

# Zhiqiang Tao

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## EDUCATION

- |   |                                     |
|---|-------------------------------------|
| <b>Northeastern University</b><br>Ph.D. Candidate in Computer Engineering<br><i>Advisor:</i> Professor Yun Fu | Boston, MA, USA<br>09/2015 - now    |
| <b>TianJin University</b><br>M.S. in Computer Science<br><i>Advisor:</i> Professor Xiaochun Cao               | Tianjin, China<br>09/2012 - 01/2015 |
| <b>TianJin University</b><br>B.Eng. in Software Engineering   | Tianjin, China<br>09/2008 - 06/2012 |

## RESEARCH INTERESTS

- **Fields:** Applied Machine Learning, Data Mining, Computer Vision
- **Themes:** Feature Representation Learning with Reconstruction and Its Applications.
- **Topics:** Unsupervised Deep Feature Learning; Ensemble Clustering; Subspace Clustering; Multi-View Learning; Sequence Learning.
- **Applications:** Image Segmentation and Clustering; Document Clustering; Video Action Prediction and Grouping; User Modeling.

## INDUSTRY EXPERIENCE

- **Alibaba's DAMO Academic** Bellevue, WA  
Research Intern 05/2019 - 08/2019  
◊ **AutoML:** Focused on solving hyperparameter optimization with hypergradient.
- **Adobe Research** San Jose, CA  
Research Intern 05/2018 - 08/2018  
◊ **Interpretable User Modeling:** Proposed a sequence-to-sequence model with recurrent memory network to learn user representations from log-trace data and software tutorials.
- **Raytheon BBN Technologies** Cambridge, MA  
Research Intern 05/2016 - 08/2016  
◊ **Sentence Similarity Learning:** Developed a siamese convolution neural network to learn sentence representations with word embedding.
- **State Key Laboratory of Information Security, IIE CAS** Beijing, China  
Research Assistant 06/2013 - 03/2014  
◊ **Visual Saliency Analysis:** Designed a self-adaptively weighted algorithm with low-rank matrix recovery to detect co-salient objects from multiple images.

## TEACHING EXPERIENCE

- **Part-Time Instructor** Northeastern University  
Work as a teaching faculty in the whole semester.
  - ◊ EECE5642 Data Visualization Fall 2019
  - ◊ EECE5642 Data Visualization Spring 2019
  - ◊ EECE5642 Data Visualization Fall 2018
- **Teaching Assistant** Northeastern University
  - ◊ EECE5644 Machine Learning and Pattern Recognition Fall 2017
  - ◊ EECE5642 Machine Learning and Pattern Recognition Spring 2017

• **JOURNAL PAPERS**

◇ 2 TPAMI, 1 TNNLS, 2 TIP, 1 TKDD, 1 TETCI, 1 SPL, and 1 PRL

- [J-1] **Zhiqiang Tao**, Hongfu Liu, Sheng Li, Zhengming Ding, and Yun Fu, “Marginalized Multi-View Ensemble Clustering”, IEEE Transactions on Neural Networks and Learning Systems, *accepted*, 2019.
- [J-2] **Zhiqiang Tao**, Hongfu Liu, Huazhu Fu, and Yun Fu, “Multi-View Saliency-Guided Clustering for Image Cosegmentation”, IEEE Transactions on Image Processing, *accepted*, 2019.
- [J-3] Sheng Li\*, **Zhiqiang Tao\***, Kang Li, and Yun Fu, “Visual to Text: Survey of Image and Video Captioning”, IEEE Transactions on Emerging Topics in Computational Intelligence, *accepted*, 2019. (\* indicates equal contribution.)
- [J-4] **Zhiqiang Tao**, Hongfu Liu, Sheng Li, Zhengming Ding, and Yun Fu, “Robust Spectral Ensemble Clustering via Rank Minimization”, ACM Transactions on Knowledge Discovery from Data, vol. 13, no. 1, pp. 4:1-4:25, 2019.
- [J-5] Yu Kong, **Zhiqiang Tao**, and Yun Fu, “Adversarial Action Prediction Networks”, accepted by IEEE Transactions on Pattern Analysis and Machine Intelligence, 2018.
- [J-6] Hongfu Liu, **Zhiqiang Tao**, and Yun Fu, “Partition Level Constrained Clustering”, IEEE Transaction on Pattern Analysis and Machine Intelligence, vol. 40, no. 10, pp. 2469-2483, 2018.
- [J-7] Changqing Zhang, **Zhiqiang Tao**, Xingxing Wei, and Xiaochun Cao, “A Flexible Framework of Adaptive Method Selection for Image Saliency Detection”, Pattern Recognition Letters, vol. 63, pp. 66-70, 2015.
- [J-8] Xingxing Wei, **Zhiqiang Tao**, Changqing Zhang, and Xiaochun Cao, “Structured Saliency Fusion Based on Dempster-Shafer Theory”, IEEE Signal Processing Letters, vol. 22, no. 9, pp. 1345-1349, 2014.
- [J-9] Xiaochun Cao, **Zhiqiang Tao**, Bao Zhang, Huazhu Fu, and Wei Feng, “Self-adaptively Weighted Co-saliency Detection via Rank Constraint”, IEEE Transaction on Image Processing, vol. 23, no. 9, pp. 4175-4186, 2014.

