Dongkuan (DK) Xu **Assistant Professor of Computer Science**

CONTACT INFORMATION

Department of Computer Science
North Carolina State University
E-mail: dxu27@ncsu.edu
Mobile: 814-699-0860

Web: https://dongkuanx27.github.io/
Google Scholar: Link
Twitter: https://twitter.com/DongkuanXu
Updated: July 16th, 2023

RESEARCH INTERESTS

My research is fundamentally grounded in exploring and advancing Landed Generative AI, with particular emphasis on studying the autonomy of intelligent agents (tools, chains, tasks), decision/reasoning reliability (alignment, uncertainty, adaptability, robustness), and resource efficiency (data, computation, parameter optimization) in Generative AI (ChatGPT, GPT-X, Diffusion Models) Systems. I am leading the NCSU Generative Intelligent Computing Lab. My long-term research goal is to liberate AI productivity and democratize its application to serve a broader range of populations and real-world applications, equally, sustainably, and responsibly.

- Tool / Chain / Task Automation in Augmented Language Models
- Reliable & Scalable Reasoning in Augmented Language Models
- Data Optimization/Augmentation/Selection for Generative AI Landing
- Algorithm-Hardware Co-design for Generative AI Landing
- Applications: NLP, Computer Vision, Agriculture, Education, Health

EDUCATION

PhD, Penn State University, PA, USA 2022
- College of IST Award for Excellent Teaching (Top 2)

MS, University of Chinese Academy of Sciences, Beijing, China 2017
- Chinese Academy of Sciences President's Fellowship (The most prestigious award)

BE, Renmin University of China, Beijing, China 2014

INDUSTRY EXPERIENCE

Microsoft Research (MSR), Redmond, WA 2021
- Research Intern, Mentors: Subho Mukherjee, Xiaodong Liu, Debadeepta Dey, Ahmed H. Awadallah, Jianfeng Gao
- Project: Task-agnostic Auto-Transformer Search
- Publication: NeurIPS 2022

Moffett.AI, Los Altos, CA 2020
- Research Intern, Mentor: Ian En-Hsu Yen, Co-founder
- Project: Knowledge-aware Pruning of Pre-trained Models
- Project: Data-free Model Compression
- Publication: NAACL 2021 and a U.S. patent

NEC Labs America, Princeton, NJ 2019
- Research Intern, Mentor: Wei Cheng
- Project: Knowledge Transfer in Multi-Task Learning
- Project: Trend Learning in Multivariate Time Series
- Publication: AAAI 2021, AAAI 2020

NEC Labs America, Princeton, NJ 2018
- Research Intern, Mentor: Wei Cheng, Senior Researcher
- Project: Contrastive Anomaly Detection
- Publication: SDM 2021

ACADEMIA EXPERIENCE

Penn State University 2017-2022
- Graduate Research Assistant, Adviser: Xiang Zhang

- Thesis: Resource-efficient Deep Learning: Democratizing AI at Scale

Chinese Academy of Sciences, Beijing, China 2014-2017
- Graduate Research Assistant, Adviser: Yingjie Tian
- Thesis: Efficient Multi-instance Learning

Renmin University of China, Beijing, China 2012-2014
- Undergraduate Research Assistant, Adviser: Wei Xu
- Thesis: Ensemble Forecasting Model for Time Series Data

PUBLICATION SUMMARY

Published: 44 papers, **23** first-/corresponding- authored papers, **2** preprints, and **10** filed patents.
Impact: 2445 citations, h-index: **11**, i10-index: **13** (as of July 16th, 2023)

PEER-REVIEWED CONFERENCE AND JOURNAL PAPERS

[1] Dongyao Zhu, Bowen Lei, Jie Zhang, Yanbo Fang, Yiqun Xie, Ruqi Zhang, and **Dongkuan Xu**. Rethinking Data Distillation: Do Not Overlook Calibration [C]. International Conference on Computer Vision **(ICCV 2023)**

[2] Shuya Li, Hao Mei, Jianwei Li, Hua Wei, and **Dongkuan Xu**. Toward Efficient Traffic Signal Control: Smaller Network Can Do More [C]. The 62nd IEEE Conference on Decision and Control **(CDC 2023)**

