Hongteng Xu

CONTACT INFORMATION

Renmin University of China
Gaoling School of Artifical Intelligence
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EDUCATION

PhD in **Electrical and Computer Engineering**
Georgia Institute of Technology, USA, August 2017
Advisor: Dr. Hongyuan Zha, Dr. Mark Davenport
Thesis: *Point process-based modeling and analysis of asynchronous event sequences*

Dual MS in **Electrical and Computer Engineering**
Georgia Tech & Shanghai Jiao Tong University, USA and China, May 2013

BS in **Electronic and Information Engineering**
Tianjin University, China, July 2010

RESEARCH POSITIONS

Associate Professor (Tenured)
Gaoling School of Artificial Intelligence, Renmin University of China 2023-present

Associate Professor (Tenure-Track)
Gaoling School of Artificial Intelligence, Renmin University of China 2021-2023

Visiting Researcher of Electrical and Computer Engineering
Department of Electrical and Computer Engineering, Duke University 2018-2020

Senior Research Scientist
Infinia ML Inc. 2018-2020

Postdoctoral Researcher of Electrical and Computer Engineering
Department of Electrical and Computer Engineering, Duke University 2017-2018

Research Assistant of Computational Science and Engineering
College of Computing, Georgia Institute of Technology 2013-2017

Teaching Assistant of Electrical and Computer Engineering
College of Engineering, Georgia Institute of Technology 2012-2013

RESEARCH INTERESTS

Structured Data-oriented Machine Learning and Applications

1. Computational optimal transport and structured data analysis (Graph analysis, representation, and generation)
2. Stochastic point process on graphs (Graph inference and graph signal processing and control)
3. Hypercomplex-based machine learning and 3D graph modeling (Modeling and representation of molecules, proteins, point cloud, and skeletons)
4. Manifold learning, landmarking, and denoising (Node sampling and embedding)

PROJECTS FUNDING & AWARDS

NSF China 92270110 (PI), Generalized Deep Learning Theory and Method Based on Optimal Transport, **800,000 RMB** (Jan. 2023 - Dec. 2025)

Huawei-CAAI Award Funding (PI), Optimal Transport-based Neural Network Design, **90,000 RMB** (Jan. 2023 - Dec. 2024)

Seed Research Funding of Interdisciplinary Studies (co-PI), AI-empowered

Medicine and Healthcare, **20,000 RMB** (Oct. 2022 - Sep. 2023)

RUC Innovative Teaching Award Funding (PI), Introduction to Machine Learning, **87,500 RMB** (Jun. 2022 - Jul. 2023)

RUC Award of Interdisciplinary Studies (PI), Investigation and Development of Interdisciplinary Research Platform, **30,000 RMB** (Jun. 2022 - Dec. 2022)

National Outstanding Young Scholar (Oversea) Award (PI), Graph-oriented Machine Learning Theory and Method, **3,000,000 RMB** (Jan. 2022 - Dec. 2024)

NSF China 62106271 (PI), Graph Generative Models and Algorithms Based on Graph Optimal Transport Theory, **300,000 RMB** (Jan. 2022 - Dec. 2024)

Project of RUC-Huawei Joint Lab (PI), Quaternion Graph Neural Networks with Local Equivariance and Global Invariance, **300,000 RMB** (Jan. 2022 - Dec. 2022)

Startup Funding of RUC (PI), Graph Optimal Transport-driven Machine Learning, **300,000 RMB** (Sep. 2021 - Aug. 2024)

Tencent AI Lab Rhino-Bird Focused Research Program (PI), Drug Retrosynthesis Based on Graph Optimal Transport Theory, **300,000 RMB** (Apr. 2021 - Apr. 2022)

Project of RUC-China UniCom Joint Lab (PI), Chang Point Detection in Continuous-Time Domain, **200,000 RMB** (Jan. 2021 - Dec. 2022)

TEACHING EXPERIENCE

Lecturer, Introduction to Machine Learning (Undergraduate Course)
Renmin University of China, Spring 2022, 2023

Lecturer, Tutorial on AI for Freshmen (Undergraduate Course)
Renmin University of China, Spring 2023

Lecturer, Modern Numerical Methods (Graduate Course)
Renmin University of China, Fall 2021, 2022

Lecturer, AI-empowered Medicine and Healthcare (Graduate Course)
Renmin University of China, Fall 2021, 2022

Temporal Lecturer, Computational Material Science (Graduate Course)
Georgia Institute of Technology, Fall 2016

Lab Lecturer, Introduction to Digital Signal Processing (Undergraduate Course)
Georgia Institute of Technology, Spring 2013

Teaching Assistant, Digital Image Processing (Graduate Course)
Shanghai Jiao Tong University, Spring 2012

TALKS & TUTORIALS

Advances in Optimal Transport-based Machine Learning
Tutorial on IJCAI'23, August 2023 (Accepted).