• **CONFERENCE PAPERS**

◇ 1 SIGKDD, 2 AAAI, 4 IJCAI, 1 CIKM, 1 CVPR, 1 ICCV, 1 ICDM, and 4 [IEEE Big Data, FG, ACM MM, ICME]

- [C-1] **Zhiqiang Tao**, Sheng Li, Zhaowen Wang, Chen Fang, Longqi Yang, Handong Zhao, and Yun Fu, “Log2Intent: Towards Interpretable User Modeling via Recurrent Semantics Memory Unit”, SIGKDD, 2019.
- [C-2] **Zhiqiang Tao**, Hongfu Liu, Jun Li, Zhaowen Wang, and Yun Fu, “Adversarial Graph Embedding for Ensemble Clustering”, IJCAI, 2019.
- [C-3] Chaoyang Li, Qianqian Wang, **Zhiqiang Tao**, Quanxue Gao, and Zhaohua Yang, “Deep Adversarial Network for Multi-view Clustering”, IJCAI, 2019.
- [C-4] Lichen Wang, Zhengming Ding, **Zhiqiang Tao**, Yunyu Liu, and Yun Fu, “Generative Multi-View Human Action Recognition”, ICCV, 2019.
- [C-5] Songyao Jiang, **Zhiqiang Tao**, and Yun Fu, “Segmentation Guided Image-to-Image Translation with Adversarial Networks”, FG, 2019.
- [C-6] Qianqian Wang, Zhengming Ding, **Zhiqiang Tao**, Quanxue Gao, and Yun Fu, “Partial Multi-View Clustering via Consistent GAN”, ICDM, 2018.
- [C-7] **Zhiqiang Tao**, Hongfu Liu, Sheng Li, Zhengming Ding, and Yun Fu, “From Ensemble Clustering to Multi-View Clustering”, IJCAI, 2017.

- [C-8] Jun Li, Handong Zhao, **Zhiqiang Tao**, and Yun Fu, “Large-scale Subspace Clustering by Fast Regression Coding”, IJCAI, 2017.
- [C-9] Yu Kong, **Zhiqiang Tao**, and Yun Fu, “Deep Sequential Context Networks for Action Prediction”, CVPR, 2017.
- [C-10] **Zhiqiang Tao**, Hongfu Liu, Huazhu Fu, and Yun Fu, “Image Cosegmentation via Saliency-Guided Constraint Clustering with Cosine Similarity”, AAAI, 2017.
- [C-11] **Zhiqiang Tao**, Hongfu Liu, and Yun Fu, “Simultaneous Clustering and Ensemble”, AAAI, 2017.
- [C-12] Sheng Li, Hongfu Liu, **Zhiqiang Tao**, and Yun Fu, “Multi-View Graph Learning with Adaptive Label Propagation”, IEEE International Conference on Big Data, 2017.
- [C-13] **Zhiqiang Tao**, Hongfu Liu, Sheng Li, and Yun Fu, “Robust Spectral Ensemble Clustering”, CIKM, 2016.
- [C-14] Xiaochun Cao, Yupeng Cheng, **Zhiqiang Tao**, and Huazhu Fu, “Co-saliency Detection via Base Reconstruction”, ACM MM, 2014.
- [C-15] Xiaochun Cao, **Zhiqiang Tao**, Bao Zhang, Huazhu Fu, and Xuewei Li, “Saliency Map Fusion Based on Rank-one Constraint”, ICME, 2013.

