**Yunwen Lei**

## Personal Information

*Date of Birth*: 02/1986 *Nationality*: Chinese
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## Education

**Wuhan University** Wuhan, China
*PhD in Computer Science* *09/2008 - 06/2014*
Advisor: Lixin Ding

**Hunan University** Changsha, China
*BSc in Mathematics* *09/2004 - 06/2008*

## Professional Appointments

**Department of Computer Science, University of Kaiserslautern** Kaiserslautern, Germany
*Alexander von Humboldt Research Fellow* *09/2019 - present*
Host: Marius Kloft

**Department of Computer Science and Engineering, SUSTech** Shenzhen, China
*Research Assistant Professor* *09/2017 - 08/2019*

**Department of Mathematics, City University of Hong Kong** Hong Kong, China
*Postdoctoral Research Fellow* *03/2015 - 09/2017*
Mentor: Ding-Xuan Zhou

**Department of Computer Science, University of Exeter** Exeter, UK
*Visiting Student* *11/2013 - 02/2014*
Mentor: Yiming Ying

## Research Interests

My research interests lie in the areas of machine learning and learning theory, with emphasis on the following topics: online learning, deep learning, optimization and extreme classification. In particular, I am interested in developing and analyzing scalable optimization methods for large-scale learning problems.

## Awards

Academic Awards
- Alexander von Humboldt Research Fellowship *11/2018*
- Hubei Province Excellent Doctoral Dissertation *12/2015*

Programming Contest Awards
- "Star-Net Cup" Programming Contest of Wuhan University, First Prize *11/2012*
- ACM International College Programming Contest (Asia Region), Silver Medal *11/2007*

Mathematical Contest Awards
- Mathematical Contest of Hunan Province, Second Prize *07/2007*
- Mathematical Contest of Hunan University, First Prize *03/2007*

## Research Grants

**Alexander von Humboldt Foundation, $69,800** PI
*Statistical Machine Learning Using Vector-valued Functions* *2019 - 2021*

**National Natural Science Foundation of China, $33,600** PI
*Extreme Classification: Learning Theory and Methods* *2019 - 2021*

**National Natural Science Foundation of China, $67,200** Member
*Statistical Learning Model and Theory for Massive Complex Data* *2018 - 2021*

## Teaching

University of Kaiserslautern

- Optimization for Deep Learning, lecture course with exercises *Summer 2020*
- Machine Learning III: Mathematics of ML, lecture course with exercises *Winter 2019*

Southern University of Science and Technology

- Intelligent Data Analysis, lab class *Spring 2019*
- Artificial Intelligence, lab class *Autumn 2018*

## Professional Services

Journal Reviewer:

- Journal of Machine Learning Research
- Transactions on Information Theory
- Transactions on Neural Networks and Learning Systems
- Transactions on Pattern Analysis and Machine Intelligence
- Journal of Approximation Theory
- Journal of Complexity
- Analysis and Applications
- Machine Learning
- Neurocomputing
- Neural Networks

Conference Reviewer:

- AAAI Conference on Artificial Intelligence (AAAI 2019, 2020)
- Asian Conference on Machine Learning (ACML 2019, 2020)
- Artificial Intelligence and Statistics Conference (AISTATS 2016–2020)
- Annual Conference on Learning Theory (COLT 2018)
- International Conference on Learning Representations (ICLR 2018–2020)
- International Conference on Machine Learning (ICML 2018–2020)
- International Joint Conference on Artificial Intelligence (IJCAI 2019, 2020)
- Advances in Neural Information Processing Systems (NeurIPS 2016–2020)*