Gromov-Wasserstein Factorization Model for Graph Representation
Invited Talk on China OT-ML Seminar, August 2022.

Gromov-Wasserstein Learning for Structured Data Modeling
Tutorial on AAAI'22, February 2022.

Gromov-Wasserstein Learning for Graph Modeling
RUC-KAUST Joint Workshop on Advances in AI, November 2021.

Gromov-Wasserstein Factorization Model for Graph Clustering
Invited talk on OT-TDA Workshop, July 2020.

Modeling and Applications for Temporal Point Processes
Tutorial on KDD'19, August 2019.

Recent Developments in Learning Hawkes Processes

Invited talk at IUPUI, November 2017.

Learning Granger Causality for Hawkes Processes
Invited poster on ITA, February 2017.

Point Processes and Their Applications
Invited talk at Shanghai Jiao Tong University, December 2016.

Active Manifold Learning via Gershgorin Circle Guided Sample Selection
Invited talk on ICRA'15, May 2015.

Active Manifold Learning via Gershgorin Circle Guided Sample Selection
Invited poster on Amazon Graduate Student Symposium, December, 2014.

PROFESSIONAL SERVICE

Guest Editor

- IEEE Transactions on Neural Networks and Learning Systems (2019-2023)
  Special Issue on Robust Learning of Spatio-Temporal Point Processes: Modeling, Algorithm, and Applications.
- MDPI Algorithms (2021-2022)
  Special Issue on Graph Partitioning Algorithm.

Chair and Co-organizer

- Seminar on Optimal Transport and Machine Learning, 2022
- AAAI 2022 Workshop on Optimal Transport and Structured Data Modeling
- KDD 2020 Workshop on Talent and Management Computing
- International Conference on Internet Multimedia Computing and Service, 2018
  Special session 2: Sequence Analytics and Its Applications.
- Machine Learning TechTalk in Infinia ML Inc., 2018-2019

Area Chair and Meta Reviewer

- International Conference on Learning Representation (ICLR), 2021, 2023
- AAAI Conference on Artificial Intelligence (AAAI), 2022
- International Conference on Machine Learning (ICML), 2020
- International Joint Conference on Artificial Intelligence (IJCAI), 2019

Reviewer (Conference)

- International Conference on Machine Learning (ICML), 2019, 2021, 2022, 2023
- International Conference on Neural Information Processing Systems (NeurIPS), 2015, 2018, 2019, 2021, 2022
- International Conference on Learning Representation (ICLR), 2019, 2020, 2021, 2022
- Artificial Intelligence and Statistics Conference (AISTATS), 2015, 2016, 2018, 2019, 2020, 2021, 2022, 2023
- AAAI Conference on Artificial Intelligence (AAAI), 2017, 2019, 2020
- International Joint Conference on Artificial Intelligence (IJCAI), 2018, 2022
- Asian Conference on Machine Learning (ACML), 2019, 2020, 2021, 2022
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2022
- International Conference on Computer Vision (ICCV), 2019, 2023
- International Conference on Computer Vision and Pattern Recognition (CVPR), 2018, 2020, 2022
- European Conference on Computer Vision (ECCV), 2020
- International Conference on Information and Knowledge Management (CIKM), 2017
- International Conference on Multimedia and Expo (ICME), 2019, 2020

Reviewer (Journal)

