

HUAXIU YAO

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RESEARCH INTEREST

- **Machine Learning:** meta-learning, few-shot learning, transfer learning, continual learning, AutoML, relation learning, graph neural network, federated learning
- **Applications:** smart city, natural language processing, healthcare, education, bioinformatics

EDUCATION

- Pennsylvania State University** 2017.08 - 2021.05 (Expected)
Ph.D. candidate in Information Science and Technology
- Advisor: Prof. [Zhenhui \(Jessie\) Li](#)
 - Thesis: Learning to Learn with Structured Knowledge
 - Committee Members: Prof. [Zhenhui \(Jessie\) Li](#), [Suhang Wang](#), [Xiang Zhang](#), [Lingzhou Xue](#)
- University of Electronic Science and Technology of China (UESTC)** 2012.08 - 2016.06
B.Eng. in Electronic Information Engineering
- Advisor: Prof. [Defu Lian](#) & Prof. [Tao Zhou](#)
 - Thesis: Academic Performance Prediction and Social Network Analysis based on Campus Data

PROFESSIONAL EXPERIENCE

- Visiting Student at Carnegie Mellon University** 2020.09 - now
Host: Prof. [Eric P. Xing](#)
- Project: Meta-learning, continual learning.
- Applied Scientist Intern at Amazon A9** 2020.05 - 2020.08
Mentor: Dr. [Nikhil Rao](#), Dr. [Sumeet Katariya](#), Prof. [Sujay Sanghavi](#)
- Project: Large-scale meta-learning, low-resource NLP.
- Research Intern at Salesforce Research** 2019.09 - 2019.12
Mentor: Dr. [Caiming Xiong](#), Dr. [Yingbo Zhou](#); Manager: Dr. [Richard Socher](#)
- Project: Online meta-learning with structure exploration [\[C2\]](#).
- Research Intern at Alibaba DAMO Academy** 2019.05 - 2019.08
Mentor & Manager: Dr. [Bolin Ding](#)
- Project: Automated relational exploration in meta-learning [\[C3\]](#).
- Research Intern at Tencent AI Lab** 2018.05 - 2018.08
Mentor: Dr. [Ying Wei](#); Manager: Prof. [Junzhou Huang](#)
- Project: Gradient-based meta-learning and its applications [\[C5\]](#) [\[C6\]](#).
- Research Intern at Didi AI Labs** 2017.03 - 2017.06
Mentor: Dr. [Pinghua Gong](#); Manager: Prof. [Jieping Ye](#)
- Project: Taxi demand prediction in the ride-sharing platform [\[C8\]](#).
- Visiting Student at Pennsylvania State University** 2016.09 - 2017.03
Host: Prof. [Zhenhui \(Jessie\) Li](#)
- Project: Spatiotemporal data mining [\[C8\]](#) [\[J4\]](#).

PUBLICATIONS

*: means equal contribution

‡: indicates work (co-)supervised by me

Summary

- **22** publications (**12** first author): **16** conference papers, **4** journal papers, **2** preprints
- Published in various top conferences: ICML, ICLR, NeurIPS, AAAI, WWW, KDD, WSDM
- **800+** citations, h-index **11**, i10-index: **12** (Oct. 2020)

Major Research Topics

- Meta-learning, Few-shot Learning and Continual Learning
 - Algorithm and Analysis: [C2] [C3] [C4] [C5] [P1] [P2]
 - Applications: [C6] [C9] [C10] [C1]
- Spatial-Temporal Analysis and Smart City
 - Spatial-Temporal Prediction and Inference: [C6] [C7] [C8] [J4]
 - Missing Data Imputation [C11] [C14] [J3]
 - Traffic Signal Control: [C10] [C15]
- Graphs/Networks Mining: [C4] [C9] [C12] [C13]