Reviewer for Mathematical Reviews, zbMATH

## Publications

Referred Journal Papers

1. **Yunwen Lei**, Ting Hu, Guiying Li and Ke Tang. "Stochastic Gradient Descent for Nonconvex Learning without Bounded Gradient Assumptions." *IEEE Transactions on Neural Networks and Learning Systems*, doi: 10.1109/TNNLS.2019.2952219
2. **Yunwen Lei** and Ding-Xuan Zhou. "Convergence of Online Mirror Descent." *Applied Computational and Harmonic Analysis*, 48(1):343–373, 2020.
3. Shao-Bo Lin, **Yunwen Lei**† and Ding-Xuan Zhou. "Boosted Kernel Ridge Regression: Optimal Learning Rates and Early Stopping." *Journal of Machine Learning Research*, 20(46):1–36, 2019.
4. **Yunwen Lei**, Ürün Dogan, Ding-Xuan Zhou and Marius Kloft. "Data-dependent Generalization Bounds for Multi-class Classification." *IEEE Transactions on Information Theory*, 65(5): 2995–3021, 2019.
5. Niloofar Yousefi, **Yunwen Lei**, Marius Kloft, Mansooreh Mollaghasemi and Georgios Anagnostopoulos. "Local Rademacher Complexity-based Learning Guarantees for Multi-task Learning." *Journal of Machine Learning Research*, 19(38):1–47, 2018.
6. **Yunwen Lei**, Lei Shi and Zheng-Chu Guo. "Convergence of Unregularized Online Learning Algorithms." *Journal of Machine Learning Research*, 18(171):1–33, 2018.
7. **Yunwen Lei** and Ding-Xuan Zhou. "Learning Theory of Randomized Sparse Kaczmarz Method." *SIAM Journal on Imaging Sciences*, 11(1):547–574, 2018.
8. Junhong Lin, **Yunwen Lei**†, Bo Zhang and Ding-Xuan Zhou. "Online Pairwise Learning Algorithms with Convex Loss Functions." *Information Sciences*, 406–407(9):57–70, 2017.
9. **Yunwen Lei** and Ding-Xuan Zhou. "Analysis of Online Composite Mirror Descent Algorithm." *Neural Computation*, 29(3):825–860, 2017.

*one of top reviewers in NeurIPS 2019

†corresponding author

10. **Yunwen Lei** and Yiming Ying. "Generalization Analysis of Multi-modal Metric Learning." *Analysis and Applications*, 14(04):503–521, 2016.
11. **Yunwen Lei**, Lixin Ding and Wensheng Zhang. "Generalization Performance of Radial Basis Function Networks." *IEEE Transactions on Neural Networks and Learning Systems*, 26(3):551–564, 2015.
12. **Yunwen Lei** and Lixin Ding. "Refined Rademacher Chaos Complexity Bounds with Applications to the Multi-Kernel Learning Problem." *Neural Computation*, 26(4):739–760, 2014.

Referred Conference Papers

1. **Yunwen Lei**, Peng Yang, Ke Tang and Ding-Xuan Zhou. "Optimal Stochastic and Online Learning with Individual Iterates." In *Advances in Neural Information Processing Systems*, pages 5416-5426, 2019. (**Spotlight, 2.97% of submissions**)
2. **Yunwen Lei** and Ke Tang. "Stochastic Composite Mirror Descent: Optimal Bounds with High Probabilities." In *Advances in Neural Information Processing Systems*, pages 1526–1536, 2018.
3. **Yunwen Lei**, Shao-Bo Lin and Ke Tang. "Generalization Bounds for Regularized Pairwise Learning." In *International Joint Conference on Artificial Intelligence*, pages 2376–2382, 2018.
4. **Yunwen Lei**, Alexander Binder, Ürün Dogan and Marius Kloft. "Localized Multiple Kernel Learning—A Convex Approach." In *JMLR Conference and Workshop Proceedings: Asian Conference on Machine Learning*, 63:81–96, 2016.
5. **Yunwen Lei**, Ürün Dogan, Alexander Binder and Marius Kloft. "Multi-class SVMs: From Tighter Data-Dependent Generalization Bounds to Novel Algorithms." In *Advances in Neural Information Processing Systems*, pages 2026–2034, 2015.

Submitted Manuscripts

1. **Yunwen Lei** and Yiming Ying "Fine-Grained Analysis of Stability and Generalization for Stochastic Gradient Descent." Submitted.
2. **Yunwen Lei** and Ke Tang "Learning Rates for Stochastic Gradient Descent with Nonconvex Objectives." *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Major revision.
3. **Yunwen Lei** and Yiming Ying. "Stochastic Proximal AUC Maximization." In *arXiv preprint arXiv:1906.06053*, 2019.
4. Antoine Ledent, **Yunwen Lei** and Marius Kloft "Norm-based Generalisation Bounds for Multi-class Convolutional Neural Networks." In *arXiv preprint arXiv:1905.12430*, 2019.