Zitai **Chen**

MASTER ON COMPUTATIONAL MATHEMATICS

School of Data and Computer Science, Sun Yat-Sen University

📱 (+86) 150-1301-9909 | ✉ chenzt25@mail2.sysu.edu.cn | 🌐 zitaichen.github.io | in zitaichen

Research Interest

Machine learning, graph mining, multilinear algebra, and optimization in general. In particular, I am interested in developing tensor algorithms to dissect characteristic of graph nodes as well as learning the optimization and the theoretical results of these methods. Problems I investigate are motivated by the network data.

Though most of my works focus on clustering problem on graph data by far, I am open to interesting works in other field and have dabbled in a wide range of AI problem. Recently, I am also working on image recovery with low rank tensor method and knowledge distill with designed tensor scheme.

Education

Sun Yat-Sen University   *Guangzhou, China*
M.S. on Computational Mathematics   *Sep. 2017 - Present*
- Grade: 90.87/100, Got a National Scholarship, a First-class Scholarship.

Central South University   *Changsha, China*
B.S. on Mathematics   *Sep. 2013 - Jun. 2017*
- Grade: 80.78/100, Got an Excellent Paper Award in College Students' Innovation and Entrepreneurship Project.

Research Experience

Department of Mathematics, Hong Kong Baptist University   *Hong Kong SAR, China*
Visiting Scholar, Supervisor: Prof. Michael Kwok-Po Ng and Dr. Weiyang Ding   *Nov. 2019 (planning)*
- **Research Topic**: Applications of Tensor Method and Neural Network .

InplusLab, Sun Yat-Sen University   *Guangzhou, China*
Research Assistant, Supervisor: Prof. Zibin Zheng and Dr. Chuan Chen   *Sep. 2017 - Present*
- **Research Topic**: Applications of Tensor Method, and Network (Graph) Analysis: Embedding, Clustering and Information Fusion.

Data Center of Wechat Group, Tencent Technology   *Guangzhou, China*
Research Intern, Supervisor: Guohui Ling   *Jun. 2018 - May. 2019*
- **Research Topic**: Network Embedding with Attributes and Labels. Paper was published in conference DASFAA 2019.

Liu's Research Team, Central South University   *Changsha, China*
Student Intern, Supervisor: Prof. Shengjun Liu and Dr. Xinru Liu   *May. 2015 - Jun. 2017*
- **Research Topic**: Fast Construction of 2D Offset Curve, and Point Cloud Denoising and Surface Reconstruction

Selected Projects

Tensor decomposition for Multilayer Networks   *AAAI 2019*
Advisor: Dr. Chuan Chen   *Sep. 2017 - Jun. 2018*
- Explored a new clustering problem in multilayer networks: some graphs might follow the same cluster distribution while the others not. In such multiple distribution case, we proposed a tensor decomposition based method to simultaneously group the graphs and cluster the nodes in different groups. This purposed constrained non-convex nonlinear least square problem is transformed to an unconstrained one and solved via Trust Region method. Published in AAAI 2019.

Variational Graph Embedding and Clustering with Laplacian Eigenmaps   *IJCAI 2019*
Advisor: Dr. Chuan Chen   *Oct. 2018 - Feb. 2019*
- Explored the graph embedding and clustering from a deep probability viewpoint, catching the uncertainty nature of nodes; presented nodes as Gaussian distributions to disentangle uncertainty from low-dimensional embeddings, and then learned an interpretable clustering by the variational inference and generative process with a Mixture of Gaussian prior. Published in IJCAI 2019.

SINE: Side information Network Embedding   *DASFAA 2019*
Advisor: Dr. Chuan Chen and Guohui Ling from WeChat   *May. 2018 - Oct. 2018*
- Proposed a framework to embed network nodes with attributes and labels. For the attribute effects varied with nodes and the propagation of label info, SINE defines a flexible and semantical neighborhood to model such nature of nodes and designs a random walk scheme to explore such neighborhood. Published in DAFSAA 2019. This work is collaborated with WeChat.

Publications

Under Review Manuscript

- Chuan Chen, **Zitai Chen**, Zibin Zheng, Nong Xiao (2019). Block Term Decomposition for Multilayer Networks Clustering.

Working Manuscript

- Zhebin Wu, **Zitai Chen**, Chaun Chen, Xiongjun Zhang, Zibin Zheng, (2019). Robust Tensor Completion with Tensor-Train Rank for Image Recovery.
- Zong Zhang, **Zitai Chen**, Chuan Chen, Zibin Zheng, Qingsong Zou (2019). Attributed Network Clustering with Uncertainty Estimation.

Publications

- **Zitai Chen**, Chuan Chen, Zong Zhang, Zibin Zheng, Qingsong Zou (2019). Variational Graph Embedding and Clustering with Laplacian Eigenmaps. In *Proceedings of the Twenty-Eighth International Joint Conference on Artificial Intelligence*, 2144-2150. IJCAI 2019. **(Accepted Rate: 850/4,752, Oral Presentation)**
- **Zitai Chen***, Tongzhao Cai*, Chuan Chen, Zibin Zheng, Guohui Ling (2019). SINE: Side Information Network Embedding. In *Database Systems for Advanced Applications (1) 2019*, 692-708. DASFAA 2019. **(Oral Presentation)**
- **Zitai Chen**, Chuan Chen, Zibin Zheng, Yi Zhu (2019). Tensor Decomposition for Multilayer Networks Clustering. In *Proceedings of the AAAI Conference on Artificial Intelligence, 33(01)*, 3371-3378. AAAI 2019. **(Accepted Rate:1,150/7095, Oral Presentation)**
- Fanghua Ye, **Zitai Chen**, Hui Qian, Rui Li, Chuan Chen and Zibin Zheng (2018). New Approaches in Multi-View Clustering. *Recent Applications in Data Clustering.*
- Rui Qin, Shengjun Liu, **Zitai Chen**, Weixiong Yuan, Fan Zhang, Xinru Liu (2017). Fast construction of 2D offset curve based on distance field. *Journal of Zhejiang University (Science Edition), 2017, 44(1)*, 10-21.

Professional Services

- **PC (2020) of AAAI**

Technical Skills

- **Languages**: Mandarin, English, and Cantonese.
- **Programming Languages**: Matlab, Python, C++, Tensorflow and LaTeX.
- **Specialty**: Convex Optimization, Multilinear Algebra, Mathematic Analysis, Numerical Calculation