- The Journal of the American Statistical Association (JASA)
- Journal of Machine Learning Research (JMLR)
- Transactions on Machine Learning Research (TMLR)
- SIAM Journal on Mathematics of Data Science
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Signal Processing
- IEEE Transactions on Neural Networks and Learning Systems
- IEEE Signal Processing Letter
- IEEE Transactions on Big Data
- IEEE Transactions on Circuits and Systems for Video Technology
- IEEE Transactions on Image Processing
- IEEE Transactions on Intelligent Transportation Systems
- IEEE Transactions on Knowledge and Data Engineering
- IEEE Transactions on Multimedia
- IEEE Access
- Elesvier Journal of Computer Methods and Programs in Biomedicine
- Elesvier Journal of Neurocomputing
- Elesvier Journal of Signal Processing: Image Communication
- Elesvier Journal of Visual Communication and Image Representation
- EURASIP Journal on Image and Video Processing
- Springer Journal of Multidimensional Systems and Signal Process
- Springer Frontiers of Information Technology and Electronic Engineering

PUBLICATION Computational Optimal Transport and Structured Data Modeling

Preprint

1. Xiangfeng Wang*, **Hongteng Xu***, Moyi Yang* - Decentralized Entropic Optimal Transport for Privacy-preserving Distributed Distribution Comparison, arXiv preprint arXiv:2301.12065.
2. **Hongteng Xu**§, Minjie Cheng - Regularized Optimal Transport Layers for Generalized Global Pooling Operations, arXiv preprint arXiv:2212.06339.
3. Tao Li, Cheng Meng, Jun Yu, **Hongteng Xu**§ - Hilbert Curve Projection Distance for Distribution Comparison, arXiv preprint arXiv:2205.15059.
4. **Hongteng Xu**§, Peilin Zhao, Junzhou Huang, Dixin Luo - Learning Graphon Autoencoders for Generative Graph Modeling, arXiv preprint arXiv:2105.14244.

Journals

1. Mengyu Li, Jun Yu, **Hongteng Xu**, Cheng Meng§ - Efficient Approximation of Gromov-Wasserstein Distance Using Importance Sparsification, Journal of Computational and Graphical Statistics (**JCGS**), 2023.
2. Dixin Luo, **Hongteng Xu**§, Lawrence Carin - Differentiable Hierarchical Optimal Transport for Robust Multi-View Learning, IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2022.
3. **Hongteng Xu**, Jiachang Liu, Dixin Luo§, Lawrence Carin - Representing Graphs via Gromov-Wasserstein Factorization, IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2022.

Conferences

1. Dixin Luo, Tingting Yu, **Hongteng Xu**§ - Group Sparse Optimal Transport for Sparse Process Flexibility Design, International Joint Conference on Artificial Intelligence (**IJCAI**), 2023, Accepted.

