Liangyu (Andrew) Ding

Contact Information

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Education

The Chinese University of Hong Kong, Shenzhen, Shenzhen, China — Sep 2022 - present

B.S. Data Science and Big Data Technology

- Selected Core Courses: Advanced Convex Optimization (Ph.D level), Numerical Methods, Deep Learning, C/C++ Programming, Data Structures, PDEs, Stochastic Process, Statistical Inference, Statistical Modeling in Financial Markets

Publications and Preprints

[1] **Liangyu Ding***, Chenghan Wu*, Guokai Li, Zizhuo Wang. *Learning to Price Bundles: A GCN Approach for Mixed Bundling*. Under review, 2025.

Research

Learning to Price Bundles: A GCN Approach for Mixed Bundling, School of Data Science, CUHK(SZ)

Undergraduate researcher, *advised by Prof. Zizhuo Wang*

- We Develop a GCN-based framework to solve the intractable bundle pricing problem by learning to identify high-quality candidate bundles. Using a GCN trained on instances with 5 products, our methods consistently achieve near-optimal solutions (better than 97%) with only a fraction of computational time for problems of small to medium size.
- Our approach also achieves superior solutions for large size of problems (with 15-25 products) compared with other heuristic methods.
- Our approach presents the first scalable approach for providing an efficient solution to the bundle pricing problem under the non-additive setting.

On Convergence of Restarted GMRES Method, School of Data Science, CUHK(SZ)

Undergraduate researcher, *advised by Prof. Yin Zhang*

- Research in progress
- Developing an algorithm to avoid the stagnation of restarted GMRES method when solving large asymmetric linear systems.

Industry Experience

SOOCHOW Securities, Shanghai, China — May 2024 - Sep 2024

Quantitative Research Intern

- Developed an enhanced CSI 300 Index fund selection system, generating trading signals by using a composite of a 2-month Momentum factor and Tracking Deviation Excess Return, and selecting funds using LightGBM for return prediction, achieving an annualized return of 8.92%.

Course Project

Image Deblurring

Ranked 1^{st} out of 101 students in the Kaggle Competition for CUHK(SZ) *Numerical Methods* (DDA3005 Course Project)

- Developed and implemented multiple image deblurring algorithms to improve numerical stability and deblurring quality, addressing challenges posed by singular matrices.

Solving Lasso via ADMM and Proximal-Type Algorithms

CUHK(SZ) *Advanced Convex Optimization* Final Project (DDA6110 Course Project)

- An implementation of ADMM, Proximal Gradient Method and Fast Iterative Shrinkage-Thresholding (FISTA) to solve LASSO problems.

Solving Semidefinite Programs: Primal-Dual Interior-Point Method

CUHK(SZ) *Advanced Convex Optimization* Project (DDA6110 Course Project)

- An implementation of predictor-corrector primal-dual interior-point method in Zhang, (1998) to solve standard form SDP.

Computing Wasserstein Barycenter via Linear Programming
CUHK(SZ) *Optimization in DS and ML* Final Project (DDA4300 Course Project)

- An implementation of predictor-corrector interior point method with the single low-rank regularization method in Ge et al. (2019) for the Pre-specified Support Barycenter Problem, MAAIPM in Ge et al. (2019) and Algorithm 3 in Cuturi and Doucet, (2014) for the Free Support Problem.

Honors and Awards

Dean's List, The Chinese University of Hong Kong, Shenzhen 2023-2025
Undergraduate Research Award, The Chinese University of Hong Kong, Shenzhen 2025

Skills

Languages: English (Fluent, TOEFL 103, GRE 332), Mandarin (Native)
Computer Languages: Python, R, Matlab, C++, Gurobi, COPT, LaTeX

References

Dr. Zizhuo Wang, Professor, School of Data Science, The Chinese University of Hong Kong, Shenzhen,
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Dr. Yin Zhang, Presidential Chair Professor, School of Data Science, The Chinese University of Hong Kong, Shenzhen,
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