

# Weihaio GAO

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CONTACT INFORMATION	<i>Phone:</i> +1-217-417-8387 <i>E-mail:</i> weihao.gao@bytedance.com <i>Website:</i> <a href="http://wgao9.github.io/">http://wgao9.github.io/</a>	
CURRENT POSITION	<b>Bytedance Inc.</b> , Bellevue, WA, USA <i>Research Scientist, Applied Machine Learning Team</i>	September, 2019 - present
EDUCATION	<b>University of Illinois at Urbana-Champaign</b> <i>Ph.D. in Electrical and Computer Engineering</i> <ul style="list-style-type: none"><li>• Advisors: Sewoong Oh, Pramod Viswanath.</li><li>• Dissertation: “Information Theory meets Big Data: Theory, Algorithms and Applications to Deep Learning”.</li></ul>	2019
	<b>University of Illinois at Urbana-Champaign</b> <i>M.S. in Electrical and Computer Engineering</i>	2016
	<b>Tsinghua University</b> <i>B.E. in Computer Science and Technology (Yao Class)</i>	2014
EXPERIENCES	<b>Coordinates Science Lab</b> , Urbana, IL, USA <i>Research Assistant</i>	August, 2014 - August, 2019
	<b>Google Brain</b> , Kirkland, WA, USA <i>Student Researcher</i>	January - May, 2019
	<b>Google AI China Center</b> , Beijing, China <i>Software Engineering Intern in Research</i>	June - September, 2018
	<b>Facebook Inc.</b> , Menlo Park, CA, USA <i>Software Engineering Intern</i>	May - August, 2017
	<b>Institute for Quantum Computing</b> , Waterloo, ON, Canada <i>Research Assistant</i>	June - September, 2013
JOURNAL PUBLICATIONS	<ol style="list-style-type: none"><li>1. <b>W. Gao</b>, S. Oh, P. Viswanath, “Demystifying Fixed <math>k</math>-Nearest Neighbor Information Estimators”, <i>IEEE Transactions on Information Theory</i>, Vol.64, Issue:8, pp.5629-5661, September 2018.</li><li>2. <b>W. Gao</b>, S. Oh, P. Viswanath, “Breaking the Bandwidth Barrier: Geometrical Adaptive Entropy Estimation”, <i>IEEE Transactions on Information Theory</i>, Vol.64, Issue:5, pp.3313-3330, May 2018.</li><li>3. H. Kim, <b>W. Gao</b>, S. Kannan, S. Oh, P. Viswanath, “Discovering Potential Correlations via Hypercontractivity”, <i>Entropy</i>, Vol.19, Issue:11, pp:586, October 2017.</li></ol>	
CONFERENCE PUBLICATIONS	<ol style="list-style-type: none"><li>1. Y. Bu, <b>W. Gao</b>, S. Zou, V. V. Veeravalli, “Information-Theoretic Understanding of Population Risk Improvement with Model Compression”, <i>Thirty-Forth AAAI Conference on Artificial Intelligence (AAAI)</i>, New York, NY, USA, 2020.</li><li>2. <b>W. Gao</b>, Y.-H. Liu, C. Wang, S. Oh, “Rate Distortion For Model Compression: From Theory To Practice”, <i>International Conference on Machine Learning (ICML)</i>, Long Beach, CA, USA, 2019.</li><li>3. <b>W. Gao</b>, A. V. Makkuva, S. Oh, P. Viswanath, “Learning One-hidden-layer Neural Networks under General Input Distributions”, <i>International Conference on Artificial Intelligence and Statistics(AISTATS)</i>, Naha, Okinawa, Japan, 2019.</li></ol>	

4. J. Jiao, **W. Gao**, Y. Han, “The Nearest Neighbor Information Estimator is Adaptively Near Minimax Rate-Optimal”, *Neural Information Processing Systems (NeurIPS)*, Montréal, QC, Canada, 2018, **spotlight presentation**.
5. **W. Gao**, S. Kannan, S. Oh, P. Viswanath, “Estimating Mutual Information for Discrete Continuous Mixtures”, *Neural Information Processing Systems (NeurIPS)*, Long Beach, CA, USA, 2017, **spotlight presentation**.
6. H. Kim, **W. Gao**, S. Kannan, S. Oh, P. Viswanath, “Discovering Potential Influence via Information Bottleneck”, *Neural Information Processing Systems (NeurIPS)*, Long Beach, CA, USA, 2017.
7. **W. Gao**, S. Oh, P. Viswanath, “Density Functional Estimators with  $k$ -Nearest Neighbor Bandwidths”, *International Symposium on Information Theory (ISIT)*, Aachen, Germany, 2017.
8. **W. Gao**, S. Oh, P. Viswanath. “Demystifying Fixed  $k$ -Nearest Neighbor Information Estimators”, *International Symposium on Information Theory (ISIT)*, Aachen, Germany, 2017.
9. **W. Gao**, S. Oh, P. Viswanath. “Breaking the Bandwidth Barrier: Geometric Adaptive Entropy Estimation”, *Neural Information Processing Systems (NeurIPS)*, Barcelona, Spain, 2016.
10. **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.
11. **W. Gao** and Y. Polyanskiy. “On bit-error-rate of repeated error-correcting codes”, *Conference on Information Systems and Sciences (CISS)*, Princeton, NJ, USA, 2014.

#### SERVICES

- Reviewers for conferences.
  - NeurIPS 2016-2019, ISIT 2016-2020, ICML 2018-2020, AAAI 2018-2020, ICLR 2018-2020.
- Reviewers for journals.
  - IEEE Transactions on Information Theory 2019, IEEE Transactions on Wireless Communication 2018.

#### HONORS AND AWARDS

- NeurIPS Student Travel Award December, 2016, 2017, 2018
- ICML Student Travel Award June, 2016, 2019
- 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, SQL  $\LaTeX$ .