2. Jiechao Yang, Yong Liu[§], **Hongteng Xu** - HOTNAS: Hierarchical Optimal Transport for Neural Architecture Search, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023.
3. Yue Xiang[†], Dixin Luo, **Hongteng Xu**[§] - Privacy-preserved Evolutionary Graph Modeling via Gromov-Wasserstein Autoregression, AAAI Conference on Artificial Intelligence (**AAAI**, AI for Social Impact Track), 2023.
4. Gengmo Zhou[†], Zhifeng Gao, Qiankun Ding, Hang Zheng, **Hongteng Xu**, Zhewei Wei, Linfeng Zhang, Guolin Ke[§] - Uni-Mol: A Universal 3D Molecular Representation Learning Framework, International Conference on Learning Representation (**ICLR**), 2023.
5. Jinjia Feng[†], Zhen Wang, Yaliang Li, Bolin Ding, Zhewei Wei[§], **Hongteng Xu** - MGMAE: Molecular Representation Learning by Reconstructing Heterogeneous Graphs with A High Mask Ratio, The 31st ACM International Conference on Information & Knowledge Management (**CIKM**), 2022.
6. Yang Zhang[†], Gengmo Zhou, Zhewei Wei[§], **Hongteng Xu** - Predicting Protein-Ligand Binding Affinity via Joint Global-Local Interaction Modeling, IEEE International Conference on Data Mining (**ICDM**), 2022.
7. Fengjiao Gong[*†], Yuzhou Nie[*†], **Hongteng Xu**[§] - Gromov-Wasserstein Multimodal Alignment and Clustering, The 31st ACM International Conference on Information & Knowledge Management (**CIKM**), 2022.
8. Dixin Luo, Yutong Wang[†], Angxiao Yue[†], **Hongteng Xu**[§] - Weakly-supervised Temporal Action Alignment Driven by Unbalanced Spectral Fused Gromov Wasserstein Distance, The 30th ACM International Conference on Multimedia (**ACMMM**), 2022.
9. Weijie Yu, Zhongxiang Sun, Jun Xu[§], Zhenhua Dong, Xu Chen, **Hongteng Xu**, Ji-Rong Wen - Explainable Legal Case Matching via Inverse Optimal Transport-based Rationale Extraction, The 45th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**), 2022
10. Yujia Xie[†], Yixiu Mao, Simiao Zuo, **Hongteng Xu**, Xiaojing Ye, Tuo Zhao, Hongyuan Zha[§] - A Hypergradient Approach to Robust Regression without Correspondence, International Conference on Learning Representations (**ICLR**), 2021.
11. **Hongteng Xu**, Dixin Luo[§], Lawrence Carin, Hongyuan Zha - Learning Graphons via Structured Gromov-Wasserstein Barycenters, AAAI Conference on Artificial Intelligence (**AAAI**), 2021.
12. Mingguo He[†], Zhewei Wei[§], Zengfeng Huang, **Hongteng Xu**[§] - BernNet: Learning Arbitrary Graph Spectral Filters via Bernstein Approximation The Conference on Neural Information and Processing System (**NeurIPS**), 2021.
13. David Dov, Serge Assaad, Shijing Si, Rui Wang, **Hongteng Xu**, Shahar Ziv Kovalsky, Jonathan Bell, Danielle Elliott Range, Jonathan Cohen, Ricardo Henao, Lawrence Carin[§] - Affinitention nets: kernel perspective on attention architectures for set classification with applications to medical text and images, Proceedings of the Conference on Health, Inference, and Learning (**CHIL**), 2021.
14. Wenlin Wang, **Hongteng Xu**, Zhe Gan, Bai Li, Guoyin Wang, Liqun Chen, Qian Yang, Wenqi Wang, Lawrence Carin[§] - Graph-Driven Generative Models for Heterogeneous Multi-Task Learning, **AAAI** Conference on Artificial Intelligence, 2020.
15. Wenlin Wang, **Hongteng Xu**, Guoying Wang, Wenqi Wang, Lawrence Carin[§] - Zero-Short Recognition via Optimal Transport, IEEE Winter Conference on Applications of Computer Vision (**WACV**), 2020.
16. **Hongteng Xu**[§], Dixin Luo, Ricardo Henao, Svati Shah, Lawrence Carin - Learning Autoencoders with Relational Regularization, The International Conference on Machine Learning (**ICML**), 2020.
17. **Hongteng Xu**[§] - Gromov-Wasserstein Factorization Models for Graph Clustering, **AAAI** Conference on Artificial Intelligence, 2020.

18. **Hongteng Xu**, Dixin Luo, Lawrence Carin[§] - Scalable Gromov-Wasserstein Learning for Graph Partitioning and Matching, The Conference on Neural Information and Processing System (**NeurIPS**), 2019.
19. **Hongteng Xu**, Dixin Luo, Hongyuan Zha, Lawrence Carin[§] - Gromov-Wasserstein Learning for Graph Matching and Node Embedding, The International Conference on Machine Learning (**ICML**), 2019.
20. **Hongteng Xu**, Wenlin Wang, Wei Liu, Lawrence Carin[§] - Distilled Wasserstein Learning for Word Embedding and Topic Modeling, The Conference on Neural Information and Processing System (**NeurIPS**), 2018.
21. Junchi Yan, **Hongteng Xu**, Hongyuan Zha, Xiaokang Yang[§] - A Matrix Decomposition Perspective to Multiple Graph Matching, International Conference on Computer Vision (**ICCV**), 2015.

Stochastic Point Processes on Graphs

Preprint

1. **Hongteng Xu**[§], Dixin Luo, Hongyuan Zha - Hawkes Processes on Graphons, arXiv preprint arXiv:2102.02741.
2. Dixin Luo, **Hongteng Xu**, Lawrence Carin[§] - Interpretable ICD Code Embeddings with Self-and Mutual-Attention Mechanisms, arXiv preprint arXiv:1906.05492.
3. **Hongteng Xu**[§] - PoPPy: A Point Process Toolbox Based on PyTorch, arXiv preprint arXiv:1810.10122.
4. **Hongteng Xu**[§], Xu Chen, Lawrence Carin - Superposition-assisted Stochastic Optimization for Hawkes Processes, arXiv preprint arXiv:1802.04725.
5. **Hongteng Xu**[§], Hongyuan Zha - THAP: A Matlab Toolkit for Learning with Hawkes Processes, arXiv preprint arXiv:1708.09252.

