Prof. Zhenghua XU

Full Professor
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1 Education

Doctor of Philosophy (D.Phil) in Computer Science Oct 2013 – Nov 2017
Department of Computer Science University of Oxford United Kingdom
Thesis: *Personalized Search and Recommendation on the Social Web* Supervisor: Prof. Thomas Lukasiewicz

Master of Philosophy (M.Phil) in Computer Science Feb 2010 – Aug 2012
Department of Computing and Information Systems University of Melbourne Australia
Thesis: *Online Time Series Approximation and Prediction* Supervisor: Prof. Rui Zhang

Bachelor of Engineering Sep 2005 – Jul 2009
School of Info. and Comm. Engineering Beijing University of Posts and Telecomm. China

2 Working Experience

Jun 2018 – Now **Full Professor**
State Key Lab. of Rel.and Int. of Electrical Equipment, Hebei University of Technolog, China;

Jul 2018 – Now **Visiting Researcher & External D.Phil Supervisor**
Department of Computer Science, University of Oxford, United Kingdom;

Dec 2017 – Jul 2018 **Research Associate**
Department of Computer Science, University of Oxford, United Kingdom;

Nov 2014 – Oct 2015 **Research Assistant**
Department of Computer Science, University of Oxford, United Kingdom;

Mar 2012 – Sep 2013 **Analyst Researcher**
School of Electrical and Computer Engineering, RMIT University, Australia.

3 Professional Activities

- Conference Chair: ICMLCA 2020
- Session Chair: IJCAI 2019, CNCC 2021
- Senior Program Committee (SPC) member: IJCAI 2021, AAAI 2023
- Program Committee (PC) member: AAAI 2020-22, IJCAI 2019-23, ECAI 2020, MICCAI 2020, ICTAI 2020
- Conference/Workshop Reviewer: IJCAI 2016-18, AAAI 2015-19, EndoCV 2019-20, ICDE 2012, DASFAA 2012, APWeb 2012
- Journal Reviewer: IEEE TNNLS, Information Science, Neurocomputing, IEEE Intelligent Systems, Journal of Computer Science and Technology (JCST)
- Exective Committee Member, Professional Committee of Computer Vision, China Computer Federation (CCF)
- Academic Secretary, CCF Young Computer Scientists & Engineers Forum (Tianjin)
- Youth Committee Member, Chapter of Medical Imaging Engineering and Technology, Chinese Society of Biomedical Engineering (CSBME)
- Committee Member, Medical Image Computing Seminar

4 Research Interests

My current research interests focus on applying deep learning and reinforcement learning techniques to achieve accurate and intelligent medical image analysis.

5 Project Fundings

- National Natural Science Foundation of China (General Fund), RMB 530k, PI 2023 – 2026
- National Natural Science Foundation of China (Young Scientist Fund), RMB 200k, PI 2019 – 2022
- Natural Science Foundation of Hebei Province (Excellent Young Scientist Fund), RMB 200k, PI 2021 – 2023
- "100 Talents Plan" of Hebei Province, RMB 500k, PI 2020 – 2022
- Natural Science Foundation of Tianjin City (Young Scientist Fund), RMB 60k, PI 2019 – 2022
- Hebei University of Technology (Yuanguang Scholar Fund), RMB 1.5m, PI 2018 – 2023
- Key Research and Development Project of Hainan Province, RMB 600k, Co-PI 2022 – 2024

6 Publications

I have published more than 30 research papers, most of them are published in the past five years and on top-tier conferences and journals. The selected publications are listed as below, where $\star$ stands for corresponding author and # stands for co-first author.