[3] Lei Zhang, Jie Zhang, Bowen Lei, Subhabrata Mukherjee, Xiang Pan, Bo Zhao, Caiwen Ding, Yao Li, and **Dongkuan Xu**. Accelerating Dataset Distillation via Model Augmentation [C]. The 34th IEEE/CVF Conference on Computer Vision and Pattern Recognition **(CVPR 2023, Highlight Paper**)
Acceptance rate: **235/9155=2.5%**

[4] Shengkun Tang, Yaqing Wang, Zhenglun Kong, Tianchi Zhang, Yao Li, Caiwen Ding, Yanzhi Wang, Yi Liang, and **Dongkuan Xu**. You Need Multiple Exiting: Dynamic Early Exiting for Accelerating Unified Vision Language Model [C]. The 34th IEEE/CVF Conference on Computer Vision and Pattern Recognition **(CVPR 2023)**

[5] Bowen Lei, Ruqi Zhang, **Dongkuan Xu**, and Bani K Mallick. Calibrating the Rigged Lottery: Making All Tickets Reliable [C]. The 11th International Conference on Learning Representations **(ICLR 2023)**

[6] Qin Zhang, Shangsi Chen, **Dongkuan Xu**, Qingqing Cao, Xiaojun Chen, Trevor Cohn, and Meng Fang. A Survey for Efficient Open Domain Question Answering [C]. The 61th Annual Meeting of the Association for Computational Linguistics **(ACL 2023)**

[7] Longfeng Wu, Bowen Lei, **Dongkuan Xu**, and Dawei Zhou. Towards Reliable Rare Category Analysis on Graphs via Individual Calibration [C]. The 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining **(KDD 2023)**

[8] Chengyuan Liu, Divyang Doshi, Muskaan Bhargava, Ruixuan Shang, Jialin Cui, **Dongkuan Xu**, and Edward Gehringer. Labels Are Not Necessary: Assessing Peer-Review Helpfulness Using Domain Adaptation Based on Self-Training [C]. The 18th Workshop on Innovative Use of NLP for Building Educational Applications **(BEA 2023)**

[9] Zihan Dong, **Dongkuan Xu**. Exploring the Augmented Large Language Model with Mathematical tools in Personalized and Efficient Education [C]. The 6th International Conference on Artificial Intelligence and Big Data **(ICAIBD 2023)**

[10] Yuchen Liu, Mingzhe Chen, **Dongkuan Xu**, Zhaohui Yang, and Shangqing Zhao. E-App: An Environment-Aware Access Point Planning Framework for mmWave Wireless LANs [C]. The 32nd International Conference on Computer Communications and Networks **(ICCCN 2023)**

[11] Yue Xiang, Dongyao Zhu, Bowen Lei, **Dongkuan Xu**, and Ruqi Zhang. Efficient Informed Proposals for Discrete Distributions via Newton's Series Approximation [C]. The 26th International Conference on Artificial Intelligence and Statistics **(AISTATS 2023)**

[12] Shaoyi Huang, Haowen Fang, Kaleel Mahmood, Bowen Lei, Nuo Xu, Bin Lei, Yue Sun, **Dongkuan Xu**, Wujie Wen, and Caiwen Ding. Neurogenesis Dynamics-inspired Spiking Neural Network Training Acceleration [C]. The 60th Design Automation Conference **(DAC 2023)**

[13] Shaoyi Huang, Bowen Lei, **Dongkuan Xu**, Hongwu Peng, Yue Sun, Mimi Xie, and Caiwen Ding. Dynamic Sparse Training via Balancing the Exploration-Exploitation Trade-off [C]. The 60th Design Automation Conference **(DAC 2023)**

[14] Jianwei Li, Tianchi Zhang, Enxu Yan, and **Dongkuan Xu**. FP8-BERT: Post-Training Quantization for Transformer [C]. The 1st Workshop on DL-Hardware Co-Design for AI Acceleration **(DCAA 2023)**

[15] Yiqun Xie, Zhili Li, Han Bao, Xiaowei Jia, **Dongkuan Xu**, Xun Zhou, and Sergii Skakun. Auto-CAM: Label-Free Earth Observation Imagery Composition and Masking Using Spatio-Temporal Dynamics [C]. The 37th AAAI International Conference on Artificial Intelligence **(AAAI 2023)**