Journals

1. Xu Chen, Zhenlei Wang, **Hongteng Xu**, Jingsen Zhang, Yongfeng Zhang, Wayne Xin Zhao, Ji-Rong Wen[§] - Data Augmented Sequential Recommendation based on Counterfactual Thinking, IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2022.
2. **Hongteng Xu**, Weichang Wu, Shamim Nemati, Hongyuan Zha[§] - Patient Flow Prediction via Discriminative Learning of Mutually-Correcting Processes, IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2017. (Extended Abstract for ICDE 2017)
3. Dixin Luo, **Hongteng Xu**, Yi Zhen, Bistra Dilkina, Hongyuan Zha, Xiaokang Yang, Wenjun Zhang[§] - Learning Mixtures of Markov Chains from Aggregate Data with Structural Constraints, IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 2016. (Extended Abstract for ICDE 2017)
4. Dixin Luo, **Hongteng Xu**, Hongyuan Zha, Jun Du, Rong Xie, Xiaokang Yang, Wenjun Zhang[§] - You Are What You Watch and When You Watch: Inferring Household Structures From IPTV Viewing Data, IEEE Transactions on Broadcasting (**TB**), 2014.

Conferences

1. Dixin Luo, Haoran Cheng, Qingbin Li, **Hongteng Xu**[§] - Coupled Point Process-based Sequence Modeling for Privacy-preserving Network Alignment, International Joint Conference on Artificial Intelligence (**IJCAI**), 2023, Accepted.
2. Zhuoqun Li, Zihan Zhou, Mingxuan Sun[§], **Hongteng Xu**[§] - Debiased Imitation Learning for Modulated Temporal Point Processes, SIAM International Conference on Data Mining (**SDM**), 2023.

3. Qingmei Wang[†], Minjie Cheng[†], Shen Yuan[†], **Hongteng Xu**[§] - Hierarchical Contrastive Learning for Temporal Point Processes, AAAI Conference on Artificial Intelligence (**AAAI**), 2023.
4. Zhenlei Wang, Jingsen Zhang, **Hongteng Xu**, Xu Chen[§], Yongfeng Zhang, Wayne Xin Zhao, Ji-Rong Wen - Counterfactual Data-Augmented Sequential Recommendation International ACM **SIGIR** Conference on Research and Development in Information Retrieval, 2021.
5. Shen Yuan[†], **Hongteng Xu**[§] - Self-Organized Hawkes Processes, CAAI Conference on Artificial Intelligence (**CICAI**), 2021.
6. Dixin Luo, **Hongteng Xu**[§], Lawrence Carin - Fused Gromov-Wasserstein Alignment for Hawkes Processes, NeurIPS Workshop on Learning with Temporal Point Processes, 2019.
7. Dixin Luo, **Hongteng Xu**[§], Lawrence Carin - Adversarial Self-Paced Learning for Mixture Models of Hawkes Processes, ICML Workshop on Time Series, 2019.
8. Matthew Engelhard[*], **Hongteng Xu**[*], Jason Oliver, Matt Hallyburton, Francis McClernon[§] - Predicting Smoking Events with a Time-Varying Semi-Parametric Hawkes Process Model Machine Learning for Healthcare (**MLHC**), 2018.
9. **Hongteng Xu**, Lawrence Carin, Hongyuan Zha[§], - Learning Registered Point Processes from Idiosyncratic Observations, The International Conference on Machine Learning (**ICML**), 2018.
10. **Hongteng Xu**, Dixin Luo, Lawrence Carin[§] - Online Continuous-Time Tensor Factorization Based on Pairwise Interactive Point Processes, The Twenty-seventh International Joint Conference on Artificial Intelligence (**IJCAI**), 2018.
11. **Hongteng Xu**, Dixin Luo, Xu Chen, Lawrence Carin[§] - Benefits from Superposed Hawkes Processes, The 21st International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2018.
12. Shuai Xiao, **Hongteng Xu**, Junchi Yan, Mehrdad Farajtabar, Xiaokang Yang, Le Song, Hongyuan Zha[§] - Learning Conditional Generative Models for Temporal Point Processes, **AAAI** Conference on Artificial Intelligence, 2018.
13. Xu Chen, **Hongteng Xu**, Yongfeng Zhang, Jiaxi Tang, Yixin Cao, Zheng Qin, Hongyuan Zha[§] - Sequential Recommendation with User Memory Networks, ACM International Conference on Web Search and Data Mining (**WSDM**), 2018.
14. Xu Chen, Yongfeng Zhang, **Hongteng Xu**, Junchi Yan, Zheng Qin[§] - Personalized Key Frame Recommendation, **SIGIR** Conference on Research and Development in Information Retrieval, 2017.
15. **Hongteng Xu**, Hongyuan Zha[§] - A Dirichlet Mixture Model of Hawkes Processes for Event Sequence Clustering, Conference on Neural Information Processing Systems (**NeurIPS**), 2017.
16. **Hongteng Xu**, Dixin Luo, Hongyuan Zha[§] - Learning Hawkes Processes from Short Doubly-Censored Event Sequences, International Conference on Machine Learning (**ICML**), 2017.
17. **Hongteng Xu**, Mehrdad Farajtabar, Hongyuan Zha[§] - Learning Granger Causality for Hawkes Processes, International Conference on Machine Learning (**ICML**), 2016.
18. **Hongteng Xu**, Xia Ning, Hui Zhang[§], Junghwan Rhee, Guofei Jiang - PInfer: Learning to Infer Concurrent Request Paths from System Kernel Events, IEEE International Conference on Autonomic Computing (**ICAC**), 2016.
19. **Hongteng Xu**, Yi Zhen, Hongyuan Zha[§] - Trailer Generation via A Point Process-based Visual Attractiveness Model, The Twenty-fourth International Joint Conference on Artificial Intelligence (**IJCAI**), 2015.
20. Dixin Luo[*], **Hongteng Xu**[*], Yi Zhen, Xia Ning, Hongyuan Zha, Xiaokang Yang, Wenjun Zhang[§] - Multi-task Multi-dimensional Hawkes Processes for Modeling