Conference Publications

- [C1] **Huaxiu Yao***, Jiayu Shi*, Xian Wu, Tong Li, Zedong Lin, Tengfei Wang, Binqiang Zhao, Relation-aware Meta-learning for E-commerce Market Segment Demand Prediction with Limited Records, in *Proceeding of the 14th ACM International Conference on Web Search and Data Mining (WSDM'21)*, Jerusalem, Israel, Mar. 2021. [PDF]
- [C2] **Huaxiu Yao**, Yingbo Zhou, Mehrdad Mahdavi, Zhenhui Li, Richard Socher, Caiming Xiong, Online Structured Meta-learning, in *Proceeding of the Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS'20)*, Vancouver, Canada, Dec. 2020.
- [C3] **Huaxiu Yao**, Xian Wu, Zhiqiang Tao, Yaliang Li, Bolin Ding, Ruirui Li, Zhenhui Li, Automated Relational Meta-learning, in *Proceeding of the Eighth International Conference on Learning Representations (ICLR'20)*, Addis Ababa, Ethiopia, Apr. 2020. [PDF]
- [C4] **Huaxiu Yao**, Chuxu Zhang, Ying Wei, Meng Jiang, Suhang Wang, Junzhou Huang, Nitesh V. Chawla, Zhenhui Li, Graph Few-shot Learning via Knowledge Transfer, in *Proceeding of the Thirty-fourth AAAI Conference on Artificial Intelligence (AAAI'20)*, New York, NY, Feb. 2020 (the short version is published in NeurIPS 2019 Graph Representation Learning Workshop). [PDF]
- [C5] **Huaxiu Yao**, Ying Wei, Junzhou Huang, Zhenhui Li, Hierarchically Structured Meta-learning, in *Proceeding of the 36th International Conference on Machine Learning (ICML'19)*, Long Beach, CA, June 2019. [PDF]
- [C6] **Huaxiu Yao**, Yiding Liu, Ying Wei, Xianfeng Tang, Zhenhui Li, Learning from Multiple Cities: A Meta-Learning Approach for Spatial-Temporal Prediction, in *Proceeding of The Web Conference 2019 (WWW'19)*, San Francisco, CA, May 2019. [PDF]
- [C7] **Huaxiu Yao***, Xianfeng Tang*, Hua Wei, Guanjie Zheng, Zhenhui Li, Revisiting Spatial-Temporal Similarity: A Deep Learning Framework for Traffic Prediction, in *Proceeding of the Thirty-third AAAI Conference on Artificial Intelligence (AAAI'19)*, Honolulu, Hawaii, Jan. 2019. [PDF]
- [C8] **Huaxiu Yao**, Fei Wu, Jintao Ke, Xianfeng Tang, Yitian Jia, Siyu Lu, Pinghua Gong, Jieping Ye, Zhenhui Li, Deep Multi-View Spatial-Temporal Network for Taxi Demand Prediction, in *Proceeding of the Thirty-second AAAI Conference on Artificial Intelligence (AAAI'18)*, New Orleans, LA, Feb. 2018. [PDF] [Penn State News]