[16] Dongsheng Luo, Wei Cheng, Yingheng Wang, **Dongkuan Xu**, Jingchao Ni, Wenchao Yu, Xuchao Zhang, Yanchi Liu, Yuncong Chen, Haifeng Chen, and Xiang Zhang. Time Series Contrastive Learning with Information-Aware Augmentations [C]. The 37th AAAI International Conference on Artificial Intelligence **(AAAI 2023)**

[17] Yingjie Tian, Weizhi Gao, Qin Zhang, Pu Sun, and **Dongkuan Xu**. Improving long-tailed classification by disentangled variance transfer [J]. Internet of Things (2023): 100687.

[18] **Dongkuan Xu**, Subhabrata Mukherjee, Xiaodong Liu, Debadeepta Dey, Wenhui Wang, Xiang Zhang, Ahmed H. Awadallah, and Jianfeng Gao. Few-shot Task-agnostic Neural Architecture Search for Distilling Large Language Models [C]. The 36th Conference on Neural Information Processing Systems **(NeurIPS 2022)**

[19] Ian En-Hsu Yen, Zhibin Xiao, and **Dongkuan Xu**. S4: a High-sparsity, High-performance AI Accelerator [C]. Sparsity in Neural Networks 2022 Workshop **(SNN 2022)**

[20] Shaoyi Huang, Ning Liu, Yueying Liang, Hongwu Peng, Hongjia Li, **Dongkuan Xu**, Mimi Xie, and Caiwen Ding. An Automatic and Efficient BERT Pruning for Edge AI Systems [C]. The 23rd IEEE International Society for Quality Electronic Design **(ISQED 2022)**

[21] Shaoyi Huang*, **Dongkuan Xu***, Ian En-Hsu Yen, Sung-En Chang, Bingbing Li, Shiyang Chen, Mimi Xie, Hang Liu, and Caiwen Ding. Sparse Progressive Distillation: Resolving Overfitting under Pretrain-and-Finetune Paradigm [C]. The 60th Annual Meeting of the Association for Computational Linguistics **(ACL 2022)**
Acceptance rate: 714/3350=21.3%

[22] **Dongkuan Xu**, Wei Cheng, Dongsheng Luo, Haifeng Chen, and Xiang Zhang. InfoGCL: Information-Aware Graph Contrastive Learning [C]. The 35th Conference on Neural Information Processing Systems **(NeurIPS 2021)**
Acceptance rate: 2372/9122=26.0%

[23] **Dongkuan Xu**, Ian En-Hsu Yen, Jinxi Zhao, and Zhibin Xiao. Rethinking Network Pruning - under the Pre-train and Fine-tune Paradigm [C]. 2021 Annual Conference of the North American Chapter of the Association for Computational Linguistics **(NAACL-HLT 2021)**
Acceptance rate: 477/1797=26.5%

[24] Xin Dong, Yaxin Zhu, Zuohui Fu, **Dongkuan Xu**, and Gerard de Melo. Data Augmentation with Adversarial Training for Cross-Lingual NLI [C]. The 59th Annual Meeting of the Association for Computational Linguistics **(ACL 2021)**
Acceptance rate: 714/3350=21.3%

[25] **Dongkuan Xu**, Wei Cheng, Jingchao Ni, Dongsheng Luo, Masanao Natsumeda, Dongjin Song, Bo Zong, Haifeng Chen, and Xiang Zhang. Deep Multi-Instance Contrastive Learning with Dual Attention for Anomaly Precursor Detection [C]. The 21th SIAM International Conference on Data Mining **(SDM 2021)**
Acceptance rate: 85/400=21.3%

[26] **Dongkuan Xu**, Wei Cheng, Xin Dong, Bo Zong, Wenchao Yu, Jingchao Ni, Dongjin Song, Xuchao Zhang, Haifeng Cheng, and Xiang Zhang. Multi-Task Recurrent Modular Networks [C]. The 35th AAAI International Conference on Artificial Intelligence **(AAAI 2021)**
Acceptance rate: 1692/7911=21.4%