Event Sequences, The Twenty-fourth International Joint Conference on Artificial Intelligence (**IJCAI**), 2015.

21. **Hongteng Xu**, Dixin Luo, Xiaoming Huo, Xiaokang Yang[§] - World Expo Problem and Its Mixed Integer Programming Based Solution, BSI workshop of **PAKDD**, Gold Coast, Australia, 2013.

Hypercomplex-based Machine Learning and 3D Graph Modeling

Journals

1. Shaofei Qin[†], Xuan Zhang[†], **Hongteng Xu**[§], Yi Xu[§] - Fast Quaternion Product Units for Learning Disentangled Representations in SO(3), IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2022.
2. Yi Xu, Licheng Yu, **Hongteng Xu**, Hao Zhang, Truong Nguyen[§] - Vector Sparse Representation of Color Image Using Quaternion Matrix Analysis, IEEE Transactions on Image Processing (**TIP**), 2015.
3. **Hongteng Xu**, Guangtao Zhai, Li Chen, Xiaokang Yang - Automatic Movie Restoration Based on Wave Atom Transform and Nonparametric Model, EURASIP Journal on Advances in Signal Processing, 2012.

Conferences

1. Xuan Zhang[†], Shaofei Qin[†], Yi Xu[§], and **Hongteng Xu**[§] - Quaternion Product Units for Deep Learning on 3D Rotation Groups, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2020.
2. Xuanyu Zhu[*], Yi Xu[*§], **Hongteng Xu**[*], Changjian Chen - Quaternion Convolutional Neural Networks European Conference on Computer Vision (**ECCV**), 2018.
3. Lichen Yu, Yi Xu[§], **Hongteng Xu**, Hao Zhang - Quaternion-based Sparse Representation of Color Image, IEEE Conference on Multimedia and Expo (**ICME**), 2013.
4. **Hongteng Xu**, Guangtao Zhai[§] - ECG Data Compression Based on Wave Atom Transform, Workshop on Multimedia Signal Processing (**MMSP**), Hangzhou, China, 2011.

