li><li>• Differential Equations with Linear Algebra (Fall 2020, undergraduate)</li></ul>	
Tutor	2015-2016
Department of Physics, Oxford College of Emory University	Oxford, GA
<ul style="list-style-type: none"><li>• Introduction to Physics, Modern Physics</li></ul>	

## Awards

NIMS Graduate Fellowship	UT Austin, 2019-2020
Peter O'Donnell Graduate Fellowship	UT Austin, 2018-2019
Trevor Evans Award	Emory University, 2018
Awarded to top graduate of Emory Department of Mathematics	
SURE Summer Research Fellowship	Emory University, 2016
Dan C. Moore Mathematics Award	Emory University, 2016
Williams Baird Physics Award	Emory University, 2016

## Publications & Preprints

\* equal contribution

1. Shuo Yang\*, **Yijun Dong\***, Rachel Ward, Inderjit S Dhillon, Sujay Sanghavi, Qi Lei. "Sample Efficiency of Data Augmentation Consistency Regularization". *2202.12230: arxiv preprint*. (2022).
2. **Yijun Dong**, Per-Gunnar Martinsson. "Simpler is better: A comparative study of randomized algorithms for computing the CUR decomposition". *2104.05877: arxiv preprint*. (2021).
3. Chen Cheng\*, **Yijun Dong\***, Matthew Dorian\*, Farhan Kamili\*, Effrosyni Seitaridou. "Quantifying Biofilm Formation of *Sinorhizobium meliloti* Bacterial Strains in Microfluidic Platforms by Measuring the Diffusion Coefficient of Polystyrene Beads". *Open Journal of Biophysics*. (2017), 7, 157-173.

## Talks

1. Yijun Dong, Per-Gunnar Martinsson. "Revitalize Classical Algorithms with Randomization: Efficient Low-rank Approximations with Statistical Guarantees". *Jane Street Symposium 2022*. New York, NY, Jan 2022.
2. Yijun Dong, Per-Gunnar Martinsson. "A Randomized CUR Decomposition via Partially Pivoted LU Factorization". *SIAM Conference on Applied Linear Algebra (LA21)*. Virtual, May 2021.
3. Yijun Dong, Peiyao Wu, James Kindt, Eric Weeks. "Forming 2D colloidal crystals with sedimented colloids". *American Physical Society March Meeting*. Los Angeles, CA, March 2018.
4. Yijun Dong, Effrosyni Seitaridou. "Quantifying Biofilm Formation of *Sinorhizobium meliloti* by Measuring the Diffusion Coefficient of Polystyrene Beads in Microfluidic Platforms". *Summer Undergraduate Research Experience at Emory University (SURE) Symposium*. Atlanta, GA, August 2016.

## Certifications

1. High-Performance Computing with Python, Udemy, Jul 2020
2. Deep Learning Specialization, deeplearning.ai, Coursera, Jul 2018

## Services

Journal review

- SIAM Journal on Matrix Analysis and Applications
- IMA Journal of Numerical Analysis

## Skills

Programming

- Proficient: Bash, Git, MATLAB, Python
- Prior knowledge: C++, IDL, Java, Julia, Mathematica, etc.

Language

- Chinese (native), English (proficient), Japanese