

# Yuxin Dong

POST DOCTORAL SCHOLAR AT OHIO STATE UNIVERSITY

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## Personal Profile

I am a Post Doctoral Scholar at the School of Biomedical Informatics, Ohio State University. In September 2024, I completed my Ph.D. degree at the School of Computer Science and Technology, Xi'an Jiaotong University, advised by Prof. Chen Li and Prof. Tieliang Gong. I obtained my B.E. 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 robust learning in areas of supervised learning, contrastive learning, and domain generalization. These works shed light on understanding the success and limitations of existing algorithms or inspire new algorithm designs that are provably more effective. My main research topics 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.

## Work Experience

### The Ohio State University

Post Doctoral Scholar

Columbus OH, USA

Feb 2025 - Current

## Education

### Xi'an Jiaotong University

B.E. in Computer Science and Technology

- GPA: 3.81 / 4.30

Xi'an Shaanxi, China

Sep 2014 - Jun 2019

### Xi'an Jiaotong University

Ph.D. in Computer Science and Technology

- GPA: 3.78 / 4.00 (Top 1)

Xi'an Shaanxi, China

Sep 2019 - Sep 2024

## Publications

### JOURNAL ARTICLES

How Does Distribution Matching Help Domain Generalization: An Information-theoretic Analysis

**Yuxin Dong**, Tieliang Gong, Hong Chen, Shuangyong Song, Weizhan Zhang, Chen Li

*IEEE Transactions on Information Theory*, 2025

Optimal Randomized Approximations for Matrix-based Rényi's Entropy

**Yuxin Dong**, Tieliang Gong, Shujian Yu, Chen Li

*IEEE Transactions on Information Theory*, 2023

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

Computationally Efficient Approximations for Matrix-Based Rényi's Entropy

Tieliang Gong\*, **Yuxin Dong**\*, Shujian Yu, Bo Dong

*IEEE Transactions on Signal Processing*, 2022

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

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A Storage Scheme for Extremely Large Image Files

Chen Li, **Yuxin Dong**, Pargorn Puttapirat, Jingyi Deng

*Chinese Invention Patent*, ZL201911206466.6. 2021

## Skills

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**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

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

2023 **Excellent Postgraduate Award (Top 30%)**, Xi'an Jiaotong University.

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

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

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

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