Manifold Landmarking and Denoising

Journals

1. **Hongteng Xu**, Licheng Yu, Mark Davenport, Hongyuan Zha[§] - A Unified Framework for Manifold Landmarking, IEEE Transactions on Signal Processing (**TSP**), 2018.
2. Weiyao Lin[§], Yang Zhou, **Hongteng Xu**, Junchi Yan, Mingliang Xu, Jianxin Wu, Zicheng Liu - A Tube-and-Droplet-based Approach for Representing and Analyzing Motion Trajectories, IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), 2017.

Conferences

1. **Hongteng Xu**, Yang Zhou, Weiyao Lin, Hongyuan Zha[§] - Unsupervised Trajectory Clustering via Adaptive Multi-Kernel-based Shrinkage, International Conference on Computer Vision (**ICCV**), 2015.
2. **Hongteng Xu**, Hongyuan Zha[§], Ren-Cang Li, Mark A. Davenport - Active Manifold Learning via Gershgorin Circle Guided Sample Selection, The Twenty-Ninth AAAI Conference on Artificial Intelligence (**AAAI**), 2015.
3. **Hongteng Xu**[*], Licheng Yu[*], Dixin Luo, Hongyuan Zha[§], Yi Xu - Dictionary Learning with Mutually Reinforcing Group-Graph Structures, The Twenty-Ninth AAAI Conference on Artificial Intelligence (**AAAI**), 2015.

4. **Hongteng Xu**, Hongyuan Zha, Mark A. Davenport[§] - Manifold Based Dynamic Texture Synthesis from Extremely Few Samples, IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2014.
5. **Hongteng Xu**, Hongyuan Zha[§] - Manifold based Image Synthesis from Sparse Samples, IEEE Conference on Computer Vision (**ICCV**), 2013.

Image Processing and Miscellaneous

Journals

1. Yuhan Chen, Jimeng Wang, Meixi Yi, **Hongteng Xu**, Hailun Liang[§] - The COVID-19 Vaccination Decision-Making Preferences of Elderly People: A Discrete Choice Experiment, Nature Scientific Reports, 2023.
2. Huanjing Yue, Yan Mao, Lipu Liang, **Hongteng Xu**, Chunping Hou, Jingyu Yang[§] - Recaptured Screen Image Demoiréing, IEEE Transactions on Circuit System and Video Technology (**TCSVT**), 2020.
3. Xu Chen, Yongfeng Zhang, **Hongteng Xu**, Zheng Qin, Hongyuan Zha[§] - Adversarial Distillation for Efficient Recommendation with External Knowledge, ACM Transactions on Information Systems (**TOIS**), 2018.
4. **Hongteng Xu**, Guangtao Zhai, Xiaolin Wu, Xiaokang Yang[§] - Generalized Equalization Model for Image Enhancement, IEEE Transactions on Multimedia (**TMM**), 2014.
5. **Hongteng Xu**, Guangtao Zhai, Xiaokang Yang[§] - Single Image Super-resolution with Detail Enhancement based on Local Fractal Analysis of Gradient, IEEE Transactions on Circuit Systems for Video Technology (**TCSVT**), 2013.

Conferences

1. Yuzhou Nie[†], Chengyue Huang[†], Hailun Liang, **Hongteng Xu**[§] - Adversarial and Implicit Modality Imputation with Applications to Depression Early Detection, CAAI Conference on Artificial Intelligence (**CICAI**), 2022.
2. Chuhao Jin[†], **Hongteng Xu**[§], Ruihua Song, Zhiwu Lu - Text2Poster: Laying out Stylized Texts on Retrieved Images, IEEE International Conference on Acoustics, Speech, and Signal Processing (**ICASSP**), 2022.
3. Tiancheng Lin, **Hongteng Xu**, Canqian Yang, Yi Xu[§] - Interventional Multi-Instance Learning with Deconfounded Instance-Level Prediction AAAI Conference on Artificial Intelligence (**AAAI**), 2022.
4. Zheng Zhang, Yi Xu[§], He Wang, Bingbing Ni, **Hongteng Xu** - Single-Image Rain Removal via Multi-Scale Cascading Image Generation, IEEE International Conference on Image Processing (**ICIP**) 2019.
5. Xu Chen, Hanxiong Chen, **Hongteng Xu**, Yongfeng Zhang, Yixin Cao, Zheng Qin, Hongyuan Zha[§] - Personalized Fashion Recommendation with Visual Explanations based on Multimodal Attention Network, ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR**), 2019.
6. Wenlin Wang, Zhe Gan, **Hongteng Xu**, Ruiyi Zhang, Guoyin Wang, Dinghan Shen, Changyou Chen, Lawrence Carin[§] - Topic-Guided Variational Auto-Encoder for Text Generation, Annual Conference of the North American Chapter of the Association for Computational Linguistics (**NAACL**), 2019.
7. He Wang, Yi Xu[§], Bingbing Ni, Lixue Zhuang, **Hongteng Xu**, - Flexible Network Binarization with Layer-wise Priority, The International Conference on Image Processing (**ICIP**), 2018.
8. Shiyu Ning, **Hongteng Xu**, Li Song[§], Rong Xie, Wenjun Zhang - Learning an Inverse Tone Mapping Network with a Generative Adversarial Regularizer, IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**), 2018.

