Chengyue Huang

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Education

Renmin University of China (RUC), Beijing, China **Sept.2019–June.2023**

Bachelor of Science, School of Statistics, Major in Applied Statistics

- **GPA:** 3.83/4.00 (Top 8%)
- **Math and Statistics Courses**: Mathematical Analysis, Advanced Algebra, Probability, Mathematical Statistics, Regression Analysis, Time Series Analysis, Stochastic Process, Convex Optimization
- **Computer Science Courses**: C&C++ Programming, Data Structure and Algorithm, Machine Learning, Deep Learning, Database System (SQL)

Publications

** indicates equal contribution*

- **C. Huang***, Y. Nie*, H. Liang, and H. Xu. Adversarial and Implicit Modality Imputation with Applications to Depression Early Detection. *CAAI International Conference on Artificial Intelligence (CICAI)*, 2022. [Paper]
- N. Huang, S. Villar, C. E. Priebe, D. Zheng, **C. Huang**, L. Yang, and V. Braverman. From Local to Global: Spectral-Inspired Graph Neural Networks, 2022. Submitted to *NeurIPS 2022 Workshop GLFrontiers*. [Paper]

Research Experience

From Local to Global: Spectral-Inspired Graph Neural Networks **June.2022–Sept.2022**

Research Assistant, advised by Prof. Carey Priebe and Ph.D. student Teresa Huang, AMS, JHU

- Mitigated over-smoothing and over-squashing issues in deep GNNs by proposing a normalization technique in message-passing algorithms (`PowerEmbed`) to encode global spectra information inspired by spectral embeddings.
- Performed comprehensive studies on 10 real-world graph benchmark datasets and simulated random graphs following the 2-block stochastic block models, with respect to different methods (spectral or message-passing), graph topology (homophily or heterophily), graph density, and number of layers of the methods.
- Demonstrated the superiority and robustness of `PowerEmbed` both theoretically and empirically compared to pure spectral methods (e.g. ASE) and recent deep GNN baselines (e.g. GCNII and GPR-GNN).

Study on Graph Neural Network Models for Multi-modal Social Network Data **Feb.2022–Present**

Member, advised by Prof. Xiaoling Lu, School of Statistics, RUC

- Exploited multi-modal contents to enhance multimedia recommendation on TikTok dataset using GNN.
- Improved the fusion process of 3 modalities (visual, acoustic, and textual) based on cross-modality attention mechanism, explored how information interchange on various modalities reflects users' preferences.

Adversarial Multi-modal Imputation for Disease Prediction **June.2021–May.2022**

Member, advised by Prof. Hongteng Xu and Prof. Hailun Liang, RUC

- Resolved the modality-missing issue by proposing an implicit imputation method (`AIMI`) with multi-modal representation learning via auto-encoding, clustering based on CPM-Net, adversarial networks and a feedback loop.
- Applied our model to the real-world depression early detection task based on the UK Biobank database, which contains 480,000 EHRs with 8 modalities including blood, metabolism, urine, gene, etc.
- Investigated the competitiveness of `AIMI` by comparing it with various typical multi-modal data imputation baselines under different missing rates, which demonstrates its stability when facing severe missing problem.

Skills and Certificates

Proficient: Python (PyTorch, Scikit-learn, etc.), C/C++, SQL, LaTeX, R
Language: TOEFL 29+26+24+26; GRE 152+170+3.5

Awards

Second Prize Scholarship (Top 8%)	2019-2020&2020-2021
First Prize in Chinese Mathematics Competitions	2020
First Prize (Beijing Region) in China Undergraduate Mathematical Contest in Modeling	2021
Honorable Mention in Mathematical Contest In Modeling	2022