

Jian Li | Ph.D. student in Statistical Machine Learning

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Education

Institute of Information Engineering, Chinese Academy of Sciences
Ph.D. student, advisor: Prof. Weiping Wang and Associate Prof. Yong Liu

Beijing, China
Sep. 2015–Present

Northeastern University
Undergraduate, Software College

Shenyang, China
Sep. 2011–Jun. 2015

Research Interests

My research interests mainly lie in **efficient large machine learning with theoretical guarantee**, but also include kernel methods, semi-supervised learning (SSL) and interpretability for neural networks. Indeed, my works focus on **generalization** analysis of those areas and building effective and scalable **optimization** tools for them, to channel theory and algorithms into applications. Current works:

- **Algorithms**: Design of efficient algorithms for semi-supervised settings, by making use of random projections, stochastic gradient methods and distributed learning.
- **Theory**: Statistical learning for large scale algorithms applying to semi-supervised settings by using popular measures, including the local Rademacher complexity and integral operator.
- **Interpretability for Neural Networks**: Understand neural networks in spectral kernels way, based on random Fourier features and Rademacher complexity.

Publications (👉 Google Scholar Profile)

- [Multi-Class Learning using Unlabeled Samples: Theory and Algorithm](#).
Jian Li, Yong Liu, Rong Yin, Weiping Wang.
In Proceedings of the 28th International Joint Conference on Artificial Intelligence (**IJCAI 2019**).
- [Approximate Manifold Regularization: Scalable Algorithm and Generalization Analysis](#).
Jian Li, Yong Liu, Rong Yin, Weiping Wang.
In Proceedings of the 28th International Joint Conference on Artificial Intelligence (**IJCAI 2019**).
- [Multi-Class Learning: From Theory to Algorithm](#).
Jian Li, Yong Liu, Rong Yin, Hua Zhang, Lizhong Ding, Weiping Wang.
Advances in Neural Information Processing Systems 31 (**NeurIPS 2018**).
- [Efficient Kernel Selection via Spectral Analysis](#).
Jian Li, Yong Liu, Hailun Lin, Yinliang Yue, Weiping Wang.
In Proceedings of the 26th International Joint Conference on Artificial Intelligence (**IJCAI 2017**).

Preprints

- [Automated Spectral Kernel Learning](#). (Submission in AAAI)
Jian Li, Yong Liu, Weiping Wang.
arXiv preprint arXiv:1909.04894, 2019.
- [Learning Vector-valued Functions with Local Rademacher Complexity](#). (Submission in TPAMI)
Jian Li, Yong Liu, Weiping Wang.
arXiv preprint arXiv:1909.04883, 2019.
- [Distributed Learning with Random Features](#).
Jian Li, Yong Liu, Weiping Wang.
arXiv preprint arXiv:1906.03155, 2019.
- [Efficient Cross-Validation for Semi-Supervised Learning](#).
Yong Liu, **Jian Li**, Guangjun Wu, Lizhong Ding, Weiping Wang.
arXiv preprint arXiv:1902.04768, 2019.
- [Max-Diversity Distributed Learning: Theory and Algorithms](#). (Submission in AAAI)
Yong Liu, **Jian Li**, Weiping Wang.
arXiv preprint arXiv:1812.07738, 2018.

Engineering Experience

Large-scale Data Analysis and Process Platform **Institute of Information Engineering, CAS**
Data mining algorithms engineer *Apr. 2017 - Dec. 2017*

- Design and implement of general machine learning algorithms.
- Apply general algorithms to specific large-scale tasks.
- Improve efficiency and scalability of both algorithms and applications.

Mass Email Analysis Subsystem **Institute of Information Engineering, CAS**
Big data algorithms engineer *Jul. 2016 - Mar. 2017*

- Build and maintain parallel computing engine (Spark cluster).
- Design and implement of large scale graph mining algorithms (including community discovery, Spread back, behavior analysis and key nodes finding) on Spark.
- Apply graph mining algorithms to practical applications, e.g. analysis of community, spread and key notes.

Sword and Magic (Mobile game) **UEGame Cooperation**
U3D Game Developer *Dec. 2014 - Sep. 2015*

- Implement the state machine to control behavior of game role.
- Implement dynamic 2D and 3D effects UI for passing a stage.
- Accelerate efficiency of packaging and communication.

Expertise

- **Generalization Theory**: Rademacher complexity, Integral operator and approximate kernel theory.
- **Large Scale Optimization Algorithm**: random projections, gradient methods and distributed learning.
- **Programming Languages**: Python, Matlab, C/C++, Java.
- **Development Environments**: Pytorch, Tensorflow, Spark, sklearn, Pandas, Linux.
- **Languages**: English, Fluent. Chinese, Mother Tongue.

Honors and Awards

- **The UCAS Joint PhD Training Program (almost 100/50,000, USD \$22,800)**
University of Chinese Academy of Sciences (UCAS). 2019.
- **CAS Presidential Scholarship (Top 1%, RMB ¥5,000)**
Chinese Academy of Sciences (CAS). 2019.
- **National Scholarship for Doctoral students (Top 2%, RMB ¥30,000)**
Ministry of Education of P.R. China. 2018.
- **IIE Presidential Scholarship (Top 10%, RMB ¥2,000)**
Institute of Information Engineering, CAS. 2018.
- **Merit Student**, University of Chinese Academy of Sciences (UCAS). 2018.
- **Merit Student**, University of Chinese Academy of Sciences (UCAS). 2019.
- **Laboratory Excellent Student Scholarship**, Institute of Information Engineering, CAS. 2017.
- **Laboratory Excellent Student Scholarship**, Institute of Information Engineering, CAS. 2018.