[27] **Dongkuan Xu**, Junjie Liang, Wei Cheng, Hua Wei, Haifeng Cheng, and Xiang Zhang. Transformer Style Relational Reasoning with Dynamic Memory Updating for Temporal Network Modeling [C]. The 35th AAAI International Conference on Artificial Intelligence **(AAAI 2021)**
Acceptance rate: 1692/7911=21.4%

[28] Hua Wei, **Dongkuan Xu**, Junjie Liang, and Zhenhui Li. How Do We Move: Modeling Human Movement with System Dynamics [C]. The 35th AAAI International Conference on Artificial Intelligence **(AAAI 2021)**
Acceptance rate: 1692/7911=21.4%

[29] Junjie Liang, Yanting Wu, **Dongkuan Xu**, and Vasant Honavar. Longitudinal Deep Kernel Gaussian Process Regression [C]. The 35th AAAI International Conference on Artificial Intelligence **(AAAI 2021)**
Acceptance rate: 1692/7911=21.4%

[30] Dongsheng Luo, Wei Cheng, **Dongkuan Xu**, Wenchao Yu, Bo Zong, Haifeng Chen, and Xiang Zhang. Parameterized Explainer for Graph Neural Network [C]. The 34th Conference on Neural Information Processing Systems **(NeurIPS 2020)**
Acceptance rate: 1900/9454=20.1%

[31] Xin Dong, Yaxin Zhu, Yupeng Zhang, Zuohui Fu, **Dongkuan Xu**, Sen Yang, and Gerard de Melo. Leveraging Adversarial Training in Self-Learning for Cross-Lingual Text Classification [C]. The 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval **(SIGIR 2020)**
Acceptance rate: 300/1062=28.2%

[32] **Dongkuan Xu**, Wei Cheng, Bo Zong, Dongjin Song, Jingchao Ni, Wenchao Yu, Yanchi Liu, Haifeng Chen, and Xiang Zhang. Tensorized LSTM with Adaptive Shared Memory for Learning Trends in Multivariate Time Series [C]. The 34th AAAI International Conference on Artificial Intelligence **(AAAI 2020)**
Acceptance rate: 1591/7737=20.6%

[33] Junjie Liang, **Dongkuan Xu**, Yiwei Sun, and Vasant Honavar. Longitudinal Multi-Level Factorization Machines [C]. The 34th AAAI International Conference on Artificial Intelligence **(AAAI 2020)**
Acceptance rate: 1591/7737=20.6%

[34] **Dongkuan Xu**, Wei Cheng, Dongsheng Luo, Yameng Gu, Xiao Liu, Jingchao Ni, Bo Zong, Haifeng Chen, and Xiang Zhang. Adaptive Neural Network for Node Classification in Dynamic Networks [C]. The 19th IEEE International Conference on Data

Mining **(ICDM 2019)**
Acceptance rate: 183/930=19.7%

[35] **Dongkuan Xu**, Wei Cheng, Dongsheng Luo, Xiao Liu, and Xiang Zhang. Spatio-Temporal Attentive RNN for Node Classification in Temporal Attributed Graphs [C]. The 28th International Joint Conference on Artificial Intelligence **(IJCAI 2019)**
Acceptance rate: 850/4752=17.9%

[36] **Dongkuan Xu**, Wei Cheng, Bo Zong, Jingchao Ni, Dongjin Song, Wenchao Yu, Yuncong Chen, Haifeng Chen, and Xiang Zhang. Deep Co-Clustering [C]. The 19th SIAM International Conference on Data Mining **(SDM 2019)**
Acceptance rate: 90/397=22.7%

[37] Jingchao Ni, Shiyu Chang, Xiao Liu, Wei Cheng, Haifeng Chen, **Dongkuan Xu**, and Xiang Zhang. Co-Regularized Deep Multi-Network Embedding [C]. The 27th International Conference on World Wide Web **(WWW 2018)**
Acceptance rate: 170/1175=14.5%

[38] Yingjie Tian, **Dongkuan Xu**, and Chunhua Zhang. A Review of Multi-Instance Learning Research [J]. Operations Research Transactions, 2018, 02: 1-17

[39] **Dongkuan Xu**, Jia Wu, Dewei Li, Yingjie Tian, Xinquan Zhu, and Xindong Wu. SALE: Self-Adaptive LSH Encoding for Multi-Instance Learning [J]. **Pattern Recognition**, 2017 **(7.74 impact factor)**

