

Weihsang Xu

xuwh01@gmail.com • xuwh19@mails.tsinghua.edu.cn

<https://weihsangxu.com/>

Research Interests

Theoretical machine learning, Non-convex optimization, Online learning

Education

2019 – Present **Tsinghua University** – Beijing, China
Institute for Interdisciplinary Information Sciences (IIIS)
Bachelor of Engineering in Computer Science
Yao Class, led by Prof. Andrew Yao
GPA: 3.84/4.

Research Experiences

March 2022 – Present **Learning Two-Layer Neural Network with Over-parameterization**
Visiting student at the University of Washington.
Advised by Prof. Simon S. Du.
Studied two-layer over-parameterized neural networks. Proved global convergence of learning one teacher neuron with arbitrarily many student neurons. Provided an exact characterization of the convergence rate: $L = \Theta(T^{-3})$.

Sept. 2021 – April 2022 **Combinatorial Bandits with Linear Constraints**
Advised by Prof. Zhixuan Fang, Tsinghua University.
Proposed a new framework that unifies two well-known models, Bandits with fairness constraints and Bandits with Knapsacks, together with improved regret bounds.

Publications

* denotes equal contribution

Combinatorial Bandits with Linear Constraints: Beyond Knapsacks and Fairness ([paper](#))

Qingsong Liu*, **Weihsang Xu***, Siwei Wang, Zhixuan Fang.

In Conference on Neural Information Processing Systems (NeurIPS) 2022.

Awards and Honors

Oct. 2022 Science and Technology Innovation Excellence Award – IIIS, Tsinghua University
Academic Excellence Award – IIIS, Tsinghua University

Nov. 2018 Chinese Mathematical Olympiad (CMO), Gold Medal (ranked 44th nationwide)

Languages

English: TOEFL 110 (Aug. 2021)

Reading: 30, Listening: 30, Speaking: 23, Writing: 27

Chinese: native

German: basic