6.1 Top-tier Conference Papers

[1] Tommaso Salvatori, Yuhang Song*, **Zhenghua Xu**, Thomas Lukasiewicz, Rafal Bogacz. Reverse Differentiation via Predictive Coding. In Proceedings of the 36th AAAI Conference on Artificial Intelligence (AAAI), 2022. (***CCF Rank A*, *Acceptance rate: 15%***)

[2] Jianfeng Wang, Thomas Lukasiewicz, Xiaolin Hu, Jianfei Cai, **Zhenghua Xu***. RSG: A Simple But Effective Module for Learning Imbalanced Datasets. In Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2021. (***CCF Rank A*, *Acceptance rate: 27%***)

[3] Yixin Su, Rui Zhang*, Sarah Erfani, **Zhenghua Xu***. Detecting Beneficial Feature Interactions for Recommender Systems. In Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI), 2021. (***CCF Rank A*, *Acceptance rate: 21%***)

[4] Tommaso Salvatori$^\#$, Yuhang Song$^\#$, Yujian Hong, Simon Frieder, Lei Sha, **Zhenghua Xu**, Rafal Bogacz, Thomas Lukasiewicz. Associative Memories via Predictive Coding. In Proceedings of the 35th Conference on Neural Information Processing Systems (NeurIPS), 2021. (***CCF Rank A*, *Acceptance rate: 26%***)

[5] Yuhang Song, Thomas Lukasiewicz, **Zhenghua Xu***, Rafal Bogacz. Can the Brain Do Backpropagation? —— Exact Implementation of Backpropagation in Predictive Coding Networks. In Proceedings of the 34th Conference on Neural Information Processing Systems (NeurIPS), 2020. (***CCF Rank A*, *Acceptance rate: 20.09%***)

[6] Yuhang Song, Andrzej Wojcicki, Thomas Lukasiewicz, Jianyi Wang, Abi Aryan, **Zhenghua Xu***, Mai Xu, Zihan Ding, Lianlong Wu. Arena: A General Evaluation Platform and Building Toolkit for Multi-Agent Intelligence. In Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI), 2020. (***CCF Rank A*, *Acceptance rate: 20.6%***)

[7] Yuhang Song, Jianyi Wang, Thomas Lukasiewicz, **Zhenghua Xu***, Shangtong Zhang, Andrzej Wojcicki and Mai Xu. Mega-Reward: Achieving Human-Level Play without Extrinsic Rewards. In Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI), 2020. (***CCF Rank A*, *Acceptance rate: 20.6%***)

[8] **Zhenghua Xu**$^{\star,\#}$, Di Yuan$^\#$, Thomas Lukasiewicz, Cheng Chen, Yishu Miao, Guizhi Xu*. Hybrid Deep-Semantic Matrix Factorization for Tag-Aware Personalized Recommendation. In Proceedings of the 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2020. (***CCF Rank B***)

[9] Yuhang Song$^\#$, Jianyi Wang$^\#$, Thomas Lukasiewicz, **Zhenghua Xu***, Mai Xu. Diversity-Driven Extensible Hierarchical Reinforcement Learning. In Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI), 2019. (***CCF Rank A*, *Acceptance rate: 16.2%***)

[10] **Zhenghua Xu**[#], Chang Qi[#], Guizhi Xu[⋆]. Semi-Supervised Attention-Guided CycleGAN for Data Augmentation on Medical Images. In Proceedings of 2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2019. (***CCF Rank B***)

[11] Lei Wang[#], Bo Wang[#], **Zhenghua Xu**[⋆]. Tumor Segmentation Based on Deeply Supervised Multi-Scale U-Net. In Proceedings of 2019 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), 2019. (***CCF Rank B***)

[12] Bo Li[#], Zehua Cheng[#], **Zhenghua Xu**[⋆], Wei Ye[⋆], Thomas Lukasiewicz, Shikun Zhang. Long Text Analysis Using Sliced Recurrent Neural Networks with Breaking Point Information Enrichment. In Proceedings of the 44th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2019. (***CCF Rank B***)

[13] **Zhenghua Xu**[⋆], Thomas Lukasiewicz, Cheng Chen[⋆], Yishu Miao, Xiangwu Meng. Tag-Aware Personalized Recommendation Using a Hybrid Deep Model. In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI), 2017. (***CCF Rank A*, *Acceptance rate: 16.2%***)

