CHUNYANG LIAO

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ACADEMIC TRAINING

Texas A&M University *Sept 2018 - Present*
Ph.D. Mathematics College Station, Texas

Texas A&M University *Sept 2016 - May 2018*
M.S. Computational Mathematics College Station, Texas

Dalian Maritime University *Sept 2012 - June 2016*
B.S. Applied Mathematics Dalian, China

RESEARCH INTERESTS

Mathematics of Data Science, Approximation Theory, (Deep) Learning Theory

HONORS AND AWARDS

- 2022 Travel award, 5th Annual Meeting of the SIAM Texas-Louisiana Section
- 2022 Travel award, Faraway Fourier Talk (FFT), College Park, MD, October 2022
- 2022 SIAM student Travel Award for the SIAM Conference on Mathematical Data Science
- 2014 National Scholarship (top 2%), Ministry of Education of China
- 2013 National Scholarship (top 2%), Ministry of Education of China

PUBLICATIONS

Journal Publications

2. *Optimal Recovery from Inaccurate Data in Hilbert Spaces: Regularize, but what of the Parameter?*
Constructive Approximation. To appear. With S. Foucart

1. *Learning from Non-Random Data in Hilbert Spaces: An Optimal Recovery Perspective*
Sampling Theory, Signal Processing, and Data Analysis, 20, 5, 2022. With S. Foucart, S. Shahrampour, Y. Wang

Refereed Proceedings Papers

1. *A Communication-Efficient Distributed Gradient Clipping Algorithm for Training Deep Neural Networks*
To appear in Advances in Neural Information Processing Systems 33, 2022. (NeurIPS 2022)
With Mingrui Liu, Zhenxun Zhuang, and Yunwen Lei.

PROJECTS

TAMIDS Course Development for MATH 664 *June 2021 - Aug 2021*

Design numerical illustrations for MATH 664: Topics in Mathematical Data Science. Topics are Machine Learning, Optimal Recovery, Compressive Sensing, Optimization and Neural Networks.

ORAL PRESENTATIONS

Invited Workshop and Conference Presentations

- *Optimal Recovery from Inaccurate Data in Hilbert Spaces: Regularize, but what of the Parameter?* Minisymposium, 5th annual meeting of the SIAM TX-LA Section, Houston, Texas, Nov 4-6, 2022.
- *Optimal Recovery in Hilbert spaces from observational data.* 2022 Summer Informal Regional Functional Analysis Seminar (SUMIRFAS), Texas A&M University, College Station, July 29-31, 2022.

Contributed Conferences Presentations

- *Optimal Recovery from Inaccurate Data in Hilbert Spaces: Regularize, but what of the Parameter?*, SIAM Annual Meeting, Pittsburgh, Pennsylvania, July 11-15, 2022.

Seminars

- *Optimal Recovery in Hilbert spaces from observational data.* Applied Math Seminar, University of Georgia, Athens, 13 Sept 2022.
- *Optimal Recovery in the age of Data Science.* Gathering in Graduate Expository Mathematics (GIG'EM), Texas A&M university, College Station, 23 April 2022
- *Optimal Recovery in Hilbert Spaces from Exact or Inaccurate data.* Center of Approximation and Mathematical Data Analytics (CAMDA) seminar, Texas A&M university, College Station, 23 Feb 2022

Poster section:

- *Optimal Recovery from Inaccurate Data in Hilbert Spaces: Regularize, but what of the Parameter?*
  1. Texas A&M University TRIPODS Annual Data Science Conference, College Station, Texas, Oct 21-22 2022
  2. Faraway Fourier Talks 2022, University of Maryland, College Park, Maryland, Oct 6-7 2022
  3. SIAM Conference on Mathematics of Data Science (MDS22), San Diego, California, Sept 26-30 2022
  4. 4th annual meeting of the SIAM TX-LA Section, South Padre Island, Texas, Nov 5-7, 2021
- *Learning from Non-Random Data in Hilbert Spaces: An Optimal Recovery Perspective.* 3rd annual meeting of the SIAM TX-LA Section, College Station, Texas, October 16-18, 2020

MISCELLANEOUS CONFERENCES & WORKSHOPS

Attendance:

- (hybrid) Focus Program on Data Science, Approximation Theory, and Harmonic Analysis, Fields Institute, Toronto, May 9-June 10, 2022

- (remote) SIAM Annual Meeting, Spokane, Washington, July 19-23 2021
- (remote) Workshop on the Theory of Overparameterized Machine Learning (TOPML), April 20-21 2021
- (remote) SIAM Conference on Mathematics of Data Science (MDS20), Cincinnati, Ohio, May 4-June 30 2020
- Concentration Week on Randomness and Determinism in Compressive Data Acquisition, College Station, Texas, July 2019

Summer Schools:

- (hybrid) Institute for Foundations of Data Science (IFDS) Summer School, Madison, Wisconsin, July 26-30 2021
- (remote) Deep Learning Theory Summer School at Princeton, July 27 - Aug 4 2021
- (hybrid) Gene Golub SIAM Summer school, Muizenberg, South Africa, July 19-30 2021

TEACHING EXPERIENCE

Texas A&M University (2018 -):

- Instructor, Applied analysis Qualifying Exam Preparation course (Summer 2022)
- Lab instructor, Topics in Mathematical Data Science (Spring 2022)
- Instructor of Record, Mathematics for Business and Social Sciences (Fall 2021)
- Teaching Assistant, Engineering Mathematics II (Spring 2021, Fall 2019)
- Teaching Assistant, Numerical Analysis (Fall 2020)

PROFESSIONAL SERVICES

Reviewing

- 2022 Sampling Theory, Signal Processing, and Data Analysis

ADDITIONAL INFORMATION

- Computer skill: Matlab, Python, R, C, C++, HTML
- Convex optimization packages: CVX (Matlab), CVXOPT/CVXPY (Python), GUROBI, MOSEK