Yuxin Dong

PH.D. STUDENT AT XI'AN JIAOTONG UNIVERSITY

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Personal Profile

I am a Ph.D. student at the School of Computer Science and Technology, Xi'an Jiaotong University, advised by Prof. Chen Li and Prof. Tieliang Gong. I am expected to graduate in Autumn 2024. I obtained my bachelor's degree in Computer Science and Technology at Xi'an Jiaotong University.

My research interests lie in machine learning and statistical learning theory. Recently, I have been focusing on **information-theoretic generalization analysis and algorithm design** in supervised learning, contrastive learning, and domain generalization. These works shed light on understanding the success of existing algorithms or inspire new algorithm designs that are provably more effective. My research areas include:

- Analyzing the generalization ability of randomized learning algorithms through the lens of information theory.
- Designing effective and robust learning algorithms based on information-theoretic measurements and analysis.
- Developing computationally efficient approximations for information-theoretic quantities and measurements.

Education

Xi'an Jiaotong University   *Xi'an Shaanxi, China*

B.S. in Computer Science and Technology. GPA: 3.81 / 4.30   *2014 - 2019*

Ph.D. in Computer Science and Technology. GPA: 3.78 / 4.00 **(Top 1)**   *2019 - 2024 (Expected)*

Publications

JOURNAL ARTICLES

Optimal Randomized Approximations for Matrix-based Rényi's Entropy.
  Yuxin Dong, Tieliang Gong, Shujian Yu, Chen Li. *IEEE Transactions on Information Theory*, 2023.

Computationally Efficient Approximations for Matrix-Based Rényi's Entropy.
  Tieliang Gong*, **Yuxin Dong***, Shujian Yu, Bo Dong. *IEEE Transactions on Signal Processing*, 2022.

Efficient Approximations for Matrix-Based Rényi's Entropy on Sequential Data.
  Yuxin Dong, Tieliang Gong, Hong Chen, Chen Li. *IEEE Transactions on Neural Networks and Learning Systems*, 2023.

Markov Subsampling Based on Huber Criterion.
  Tieliang Gong, **Yuxin Dong**, Hong Chen, Bo Dong, Chen Li. *IEEE Transactions on Neural Networks and Learning Systems*, 2022.

CONFERENCE PROCEEDINGS

Towards Generalization beyond Pointwise Learning: A Unified Information-theoretic Perspective.
  Yuxin Dong, Tieliang Gong, Hong Chen, Mengxiang Li, Zhongjiang He, Chen Li. *International Conference on Machine Learning*, 2024.

Rethinking Information-theoretic Generalization: Loss Entropy Induced PAC Bounds.
  Yuxin Dong, Tieliang Gong, Hong Chen, Shujian Yu, Chen Li. *International Conference on Learning Representations*, 2024.

Understanding the Generalization Ability of Deep Learning Algorithms: A Kernelized Rényi's Entropy Perspective.
  Yuxin Dong, Tieliang Gong, Hong Chen, Chen Li. *International Joint Conference on Artificial Intelligence*, 2023.

Robust and Fast Measure of Information via Low-rank Representation.
  Yuxin Dong, Tieliang Gong, Shujian Yu, Hong Chen, Chen Li. *AAAI Conference on Artificial Intelligence*, 2023.

Regularized Modal Regression on Markov-Dependent Observations: A Theoretical Assessment.
  Tieliang Gong, **Yuxin Dong**, Hong Chen, Wei Feng, Bo Dong, Chen Li. *AAAI Conference on Artificial Intelligence*, 2022.

Patent

A Storage Scheme for Extremely Large Image Files, ZL201911206466.6.
  Chen Li, **Yuxin Dong**, Pargorn Puttapirat, Jingyi Deng. *Chinese Invention Patent*, 2021.

Skills

Programming   C/C++, Python, Matlab, Java, C#, JavaScript, PHP, HTML.

Software   Microsoft Office (Word, Excel, PowerPoint), Latex, Adobe (Photoshop, Premiere, Audition).

English   CET-4 (576), CET-6 (547), TOEFL (102).

Awards

2023   **National Postgraduate Scholarship (Top 3)**.

2023   **China Mobile Outstanding Scholarship (Top 7)**.

2019   **Excellent Undergraduate Thesis Award (Top 10)**, Xi'an Jiaotong University.

2017   **Silver Medal (Top 30%)**, The 2017 China Collegiate Programming Contest - Haerbin Regional Contest.

2017   **Silver Medal (Top 25%)**, The 2017 International Collegiate Programming Contest - Beijing Regional Contest.

2017   **National First Prize (Top 0.6%)**, Contemporary Undergraduate Mathematical Contest in Modeling.