

CURRICULUM VITAE

Zhenyu LIAO

Present Address

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Personal information

Date of Birth: 28/08/1992
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Education

- **Ph.D.** in Statistics and Machine Learning, **L2S, CentraleSupélec**, France
2016-present
 - Thesis: A Random Matrix Approach to Deep Neural Networks Analysis.
 - Supervisor: **Prof. Romain Couillet**, **Prof. Yacine Chitour**.
- **M.Sc.** in Signal and Image Processing, **CentraleSupélec/Paris-Sud (11)**, France
2014-2016
- **B.Sc.** in Electronic Engineering, **Paris-Sud (11)**, France
2013-2014
- **B.Sc.** in Optical & Electronic Information, **HUST**, Wuhan, China
2010-2014

Internship

- **Research intern**, **LANEAS Group, CentraleSupélec**, France. Summer 2016
 - Research intern: random matrix analysis of support vector machines.
 - Supervisor: **Prof. Romain Couillet**
- **Research intern**, **IEF**, Paris-Sud-CNRS, France. Summer 2015
 - Research intern: modeling and circuits design of a thermoelectric system.
 - Supervisors: **Damien Querlioz** and **Jérôme Saint Martin**
- **Intern**, **FiberhomeTech**, China. Summer 2014
 - Teaching assistant in a technical conference on telecommunication.
 - Supervisor: Prof. Zhiyong TAO

Tutorials and invited talks

- **Z. Liao**, invited talk on “Recent Advances in Random Matrix for Neural Networks”, 1st workshop on Deep Learning Theory, Shanghai Jiao Tong University, Shanghai, China, 2018.
- R. Couillet, **Z. Liao**, X. Mai, tutorial on “Random Matrix Advances in Machine Learning and Neural Nets”, The 26th European Signal Processing Conference (EUSIPCO’18), Roma, Italy, 2018.

Teaching

- 2017-2018: Lab work of Signal and System 1, with **Prof. Laurent Le Brusquet**, Department of Signal and Statistics, CentraleSupélec: 54 hours.

Review activities

- International Conference of Machine Learning (ICML)
- IEEE Transactions on Signal Processing
- Neural Processing Letters

Publications

Conferences

- X. Mai, **Z. Liao**, “High Dimensional Classification via Empirical Risk Minimization: Improvements and Optimality”, (submitted to) The 36th International Conference on Machine Learning (ICML’19), Long Beach, CA, USA.
- X. Mai, **Z. Liao**, R. Couillet, “A Large Scale Analysis of Logistic Regression: Asymptotic Performance and New Insights”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP’19), Brighton, UK, 2019.
- R. Couillet, **Z. Liao**, X. Mai, “Classification Asymptotics in the Random Matrix Regime”, The 26th European Signal Processing Conference (EUSIPCO’18), Rome, Italy, 2018.
- **Z. Liao**, R. Couillet, “The Dynamics of Learning: A Random Matrix Approach”, The 35th International Conference on Machine Learning (ICML 2018), Stockholm, Sweden, 2018.
- **Z. Liao**, R. Couillet, “On the Spectrum of Random Features Maps of High Dimensional Data”, The 35th International Conference on Machine Learning (ICML 2018), Stockholm, Sweden, 2018.
- **Z. Liao**, R. Couillet, “Une Analyse des Méthodes de Projections Aléatoires par la Théorie des Matrices Aléatoires (in French)”, Colloque GRETSI’17, Juan Les Pins, France, 2017.
- **Z. Liao**, R. Couillet, “Random Matrices Meet Machine Learning: A Large Dimensional Analysis of LS-SVM”, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP’17), New Orleans, USA, 2017.

Journals

- Y. Chitour, **Z. Liao**, R. Couillet, “A Geometric Approach of Gradient Descent Algorithms in Neural Networks”, 2018.
- C. Louart, **Z. Liao**, R. Couillet, “A Random Matrix Approach to Neural Networks”, The Annals of Applied Probability (AAP) 28 (2), 1190-1248, 2018.
- **Z. Liao**, R. Couillet, “A Large Dimensional Analysis of Least Squares Support Vector Machines”, IEEE Transactions on Signal Processing (IEEE-TSP) 67 (4), 1065-1074, 2019.

Research interests

- Machine Learning
- Signal Processing
- Random Matrix Theory
- Statistics

Updated on January, 2019.