#### • PREPRINTS

- [P-1] **Zhiqiang Tao**, Hongfu Liu, Yu Kong, and Yun Fu, “Higher-Order Subspace Clustering via Cluster Structure Encoding”, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence, *under review*, 2019.
- [P-2] Hongfu Liu, **Zhiqiang Tao**, Zhengming Ding, and Yun Fu, “Semantics Recovery for Generalized Image Understanding”, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence, *under review*, 2019.
- [P-3] Hongfu Liu, **Zhiqiang Tao**, Zhengming Ding, and Yun Fu, “Consensus Clustering: An Embedding Perspective, Extension and Beyond”, *arXiv preprint arXiv:1906.00120*, 2019.
- [P-4] Jun Li, Hongfu Liu, **Zhiqiang Tao**, Handong Zhao, and Yun Fu, “Learnable Subspace Clustering”, submitted to IEEE Transactions on Neural Networks and Learning Systems, *under review*, 2019.
- [P-5] Jun Li, **Zhiqiang Tao**, Bineng Zhong, Yue Wu, and Yun Fu, “Million-scale Sparse Subspace Clustering by Distributed and Parallel Computing”, IEEE Transactions on Neural Networks and Learning Systems, *under review*, 2019.
- [P-6] Qianqian Wang, Zhengming Ding, **Zhiqiang Tao**, Quanxue Gao, and Yun Fu, “Generative Partial Multi-View Clustering”, 2019.

#### HONORS & AWARDS

- Third Place Award in KDD Cup Auto-ML Track 2019  
*ACM SIGKDD Conference on Knowledge Discovery and Data Mining*
- KDD Student Travel Award 2019  
*ACM SIGKDD Conference on Knowledge Discovery and Data Mining*
- AAAI Student Travel Award 2017  
*AAAI Conference on Artificial Intelligence*
- SIGIR Student Travel Award 2016  
*ACM International Conference Information and Knowledge Management*
- Dean’s Fellowship 2015  
*Northeastern University*
- Graduate National Scholarship (top 5/200) 2015  
*Ministry of Education, China*

**PROFESSIONAL ACTIVITIES • Program Committee**

- ◇ AAAI Conference on Artificial Intelligence 2020
- ◇ IJCAI-2019 TUSION Workshop 2019
- ◇ AAAI Conference on Artificial Intelligence 2019
- ◇ IEEE International Conference on Multimedia and Expo (ICMEW) 2019
- ◇ AAAI Conference on Artificial Intelligence 2018
- ◇ MICCAI Workshop on Ophthalmic Medical Image Analysis 2016

**• Journal Reviewer**

- ◇ IEEE Transactions on Neural Networks and Learning Systems
- ◇ IEEE Transactions on Cybernetics
- ◇ IEEE Transactions on Control Systems Technology
- ◇ IEEE Transactions on Emerging Topics in Computational Intelligence
- ◇ IEEE Computational Intelligence Magazine
- ◇ Image and Vision Computing
- ◇ Neurocomputing
- ◇ Journal of Electronic Imaging (JEI)

**ACADEMIC TALKS**

- SIGKDD, Anchorage, Alaska Aug. 3-7, 2019
- AAAI, San Francisco, California Feb. 4-9, 2017
- CIKM, Indianapolis, Indiana Oct. 24-28, 2016

**PROPOSAL WRITTING**

**Key Contributor for Funded Proposals:**

1. Multi-Functional Optical Meta-Systems Enabled by Deep-Learning \$529,539  
-Aided Inverse Design  
*NSF Electrical, Communications and Cyber Systems* 06/2019 - 05/2022

**Key Contributor for Pending Proposals:**

2. FAI: Visual Relational Fairness: Identification, Inference and Generalization  
*NSF Information and Intelligent Systems* 2019
3. Modernizing the Science and Management of Sidewalks: Capitalizing on and Responding to Emergent Technologies  
*NSF Smart and Connected Communities* 2019