- [C9] Chuxu Zhang, **Huaxiu Yao**, Chao Huang, Meng Jiang, Zhenhui Li, Nitesh V. Chawla, Few-Shot Knowledge Base Completion, in *Proceeding of the Thirty-fourth AAAI Conference on Artificial Intelligence (AAAI'20)*, New York, NY, Feb. 2020. [PDF]
- [C10] ‡Xinshi Zang, **Huaxiu Yao**, Guanjie Zheng, Nan Xu, Kai Xu, Zhenhui Li, MetaLight: Value-based Meta-reinforcement Learning for Online Universal Traffic Signal Control, in *Proceeding of the Thirty-fourth AAAI Conference on Artificial Intelligence (AAAI'20)*, New York, NY, Feb. 2020. [PDF]
- [C11] Xianfeng Tang, **Huaxiu Yao**, Yiwei Sun, Charu Aggarwal, Prasenjit Mitra, Suhang Wang, Joint Modeling of Local and Global Temporal Dynamics for Multivariate Time Series Forecasting with Missing Values, in *Proceeding of the Thirty-fourth AAAI Conference on Artificial Intelligence (AAAI'20)*, New York, NY, Feb. 2020. [PDF]
- [C12] Xianfeng Tang, **Huaxiu Yao**, Yiwei Sun, Yiqi Wang, Jiliang Tang, Charu Aggarwal, Prasenjit Mitra, Suhang Wang, Investigating and Mitigating Degree-Related Biases in Graph Convolutional Networks, in *Proceeding of the 29th ACM International Conference on Information and Knowledge Management (CIKM'20)*, Galway, Ireland, Oct. 2020. [PDF]
- [C13] Xianfeng Tang, Yandong Li, Yiwei Sun, **Huaxiu Yao**, Prasenjit Mitra, Suhang Wang, Robust Graph Neural Network Against Poisoning Attacks via Transfer Learning, in *Proceeding of the 13th ACM International Conference on Web Search and Data Mining (WSDM'20)*, Houston, TX, Feb. 2020. [PDF]
- [C14] Xianfeng Tang, Boqing Gong, Yanwei Yu, **Huaxiu Yao**, Yandong Li, Haiyong Xie, Xiaoyu Wang, Joint Modeling of Dense and Incomplete Trajectories for Citywide Traffic Volume Inference, in *Proceeding of The Web Conference 2019 (WWW'19)*, San Francisco, CA, May 2019. [PDF]
- [C15] Hua Wei, Guanjie Zheng, **Huaxiu Yao**, Zhenhui Li, IntelliLight: a Reinforcement Learning Approach for Intelligent Traffic Light Control, in *Proceedings of the Twenty-fourth SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'18)*, London, UK, Aug. 2018 (Research track). [PDF]
- [C16] **Huaxiu Yao**, Min Nie, Han Su, Hu Xia, Defu Lian, Predicting Academic Performance via Semi-Supervised Learning with Constructed Campus Social Network. In *Proceeding of the 22nd International Conference on Database Systems for Advanced Applications (DASFAA'17)*, Suzhou, China, Mar. 2017. [PDF]

Journal Publications

- [J1] **Huaxiu Yao**, Defu Lian, Yi Cao, Yifan Wu, Tao Zhou. Predicting Academic Performance for College Students: A Campus Behavior Perspective, *ACM Transactions on Intelligent Systems and Technology (TIST)*, 10, 3, Article 24, May 2019. [PDF]
- [J2] Yi Cao*, Jian Gao*, Defu Lian, Zhihai Rong, Jiatu Shi, Qing Wang, Yifan Wu*, **Huaxiu Yao***, Tao Zhou*. Orderliness predicts academic performance: behavioural analysis on campus lifestyle, *Journal of the Royal Society Interface (J. R. Soc. Interface)*, 15 (146), (2018) 20180210 (**authors listed by alphabetical order**). [PDF] [China Daily]
- [J3] Yanwei Yu, Xianfeng Tang, **Huaxiu Yao**, Xiuwen Yi, Zhenhui Li, Citywide Traffic Volume Inference with Surveillance Camera Records, *IEEE Transactions on Big Data (TBD)*, 2019. [PDF]
- [J4] Hongjian Wang, **Huaxiu Yao**, Daniel Kifer, Corina Graif, Zhenhui Li. Non-Stationary Model for Crime Rate Inference Using Modern Urban Data. *IEEE Transactions on Big Data (TBD)*, 2017. [PDF]

Preprint

- [P1] **Huaxiu Yao**, Longkai Huang, Ying Wei, Tian Li, Junzhou Huang, Zhenhui Li, Don't Overlook the Support Set: Towards Improving Generalization in Meta-learning, *arXiv 2007.13040*. [PDF]
- [P2] Ying Wei, Peilin Zhao, **Huaxiu Yao**, Junzhou Huang, Hyper-parameter Meta-learning via Neural Processes, *arXiv 1909.03209*. [PDF] (the short version is published in NeurIPS 2019 Workshop on Meta-Learning)

