Mr Zhichen Gong

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Education

Master of Science, Dept. Computer Science, University of Science and Technology of China **Aug. 2015-Jul. 2018**
GPA: 84.44/100 Advisor: Prof. Dr Huanhuan Chen
Related Courses: Machine Learning, Pattern Recognition, Algorithm Design and Analysis, Signal Processing
Bachelor of Engineering, Dept. Computer Science, Anhui University **Aug. 2011-Jul. 2015**
GPA: 91.03/100, ranking $1^{th}/199$ *in major*
Related Courses: Computer Programming, Discrete Mathematics, Linear Algebra, Calculus, Probability Statistics

Research Interests, Development, Languages

- Research Interests: Machine learning, Deep Learning, Reinforcement Learning, Latent variable model, Time series
- Development: c/c++, python, Matlab
- Languages: Chinese (native), English IELTS 6.5 (L:6.5 R:7 W:6 S:6)

Awards

- National Scholarship, Ministry of Education of the People's Republic of China (2016) (top 1% in China)
- National Scholarship, Ministry of Education of the People's Republic of China (2013) (top 1% in China)
- 1st Grade Scholarship for Excellent Students of USTC (2015, 2016 and 2017)
- 1st Grade Scholarship for Excellent Students of Anhui University (2012 and 2014)
- Merit Student of Anhui University (2012)

Research Experience

Fisher Kernel Based on Mixture of Experts and Adaboost 2017
- Supervisor: Prof. Dr Huanhuan Chen
- Derive and implement the Fisher kernel based on mixture of experts to explain data from potentially different manifolds
- Adopt the Adaboost to adaptively enhance the manifold approximation
- Formulate Fisher Kernel for time series classification and write a conference paper

Multi-task Time Series Model Learning 2017
- Supervisor: Prof. Dr Huanhuan Chen National Key R&D Program 2016YFB1000905
- Assume the parameters of multivariate time series prediction are determined by several key series, i.e. the regression parameters are sparse at the series level
- The task is formulated as a multi-task problem and the parameters are decomposed for optimization
- The work is accepted by ICBK2017 (Idea contributor and paper writing).

Imbalanced Learning by Semi-supervised and Ensemble Learning 2016
- Supervisor: Prof. Dr Huanhuan Chen National Key R&D Program 2016YFB1000905
- Generate synthetic data based on time series modelling and kernel alignment to solve the class imbalance (60:1) problem
- Achieve statistically significant improvement than state-of-the-art on F1 measure, G-means, and AUC
- The work is accepted by CIKM2016

Dynamic State Warping 2016
- Supervisor: Prof. Dr Huanhuan Chen National Key R&D Program 2016YFB1000905
- Align sequences by using the dynamic information of a nonlinear yet efficient dynamic system. Calculate the distance between series by dynamic programming.
- The work is accepted by Journal of Knowledge and Information System (KAIS)

Attention for Time Series Model 2016
- Supervisor: Prof. Dr Huanhuan Chen
- Cluster the time series points in the state space and learn intra-/inter-cluster local distance metrics as weights for that time point
- Write a conference paper

Spatio-temporal Graph for Human Activity Recognition 2016
- Supervisor: Prof. Dr Huanhuan Chen
- Apply spatio-temporal graph to qualitatively formulate a tree-representation for videos, whose distance is then defined by the intersection of the subtrees
- Write a journal paper

Multi-objective Learning for Time Series Representation and Separation 2015-2016
- Supervisor: Prof. Dr Huanhuan Chen EPSRC EP/J017515/1
- Optimize the representation ability, separation ability of sequence models and the network size simultaneously by Pareto-based optimization
- Time series classification in the model space improves $4\% \sim 11\%$ over state-of-the-art

- The work is accepted by IEEE transaction on Cybernetics

Collaborative Filtering for Studying Calligraphy and Paintings of Qing Dynasty 2014-2015

- Supervisor: Associate Prof. Dr Xuejun Li NSF61202227
- Design a similarity measurement of experts studying Chinese Qing dynasty antiques based on their previous ratings, to improve the collaborative filtering based recommendation performance
- Publish a journal paper

Publication

1. **Zhichen Gong**, Huanhuan Chen, Bo Yuan, Xin Yao, "Multi-objective Learning in the Model Space for Time Series Classification", IEEE Transactions on Cybernetics. DOI: 10.1109/TCYB.2018.2789422. 2018.
2. **Zhichen Gong**, Huanhuan Chen, "Model-Based Oversampling for Imbalanced Sequence Classification", In Proceedings of The 25th ACM International Conference on Information and Knowledge Management (CIKM'16), Indianapolis, USA, 2016
3. **Zhichen Gong**, Huanhuan Chen, "Sequential Data Classification by Dynamic State Warping", Knowledge and Information Systems. DOI: https://doi.org/10.1007/s10115-017-1139-9. 2017.
4. **Zhichen Gong**, Xuejun Li, Jingjing Zhang, Yiwen Zhang, Huiting Liu. "Mixed collaborative filtering based on multi-directional measurement and attribute similarity". Computer Applications and Software, 2015, 32:62-65. (In Chinese)
5. Zhengfu Liu, Zhenyu Liu, Yinlong Song, **Zhichen Gong**, Huanhuan Chen, "Predicting Stock Trend Using Multi-objective Diversified Echo State Network", In Proceedings of The 7th IEEE International Conference on Information Science and Technology (ICIST), pp. 181-186, 2017
6. Dandan Yang, Huanhuan Chen, Yinlong Song, and **Zhichen Gong**, "Granger Causality for Multivariate Time Series Classification", In Proceedings of The 8th IEEE International Conference on Big Knowledge, 2017