Sihan Wang

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Education

University of Science and Technology of China, B.S. in Mathematics   09/2021 - 07/2025
Major: Computational Mathematics, GPA: 3.56/4.3, Rank: 31%
Courses: Operations Research 96, Numerical algebra 92, Data Structure and Database 92, Mathematical Modeling 90, Mathematical analysis 88

Experiences

Privacy-Enhanced Methods for the Predict-then-Optimize Framework   07/2024 - Present
Supervisor: Hanzhang Qin, NUS

· Review a large body of literature on Differential Privacy and Predict-then-Optimize framework.

· We propose two novel gradient descent algorithms that incorporate the exponential mechanism and Gaussian mechanism within the "Smart Predict-then-Optimize" (SPO) framework, aiming to strike a balance between data privacy and optimization performance. We provide a rigorous performance analysis of the algorithms, demonstrating their ability to preserve privacy without significantly affecting convergence rates. Moreover, we establish that under specific conditions, these algorithms achieve provably near-optimal accuracy in terms of the expected SPO loss. Experimental results further support our theoretical insights, highlighting the algorithms' robust performance in both private and non-private settings.

· First-author paper, which is currently under review at AISTATS 2025.

Guided Recommendation System Based on Diffusion Model   05/2023 - Present
Supervisor: Xiang Wang, USTC
· Read publications related to reinforcement learning and deep learning.

Awards

· Outstanding Freshman Scholarship   2021
· Outstanding Student Scholarship, Bronze   2022, 2023, 2024

Skills

Language Proficiency: TOEFL 100 (Speaking 25), GRE 325+3.5
Software: Mathematica, Latex, Matlab
Programming: C++ , Python, Julia

Extracurricular

Head of the School Choir and WeChat Public Account Manager
· Coordinate the work of the publicity team members
· Innovatively designed public account and received a record for the number of readings on the choir's public account