Yijun Dong

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Research Interests

Randomized numerical linear algebra, Learning theory

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 matrix skeletonization
- Accuracy of randomized subspace approximations
- Sample efficiency of data augmentation consistency regularization
- Medical image segmentation with subpopulation shift

Undergraduate Research Assistant — 2015-2018
Weeks Lab and Seitaridou Lab, Emory University — Atlanta, GA
- Soft matter physics, Biophysics

Industry Experience

Research Intern — May-Aug 2021
Dell Technologies — Remote, TX
- Streaming telemetry time series compression on edge devices

Research Intern — Jun-Aug 2022
Dell Technologies — Austin, TX
- Semi-supervised tabular learning with consistency regularization

Teaching Experience

Teaching Assistant — 2020, 2021
Department of Mathematics & Oden Institute, UT Austin — Austin, TX
- Numerical Analysis: Linear Algebra (Fall 2021, graduate)
- Differential Equations with Linear Algebra (Fall 2020, undergraduate)

Tutor — 2015-2016
Department of Physics, Oxford College of Emory University — Oxford, GA
- Introduction to Physics, Modern Physics

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