Weihao GAO

Contact Information

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Education

University of Illinois at Urbana-Champaign (expected) August, 2019
Ph.D. in Electrical and Computer Engineering

- Advisors: Sewoong Oh, Pramod Viswanath,
- Tentative dissertation title: "Discovering relationship among data via information-theoretic quantity estimators".

University of Illinois at Urbana-Champaign December, 2016
M.S. in Electrical and Computer Engineering

- GPA: 3.97/4.0,
- Thesis: "Conditional Dependence via Shannon Capacity: Axioms, Estimators and Applications".

Tsinghua University July, 2014
B.E. in Computer Science and Technology (Special Pilot CS Class)

- GPA: 91/100, Ranking: 8/34.

Experiences

Coordinates Science Lab, Urbana, IL, USA August, 2014 - present
Research Assistant

- Research Interest: Machine Learning, Deep learning, Information Theory, Statistics.

Google AI China Center, Beijing, China June - September, 2018
Software Engineering Intern in Research

Facebook Inc., Menlo Park, CA, USA May - August, 2017
Software Engineering Intern

Institute for Quantum Computing, Waterloo, ON, Canada June - September, 2013
Research Assistant

Journal Publications

1. **W. Gao**, S. Oh, P. Viswanath, "Demystifying Fixed k-Nearest Neighbor Information Estimators", *IEEE Transactions on Information Theory*, Vol.64, Issue:8, pp.5629-5661, September 2018.
2. **W. Gao**, S. Oh, P. Viswanath, "Breaking the Bandwidth Barrier: Geometrical Adaptive Entropy Estimation", *IEEE Transactions on Information Theory*, Vol.64, Issue:5, pp.3313-3330, May 2018.
3. H. Kim, **W. Gao**, S. Kannan, S. Oh, P. Viswanath, "Discovering Potential Correlations via Hypercontractivity", *Entropy*, Vol.19, Issue:11, pp:586, October 2017.

Conference Publications

1. J. Jiao, **W. Gao**, Y. Han, "The Nearest Neighbor Information Estimator is Adaptively Near Minimax Rate-Optimal", *Neural Information Processing Systems (NIPS)*, Montréal, QC, Canada, 2018, **spotlight presentation**.
2. **W. Gao**, S. Kannan, S. Oh, P. Viswanath, "Estimating Mutual Information for Discrete Continuous Mixtures", *Neural Information Processing Systems (NIPS)*, Long Beach, CA, USA, 2017, **spotlight presentation**.

3. H. Kim, **W. Gao**, S. Kannan, S. Oh, P. Viswanath, "Discovering Potential Influence via Information Bottleneck", *Neural Information Processing Systems (NIPS)*, Long Beach, CA, USA, 2017.
4. **W. Gao**, S. Oh, P. Viswanath, "Density Functional Estimators with k-Nearest Neighbor Bandwidths", *International Symposium on Information Theory (ISIT)*, Aachen, Germany, 2017.
5. **W. Gao**, S. Oh, P. Viswanath. "Demystifying Fixed k-Nearest Neighbor Information Estimators", *International Symposium on Information Theory (ISIT)*, Aachen, Germany, 2017.
6. **W. Gao**, S. Oh, P. Viswanath. "Breaking the Bandwidth Barrier: Geometric Adaptive Entropy Estimation", *Neural Information Processing Systems (NIPS)*, Barcelona, Spain, 2016.
7. **W. Gao**, S. Kannan, S. Oh, P. Viswanath. "Conditional Dependence via Shannon Entropy: Axioms, Estimators and Applications", *International Conference on Machine Learning (ICML)*, New York, NY, USA, 2016.
8. **W. Gao** and Y. Polyanskiy. "On bit-error-rate of repeated error-correcting codes", *Conference on Information Systems and Sciences (CISS)*, Priceton, NJ, USA, 2014.

Conference Papers Under Review

9. **W. Gao**, C. Wang, S. Oh, "Rate Distortion For Model Compression: From Theory To Practice", under review, `https://arxiv.org/abs/1810.06401`.
10. **W. Gao**, A. V. Makkuva, S. Oh, P. Viswanath, "Learning One-hidden-layer Neural Networks under General Input Distributions", under review, `https://arxiv.org/abs/1810.04133`.

Services

- Reviewer for *Neural Information Processing Systems (NIPS)* 2016 and 2018
- Reviewer for *AAAI Conference on Artificial Intelligence (AAAI)* 2018
- Reviewer for *International Conference on Learning Representations (ICLR)* 2018
- Reviewer for *IEEE Transcation on Wireless Communications (TWC)* 2018
- Reviewer for *International Symposium on Information Theory (ISIT)* 2016 and 2017

Honors and Awards

- NIPS Student Travel Award December, 2016 and 2017
- ICML Student Travel Award June, 2016
- Outstanding Graduates, IIIS, Tsinghua University July, 2014
- Tsinghua-Baidu Scholarship, First Prize October, 2013
- Andrew Chi-Chih Yao Student Award, Recognition Prize June, 2013
- National Scholarship (Top 2% in Tsinghua) November, 2011
- Tsinghua University Freshman Scholarship, Second Prize December, 2010
- China Mathematics Olympic(CMO), First Prize January, 2010

Languages and Skills

- Languages: Mandarin Chinese(native), English(fluent).
- Programming Languages: Python, C/C++, Java, PHP.
- Other Computer Skills: Tensorflow, Pytorch, MATLAB, LaTeX.