XINGXING ZHANG

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EDUCATION

Doctor of Engineering *September 2015 - June 2020 (Expected)*
Computer Science and Technology, Beijing Jiaotong University (BJTU), Beijing, China
Advisor: Yao Zhao and Zhenfeng Zhu

Visiting Student *September 2018 - October 2019*
Computer Science, University of Rochester (UR), NY, USA
Advisor: Ji Liu

Bachelor of Engineering *September 2011 - July 2015*
Computer Science and Engineering, Henan Normal University (HNU), Xinxiang, China
GPA: 3.9/4.0 (highest grade)

RESEARCH INTERESTS

Machine Learning and Optimization

· Data selection.
· Small sample learning for novel categories.

Computer Vision

· Image classification, recognition, and retrieval, video summarization, and motion segmentation.

SKILLS

Programming	Matlab, Python
Packages	PyTorch, TensorFlow, OpenCV, Scikit-learn
OS/Meta-OS	Linux, MacOS

PROJECTS

Research on Subset Selection based on Sparsity July 2017 - December 2018
Doctoral Innovation Foundation *Director*

· Proposed a ℓ_1-norm induced prototype selection model for selecting discriminative prototypes, by assigning a source set to an optimal subset of it in sparse space.
· Extended the proposed prototype selection model to support online prototype selection by using already obtained prototypes and newly arrived data.

Motion Segmentation based on Sparse Subspace Clustering March 2016 - March 2017
Doctoral Innovation Foundation *Director*

· Developed a general assignment model that aims to assign each element in a target set to the element in an opposite source set, thus achieving promising performance on motion segmentation task.
· Provided a potential powerful generalization ability for the assignment model to deal flexibly with the unsupervised, semi-supervised and fully supervised scenarios.

Research on the Theory and Method of Prototype Selection in Machine Learning October 2019 - December 2023 (Expected)
National Natural Science Foundation of China *First member*

· Research on prototype selection with self-supervised metric learning.
· Research on prototype selection model based on saliency sampling.
· Research on prototype learning method in knowledge transfer and for representation learning.

Pattern Recognition of Mixed Data and Research on Sensitive Content Mining January 2016 - December 2021 (Expected)
National Natural Science Foundation of China *Main member*

· Research on various tasks (*e.g.*, representation learning and subset selection) of mixed data, such as cross-modal data and zero-shot data.
· Research on sensitive content mining of mixed data, such as adversarial attacks and information hiding.

SELECTED HONORS AND AWARDS

• National Scholarship, BJTU, 2015, 2017, 2018, 2019 • National Scholarship, HNU, 2014 • BJTU Top Grade Scholarship - ZHIXING Scholarship (*10 graduates per year*), 2019 • China Scholarship Council Scholarship, 2018 • Excellent Undergraduate in Henan Province, 2015 • Meritorious Award (*rate* $\approx$ *8%*), National College Mathematical Contest in Modeling, 2014 • 2nd Prize, China Undergraduate Mathematical Contest in Modeling, 2013 • 3rd Prize, National Computer Simulation Competition, 2014 • 3rd Prize, National English Competition for College Students, 2014

SERVICE

Reviewer T-CSVT, T-NNLS, NeuCom, MTA, IJCAI'19

INVITED TALKS

• IJCAI oral presentation, "Self-Supervised Deep Low-Rank Assignment Model for Prototype Selection", Stockholm, Sweden, 2018.
• NCIG'18 talk, "Prototype Selection: Modeling, Optimization, and Applications", Yangzhou, China.
• ChinaMM talk, "Missing View Completion for Multi-view Data", Nanjing, China, 2017.
• CUMCM talk, "Queue Length Model of Road Sections Caused by Traffic Accidents", Zhengzhou, China, 2013.

PUBLICATIONS

For more please check `https://scholar.google.com.hk/citations?user=RKjiLyAAAAAJ&hl=zh-CN`

· X. Zhang, et al. "Hierarchical Prototype Learning for Zero-Shot Recognition", accepted by IEEE Trans. Multimedia, Nov. 2019.
· X. Zhang, et al. "Seeing All From a Few: ℓ_1-norm Induced Discriminative Prototype Selection", IEEE Trans. Neural Netw. Learn. Syst., vol. 30, no. 7, pp. 3187–3200, Dec. 2015.
· X. Zhang, et al. "Learning a general assignment model for video analytics", IEEE Trans. Circuits Syst. Video Technol., vol. 28, no. 10, pp. 3066–3076, Oct. 2018.
· X. Zhang, et al. "ProLFA: Representative Prototype Selection for Local Feature Aggregation", accepted by Neurocomputing, Nov. 2019.
· X. Zhang, et al. "Self-Supervised Deep Low-Rank Assignment Model for Prototype Selection", in Proc. IJCAI, 2018, pp. 3141–3147.
· X. Zhang, et al. "Sparsity induced prototype learning via $\ell_{p,1}$-norm grouping", Journal of Visual Communication and Image Representation, vol. 57, pp. 192-201, 2018.
· X. Zhang, et al. "ATZSL: Defensive Zero-Shot Recognition in the Presence of Adversaries", IEEE Trans. Pattern Anal. Mach. Intell., under review.

· Z. Liu, X. Zhang, et al. "Convolutional Prototype Learning for Zero-Shot Recognition", under review in CVM'19.

· M. Xu, Z. Zhu, X. Zhang, et al. "Canonical Correlation Analysis With $\ell_{2,1}$-Norm for Multiview Data Representation", accepted by IEEE Trans. Cybernetic, Apr. 2019.

· F. Li, Z. Zhu, X. Zhang, et al. "Diffusion Induced Graph Representation Learning", Neurocomputing, vol. 360, pp. 220-229, 2019.

· L. Sun, J. Xu, X. Zhang, et al. "A novel Generalized Arnold Transform-based Zero-Watermarking Scheme", Applied Mathematics & Information sciences, vol. 4, pp. 2023-2035, 2015.

· L. Sun, J. Xu, X. Zhang, et al. "An image watermarking Scheme Using Arnold Transform and Fuzzy Smooth Support Vector Machine", Mathematics Problems in Engineering, Oct 11, 2015.

· Y. Zhao, Q. Zhao, X. Zhang, et al. "Understand Dynamic Regret with Switching Cost for Online Decision Making", accepted by ACM Transactions on Intelligent Systems and Technology, Nov. 2019.

· W. Li, L. Wang, X. Zhang, et al. "Defense Transferable Few-shot Adversarial Learning", under review by AAAI'19, 2019.

· F. Li, Z. Zhu, X. Zhang, et al. "From Anchor Generation to Distribution Alignment: Learning a Discriminative Embedding Space for Zero-Shot Recognition", under review by Information Science, 2019.

· Z. Zhu, Y. Meng, D. Kong, X. Zhang, et al. "To See in the Dark: N2DGAN for Background Modeling in Nighttime Scene", under review by IEEE Transactions on Circuits and Systems for Video Technology, 2019.