Runze Zhao

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About

Research Interest: Pose estimation, EMD, ML algorithms

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

Technologies: LaTeX, Maching Learning, Mathematical Modelling, Git, Docker, MediaPipe, Webots, MMAction, ROS

Education

Chinese University of Hong Kong, Shenzhen Shenzhen, China

Bachelor in Financial Engineering; ***GPA: 3.489/4.0*** *Sep 2020 – Jul 2024*

- **Coursework:** Probability Theory, Stochastic Process, Calculus, Mathematical Modeling, Discrete Mathematics, Machine Learning, Advanced Machine Learning, Optimization in Data Science and Machine Learning, Data Structures and Algorithms, Computer Programming Paradigm
- **Honor:** Dean's list (2020-2021)
- **Scholarship:** Bowen II Scholarship (2020-2024)
- TOFEL: 110, R:30, L:27, S:24, W:29 (MyBest™ Scores)

Research

Shenzhen Research Institute of Big Data (SRIBD) Shenzhen

Estimation of EMD calculation for incomplete 2D and 3D images (ongoing) *Sept.2022 – Now*

- Summarized current computation models of EMD on point clouds and boosting algorithms for EMD.
- Compared the performance of different EMD algorithms on sparse data.
- Analyzed the computational complexity of different EMD algorithms.

Shenzhen Research Institute of Big Data (SRIBD) Shenzhen

Boosting Spectral Clustering on Incomplete Data via Kernel Correction and Affinity Learning *Feb.2023 – May.2023*

- Formulated an intrinsic similarity matrix by extending the self-expressive learning (SEL) model.
- Incorporated the ℓ_p norm $(0 < p < 1)$ to further boost the SEL framework.
- Orchestrated the theoretical derivation and code implementation of proposed algorithm using optimization methods like ADMM.

Intern

Zhuhai Hanglok Interventional Robotics Co., Ltd Shenzhen, China

Algorithm Intern (in field of pose estimation) *Aug.2023 – Now*

- Constructed a teleoperation platform that recognizes and predicts human motions in an inverse kinematics approach.
- Designed a system where the robot mimics human movements in real-time through different mapping way.
- Enabled the robot to perform predefined actions upon detecting specific human gestures.

Projects

Recommendation system with focus on user privacy and scalability Apr. 2023

- Adopt hash encryption with Laplacian noise to encode data, ensuring the customers' privacy.
- Design an algorithm to maintain prediction accuracy in a noisy data environment and handle new inputs efficiently, achieving fast computation for different dataset sizes.

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.
- Design a variant model of the SIRS model (SBRS model) and try the performance of its prediction under the continuous time Markov chain (CTMC) framework.

Publications

[1] Fangchen Yu, **Runze Zhao**, Zhan Shi, Yiwen Lu, Jicong Fan, Yicheng Zeng, Jianfeng Mao, Wenye Li. Boosting Spectral Clustering on Incomplete Data via Kernel Correction and Affinity Learning *(NeurIPS 2023 under revision)*