Xiaoyi MAI

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Experiences

- Assistant Professor, University of Toulouse-Jean Jaurès, Toulouse Mathematics Institute, France.   2022-
- Postdoctoral Researcher, CRIStAL, CNRS, France.   2021-2022
    - Project: Determinantal point processes for statistical learning.
    - Host: R. Bardenet.
- Postdoctoral Researcher, University of Southern California, USA.   2020-2021
    - Project: Learning with less labels.
    - Hosts: S. Avestimehr, A. Ortega and M. Soltanolkotabi.

Education

- Ph.D. in Mathematics and Computer Science, CentraleSupélec, University of Paris-Saclay, France.   2016-2019
    - Thesis: Methods of random matrices for large dimensional statistical learning.
    - Supervisors: R. Couillet, W. Hachem.
    - Award: The 20220 GRETSI/GdR ISIS/EEA best thesis award.
- M.Sc. (double degrees) in Applied Mathematics and Information Processing, CentraleSupélec, France.   2014-2016
- M.Sc. (double degrees) in Electronic and Information Engineering, Beihang University, China.   2014-2016
- B.Sc. in Applied Physics, Beihang University, China.   2010-2014

Articles

- **X. Mai**, Z. Liao, "The breakdown of gaussian universality in classification of high-dimensional linear factor mixtures", (accepted) The International Conference on Learning Representations (ICLR'25), Singapore, Singapore, 2025.
- W. Yang, Z. Wang, **X. Mai**, Z. Ling, RC Qiu, Z. Liao, "Inconsistency of ESPRIT DoA estimation for large arrays and a correction via RMT", European Signal Processing Conference (EUSIPCO'24), Lyon, France, 2024.
- **X. Mai**, S. Avestimehr, A. Ortega, M. Soltanolkotabi, "On the effectiveness of active learning by uncertainty sampling in classification of high-dimensional gaussian mixture data", IEEE International Conference on Acoustics,Speech and Signal Processing (ICASSP'22), Singapore, Singapore, 2022.
- **X. Mai**, R. Couillet, "Consistent semi-supervised graph regularization for high-dimensional data", Journal of Machine Learning Research, 2021.
- **X. Mai**, R. Couillet, "Revisiting and improving semi-supervised learning: a large dimensional approach", IEEE International Conference on Acoustics,Speech and Signal Processing (ICASSP'19), Brighton, UK, 2019.
- **X. Mai**, Z.Liao, R. Couillet, "A large n, p analysis of logistic regression: asymptotic performance and new insights", IEEE International Conference on Acoustics,Speech and Signal Processing (ICASSP'19), Brighton, UK, 2019
- **X. Mai**, R. Couillet, "A random matrix analysis and improvement of semi-supervised learning for large dimensional data", Journal of Machine Learning Research, vol. 19, no. 79, pp. 1-27, 2018.

- **X. Mai**, R. Couillet, "Semi-supervised spectral clustering", Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, USA, 2018.
- R. Couillet, Z. Liao, **X. Mai**, "Classification asymptotics in the random matrix regime", European Signal Processing Conference (EUSIPCO'18), Rome, Italy,2018.
- **X. Mai**, R. Couillet, "The counterintuitive mechanism of graph-based semi-supervised learning in the big data regime", IEEE International Conferenceon Acoustics, Speech and Signal Processing (ICASSP'17), New Orleans, USA,2017.

Activities

Scientific events
- Co-organizer of the CIMI thematic trimester "Beyond Classical Regimes in Statistical Inference and Machine Learning" (consisting of a colloquium, two thematic schools and a workshop), Toulouse, France.   2025
- Co-organizer of Journées Statistiques du Sud 2024, Toulouse, France.   2024
- Tutorial speaker (with R. Couillet & Z. Liao), European Signal Processing Conference (EUSIPCO'18), Italy.   2018

Review activities
- Reviewer & Area Chair for machine learning Conferences.
  - Area Chair: ICML'25, Neurips'24.
  - Reviewer: AAAI'25, ICLR'24-25, ICML'23-24, Neurips'22-23.
- Reviewer for Journals: IEEE Transaction on Signal Processing, IEEE Transaction on Information Theory.