9. **Hongteng Xu**, Junchi Yan, Weiyao Lin, Hongyuan Zha - Fractal Dimension Invariant Filtering and Its CNN-based Implementation, International Conference on Computer Vision and Pattern Recognition (**CVPR**), 2017.
10. **Hongteng Xu**, Guangtao Zhai, Xiaokang Yang§ - No Reference Measurement of Contrast Distortion and Optimal Contrast Enhancement, IEEE Conference on Pattern Recognition (**ICPR**), Tsukuba, Japan, 2012.
11. Licheng Yu, **Hongteng Xu**, Yi Xu§, Xiaokang Yang - Robust Single Image Super-resolution based on Gradient Enhancement, Asia-Pacific Signal and Information Processing Association, Hollywood, USA, 2012.

∗ means equal contribution.
§ indicates corresponding authors.
† indicates advised and co-advised students.

Patents

1. A Video Understanding Method. Issued date: June 2, 2023. Patent issuer and number: cn ZL 2022 1 1405957.5.
2. System and method for profiling requests in service systems. Issued date: June 14, 2016. Patent issuer and number: us US9367821 B2.
3. An IPTV User Behavior Analysis Method Based on Watching Records. Issued date: April 13, 2016. Patent issuer and number: cn ZL 2013 1 0032682.X.
4. An Image Enhancement Method Based on Generalized Equalization Model. Issued date: March 5, 2014. Patent issuer and number: cn ZL 2011 1 0367151.7.
5. An Automatic Movie Contrast-Tone Enhancement System. Issued date: November 20, 2013. Patent issuer and number: cn ZL 2011 1 0304673.2.
6. A Movie Automatic Restoration System Based on Wave Atom and Nonparametric Model. Issued date: September 25, 2013. Patent issuer and number: cn ZL 2011 1 0304655.4.
7. An Image/Video Super-resolution and Enhancement Method Based on Fractal Analysis. Issued date: August 2, 2012. Patent issuer and number: cn ZL 2012 1 0273937.7.

HONOR

Distinguished Program Committee Member of IJCAI-ECAI	2018
Travel Grant of NeurIPS	2017
Travel Grant of ITA	2017
Finalist of Baidu Fellowship	2016
Travel Grant of ICML	2016
Travel Grant of ICRA	2015
Travel Grant of Amazon Graduate Student Symposium	2014
Outstanding Master Thesis of Shanghai	2014
Travel Grant of ICCV	2013
National Excellent Scholarship, Shanghai Jiao Tong University	2010-2012
Courlter Fellowship, Georgia Institute of Technology	2010
Third Prize in Contemporary Mathematical Contest in Modeling, China	2009
National Scholarship, Tianjin University	2007-2009
Third Prize in Contest of Advanced Mathematics, Tianjin	2007

INDUSTRIAL INTERNSHIP EXPERIENCE

Intern (Neural network truncation)
GE Global Research Center, America, Summer 2016-Fall 2016
Mentor: Dr. Ser Nam Lim, Dr. Xiao Bian

Intern (Image captioning)
Amazon 126 Lab, America, Summer 2015-Fall 2015
Mentor: Mr. Sathish Thoppay Egambaram, Dr. Ambrish Tyagi

Intern (Analyzing kernel event traces in distributed systems)
NEC Lab, America, Summer 2014-Fall 2014
Mentor: Dr. Hui Zhang, Dr. Xia Ning
Intern (Image stitching and panorama)
Qualcomm Shanghai Branch, Summer 2012-Fall 2012
Mentor: Dr. Fan Lin