Tutorials

- [T1] Learning with Small Data. (AAAI'21) (KDD'20 [[Website](#)]) (WSDM'20 [[Website](#)])
[T2] Meta-learning and Automated Machine Learning: Approaches and Applications. (IJCAI'20)

TEACHING EXPERIENCE

Reinforcement Learning (IST 597)

Teaching Assistant, Instructor: Prof. [Zihan Zhou](#)

Spring 2019

Pennsylvania State University

MENTORING EXPERIENCE

Tianxiang Zhao, Ph.D. student, IST@Penn State University

2020.06 - now

Project: Knowledge transfer on graph.

Research Co-advising with Prof. Suhang Wang

Bochuan Cao, Undergraduate, Automation@UESTC

2020.07 - now

Project: Few-shot spatiotemporal analysis.

Xinshi Zang, Undergraduate, CS@Shanghai Jiaotong University

2019.01 - 2019.06

Project: Meta-reinforcement learning on traffic signal control [[C10](#)].

Research Co-advising with Prof. Zhenhui (Jessie) Li

HONORS AND AWARDS

College of IST Ph.D. Award for Research Excellence, Pennsylvania State University

2020

ICLR Travel Award, ICLR

2020

NeurIPS Travel Award, NeurIPS

2019

ICML Travel Award, ICML

2019

AAAI Travel Award, AAAI

2019, 2020

IST Travel Award, Pennsylvania State University

2018, 2019

Excellent Undergraduate Thesis, University of Electronic Science and Technology of China

2016

Excellent Graduates, University of Electronic Science and Technology of China

2016

Meritorious Winner, 2016 Interdisciplinary Contest in Modeling (ICM), COMAP

2016

TALKS

Meta-learning with Relational Exploration

Invited talk at Zhidongxi

2020.08

Invited talk at Microsoft Dynamic 365

2020.07

Invited talk at Amazon A9

2020.06

Automated Relational Meta-learning

The 8th International Conference on Learning Representations (ICLR)

2020.04

Learning with Small Data

Tutorial on KDD 2020 [[Website](#)]

2020.08

Tutorial on WSDM 2020 [[Website](#)]

2020.02

DaML Seminar, Penn State University

2019.09

Hierarchically Structured Meta-learning

The 36th International Conference on Machine Learning (ICML)

2019.06

Learning from Multiple Cities: A Meta-Learning Approach for Spatial-Temporal Prediction

The Web Conference 2019 (WWW)

2019.05

Cost-efficient Spatial-temporal Prediction

Invited talk at CS department, University of Science and Technology of China

2019.03

Spatial-temporal Learning for Intelligent Transportation

Invited talk at department of statistics, Penn State University

2018.12

Invited talk at school of CCSE, University of Electronic Science and Technology of China

2018.05

PROFESSIONAL SERVICES

Conference Program Committee Member/Reviewer:

- International Conference on Machine Learning (ICML) 2020
- International Conference on Learning Representations (ICLR) 2020, 2021
- Conference on Neural Information Processing Systems (NeurIPS) 2020
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2020
- International Joint Conference on Artificial Intelligence (IJCAI) 2020
- AAAI Conference on Artificial Intelligence (AAAI) 2020, 2021
- ACM International Conference on Information and Knowledge Management (CIKM) 2019
- IEEE International Conference on Big Data (BigData) 2019, 2020

Journal Invited Reviewer:

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Journal of Artificial Intelligence (AIJ)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transaction on Big Data (TBD)
- ACM Transaction on Intelligent System and Technology (TIST)
- Knowledge and Information Systems (KAIS)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- IEEE Transactions on Intelligent Transportation Systems (TITS)
- Transportation Research Part C (TRC)