

Runze Zhao

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EDUCATION

The Chinese University of Hong Kong, Shenzhen

Shenzhen, China

Bachelor in Financial Engineering; GPA: 3.49/4.0 (Top 30%)

Sep. 2020 - Jul. 2024

- **Research Interest:** Machine Learning, Optimization, Robotics
- **Coursework:** Calculus (A and A-), Computational Laboratory (A), Programming Methodology (A-), Data Structures and Algorithms (A), Probability Theory (A-), Stochastic Process (A-), Mathematical Modeling (A), Advanced Machine Learning (A-), Optimization in Data Science and Machine Learning (A)
- **Honor:** Dean's List (Top 15%) 2020 - 2021
- **Scholarship:** Bowen II Scholarship 2020 - 2024
- **Scholarship:** Undergraduate Research Awards (URA) (Dec. 2023 - Feb.2024)
- **TOEFL:** 106, R:30, L:27, S:22, W:27 (MyBest™ Scores)

PUBLICATION

- [1] Fangchen Yu, **Runze Zhao**, et al. Boosting Spectral Clustering on Incomplete Data via Kernel Correction and Affinity Learning, *the 37th Conference on Neural Information Processing Systems (NeurIPS'2023)*

RESEARCH

Shenzhen Research Institute of Big Data (SRIBD)

Shenzhen, China

- *Spectral Clustering on Incomplete Data* [code][pdf][ppt][poster]

Sep. 2022 - May 2023

- Formulated a convex optimization problem to learn high-quality kernel matrices for incomplete data;
- Proposed novel self-expressive affinity learning algorithms combined with the penalty term of the ℓ_p norm.
- Responsible for theoretical derivation and code implementation by using optimization methods like ADMM.

The Chinese University of Hong Kong, Shenzhen (CUHK-SZ)

Shenzhen, China

- *Earth Mover's Distance (EMD) Estimation for Incomplete Images (Ongoing)*

Jun. 2023 - Now

- Summarized popular computation and approximation models of EMD calculation on complete data.
- Compared the performance of different EMD algorithms on sparse data.
- Analyzed the computational complexity of different EMD algorithms.

- *Dimensionality Reduction Techniques for Incomplete Data (Ongoing)*[RP]

Nov. 2023 - Now

- Summarized popular algorithms on dimension reduction techniques, data imputation and distance calibration.
- Evaluate the performance of baseline algorithms (DR, algorithms for incomplete data).

INTERN

Zhuhai Hanglok Interventional Robotics Co., Ltd [code][ppt]

Shenzhen, China

Algorithm Intern (in field of pose estimation and teleoperation)

Aug. 2023 - Now

- Constructed a real-time teleoperation platform that control UR5 through angle mapping. [demo1]
- Designed a motion recognition - prediction system where the system classify human action and predict the route for remote slave robot based on transformer and GCN (ongoing). [RP][demo2]

SELECTED PROJECTS

Recommendation system with focus on user privacy and scalability[code][pdf]

Apr. 2023

- Adopt hash encryption with Laplacian noise to encode data, ensuring the customers' privacy.
- Designed an algorithm to maintain prediction accuracy in a noisy data environment and handle new data efficiently.

Rumor Propagation Model Based on Continuous Time Markov Chain

Dec. 2022

- Summarized models in field of infectious deceases and the performance in field of rumor.
- Designed a variant model of the SIRS model and tested the performance under the continuous time Markov chain.

SKILLS

Programming Language: Python, PyTorch, C, C++, MATLAB, R, Java

Technologies: L^AT_EX, Machine Learning, Mathematical Modelling, Git, Docker, MediaPipe, Webots, MMAAction, ROS