[14] Cheng Chen, Thomas Lukasiewicz, Xiangwu Meng, **Zhenghua Xu** (co-first author, in alphabetical order). Location-Aware News Recommendation Using Deep Localized Semantic Analysis. In Proceedings of the 22nd International Conference on Database Systems for Advanced Applications (DASFAA), 2017. (***CCF Rank B***)

[15] **Zhenghua Xu**, Cheng Chen, Thomas Lukasiewicz, Yishu Miao, Xiangwu Meng. Tag-Aware Personalized Recommendation Using a Deep-Semantic Similarity Model with Negative Sampling. In Proceedings of the 25th ACM International Conference on Information and Knowledge Management (CIKM), 2016. (***CCF Rank B***)

[16] Andy Yuan Xue, Rui Zhang, Yu Zheng, Xing Xie, Jin Huang, **Zhenghua Xu**. Destination Prediction by Sub-trajectory Synthesis and Privacy Protection against Such Prediction. In Proceedings of the 29th IEEE International Conference on Data Engineering (ICDE), 2013. (***CCF Rank A*, *Acceptance rate: 19.8%***)

[17] **Zhenghua Xu**, Rui Zhang, Ramamohanarao Kotagiri and Udaya Parampalli. An Adaptive Online Algorithm for Time Series Segmentation with Error Bound Guarantee. In Proceedings of the 15th International Conference on Extending Database Technology (EDBT), 2012. (***CCF Rank B***)

[18] Jianzhong Qi, **Zhenghua Xu**, Yuan Xue and Zeyi Wen. A Branch and Bound Method for Min-dist Location Selection Queries. In Proceedings of the 23rd Australasian Database Conference (ADC), 2012. (***Runner-up for Best Paper award***)

6.2 Journal Article

[19] Shuo Zhang, Jiaojiao Zhang, Biao Tian, Thomas Lukasiewicz, **Zhenghua Xu**[⋆]. Multi-Modal Contrastive Mutual Learning and Pseudo-Label Re-Learning for Semi-Supervised Medical Image Segmentation. Accepted to publish in Medical Image Analysis, 2022. (***SCI Q1, IF: 13.828***)

[20] **Zhenghua Xu**[⋆], Shijie Liu, Di Yuan[⋆], Lei Wang, Junyang Chen, Thomas Lukasiewicz, Zhigang Fu, Rui Zhang. ω-Net: Dual Supervised Medical Image Segmentation with Multi-Dimensional Self-Attention and Diversely-Connected Multi-Scale Convolution. Neurocomputing, 2022. (***SCI Q2, IF: 5.779***)

[21] Haozhe Lin, Yushun Fan, Jia Zhang, Bing Bai, **Zhenghua Xu**, Thomas Lukasiewicz. Toward Knowledge as a Service (KaaS): Predicting Popularity of Knowledge Services Leveraging Graph Neural Networks. IEEE Transactions on Service Computing (TSC), 2022. (***SCI Q1, IF: 8.216***)

[22] Junyang Chen, Mengzhu Wang, Haodi Zhang, **Zhenghua Xu**, Xueliang Li, Zhiguo Gong, Kaishun Wu, Victor C. M. Leung. IRLM: Inductive Representation Learning Model for Personalized POI Recommendation. IEEE Transactions on Computational Social System, 2022. (***SCI Q2, IF: 4.747***)

[23] Junyang Chen, Zhiguo Gong[⋆], Wei Wang, Cong Wang[⋆], **Zhenghua Xu**, Jianming Lv, Xueliang Li, Kaishun Wu, Weiwen Liu. Adversarial Caching Training: Unsupervised Inductive Network Representation Learning on Large-Scale Graphs. IEEE Transactions on Neural Networks and Learning Systems (TNNLS), 2021. **(SCI Q1, IF: 10.451)**