[40] Dewei Li, **Dongkuan Xu**, Jingjing Tang, and Yingjie Tian. Metric Learning for Multi-Instance Classification with Collapsed Bags [C]. The 30th IEEE International Joint Conference on Neural Networks **(IEEE IJCNN 2017)**

[41] Dewei Li, Wei Zhang, **Dongkuan Xu**, and Yingjie Tian. Multi-Metrics Classification Machine [C]. International Conference on Information Technology and Quantitative Management **(ITQM 2016) (Best Paper Award)**

[42] **Dongkuan Xu**, and Yingjie Tian. A Comprehensive Survey of Clustering Algorithms [J]. Annals of Data Science, 2015, 2(2): 165-193

[43] **Dongkuan Xu**, Tianjia Chen, and Wei Xu. A Support Vector Machine-Based Ensemble Prediction for Crude Oil Price with VECM and STEPMRS [J]. International Journal of Global Energy Issues, 2015

[44] **Dongkuan Xu**, Yi Zhang, Cheng Cheng, Wei Xu, and Likuan Zhang. A Neural Network-Based Ensemble Prediction Using PMRS and ECM [C]. The 47th IEEE Hawaii International Conference on System Sciences **(HICSS 2014)**

PREPRINTS

[45] Binfeng Xu, Zhiyuan Peng, Bowen Lei, Subhabrata Mukherjee, Yuchen Liu, and **Dongkuan Xu**. "ReWOO: Decoupling Reasoning from Observations for Efficient Augmented Language Models." arXiv preprint arXiv:2305.18323 (2023).

[46] Bowen Lei, **Dongkuan Xu**, Ruqi Zhang, Shuren He, and Bani K Mallick. Balance is Essence: Accelerating Sparse Training via Adaptive Gradient Correction [C]. arXiv preprint arXiv:2301.03573 (2023)

TEACHING EXPERIENCE

Instructor at NC State

- CSC 422: Automated Learning and Data Analysis — Spring 2023, Fall 2023
  Course Materials: Introduction to Data Mining (Second Edition)

- CSC 791&591: Advanced Topics in Efficient Deep Learning — Fall 2022
  Course Materials: Dive into Deep Learning

Teaching Assistant at Penn State

- SRA 268, Visual Analytics — Fall 2021
  Instructor: Prof. Mahir Akgun
  Course Materials: Visual Analytics with Tableau
  (Responsible for teaching lab classes of 46 students)
- SRA 450, Cybercrime and Cyberwar — Fall 2021
  Instructor: Prof. John Hodgson
  Course Materials: Cybersecurity: What Everyone Needs to Know
- DS/CMPSC 410, Programming Models for Big Data — Spring 2021
  Instructor: Prof. John Yen
  Course Materials: Learning Spark
- SRA 365, Statistics for Security and Risk Analysis — Fall 2020
  Instructor: Dr. James Farrugia
  Course Materials: Discovering Statistics Using R
- DS 402, Introduction to Social Media Mining — Spring 2020
  Instructor: Prof. Suhang Wang
  Course Materials: Social Media Mining: An Introduction
- SRA 365, Statistics for Security and Risk Analysis — Spring 2019
  Instructor: Dr. Katherine Hamilton

  Course Materials: Foundations and Practice of Intermediate Statistics
- IST 210, Organization of Data — Fall 2018
  Instructor: Prof. Xiang Zhang
  Course Materials: Database Systems Concepts
  (The Award for Excellence in Teaching Support)

Guest Lecturer

- COSI 133A, Graph Mining — Fall 2021
  Brandeis University
  Slides: Link
- COSI 165B, Deep Learning — Spring 2021
  Brandeis University
  Slides: Link

MENTORING EXPERIENCE

- Ziqing Wang, Undergraduate at Sun Yat-sen University
  Topic: Efficient Co-design AI
- Jie Zhang, Master at Zhejiang University
  Topic: Efficient Data-centric AI
- Shengkun Tang, Undergraduate at Wuhan University
  Topic: Efficient Multi-modal Learning
- Jianwei Li, Master at San Jose State University
  Topic: Robust Generalized Model Compression
- Chengyuan Liu, Ph.D. at NC State University
  Topic: Large Language Model in Education

- Bowen Lei, Ph.D. student at Texas A&M University
  Topic: Theoretical Foundations of Sparse Training
- Dongyao Zhu, Undergraduate at UCSD
  Topic: Reliable Large Generative Model
- Shaoyi Huang, Ph.D. student at University of Connecticut
  Topic I: Sparse Neural Architecture Search
  Topic II: Few-shot BERT Distillation
- Zhiyuan Peng, Ph.D. at The Chinese University of Hong Kong
  Topic: Augmented Large Language Model
- Binfeng Xu, Master at New York University
  Topic: Augmented Large Language Model
- Jiasheng Gu, Master at University of Southern California
  Topic: Augmented Large Language Model
- Yuhan Li, Master at Tianjin University
  Topic: Augmented Large Language Model
- Boyan Li, Undergraduate at South University of Science and Technology of China
  Topic: Augmented Large Language Model
- Hanyang Lin, Master at University of Illinois Urbana-Champaign
  Topic: Autonomous Tool Learning
- Longxuan Yu, Master at University of California San Diego
  Topic: Autonomous Tool Learning
- Zihan Dong, Undergraduate at NC State University
  Topic: Large Language Model in Education
- Zifan Zhang, Master at Cornell University
  Topic: Large Language Model in Education
- Zhengdong Zhang, Master at Georgia Tech
  Topic: Large Language Model in Education
- Peiyan Dong, Ph.D. at Northeastern University
  Topic: Algorithm-hardware Co-design Efficient Transformer
- Zhenglun Kong, Ph.D. student at Northeastern University
  Topic: Efficient Transformer Architecture Search
- Xukun Liu, Undergraduate at SUSTech
  Topic: Efficient Transformer Architecture Search
- Haoze Lv, Undergraduate at SUSTech
  Topic: Efficient Transformer Architecture Search
- Zeyu Han, Undergraduate at Sichuan University
  Topic: Efficient Data-centric AI
- Xiang Pan, Master at New York University
  Topic: Efficient Data-centric AI
- Shuya Li, Master at Tsinghua University
  Topic: Efficient Intelligent Traffic Learning
- Yanbo Fang, Master at Rutgers University
  Topic: Robust Generalized Model Compression

PROFESSIONAL SERVICE

Column Editor
- ACM SIGAI Newsletter

Workshop Chair
- The First Workshop on DL-Hardware Co-Design for AI Acceleration @AAAI2023
- The Resource-Efficient Learning for Knowledge Discovery Workshop @KDD2023

Session Chair
- Scalable, Distributed Systems & Trustable AI @KDD2022
- Deep Learning: New Architectures and Models @KDD2022

Academic Committee Member
- Machine Learning & Natural Language Processing Community (MLNLP)

Senior Program Committee
- AAAI Conference on Artificial Intelligence (AAAI) 2024
- International Joint Conferences on Artificial Intelligence (IJCAI) 2021

Program Committee
- Neural Information Processing Systems (NeurIPS) 2020, 2021, 2022, 2023
- International Conference on Learning Representations (ICLR) 2021, 2022, 2023
- International Conference on Machine Learning (ICML) 2021, 2022, 2023
- AAAI Conference on Artificial Intelligence (AAAI) 2020, 2021, 2022, 2023
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2020-2023
- Association for Computational Linguistics (ACL) Rolling Review 2022
- North American Chapter of the Association for Computational Linguistics (NAACL) 2021
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2020, 2021
- International Conference on Computational Linguistics (COLING) 2022
- Learning on Graphs Conference (LoG) 2022
- International Joint Conferences on Artificial Intelligence (IJCAI) 2020, 2022
- ACM International Conference on Web Search and Data Mining (WSDM) 2022
- SIAM International Conference on Data Mining (SDM) 2022
- European Chapter of the Association for Computational Linguistics (EACL) 2021
- Conference on Information and Knowledge Management (CIKM) 2020, 2021, 2022
- Asia-Pacific Chapter of the Association for Computational Linguistics & International Joint Conference on Natural Language Processing (AACL-IJCNLP) 2020
- International Joint Conference on Neural Networks (IJCNN) 2018, 2019, 2020, 2021

Journal Reviewer
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Transactions on Cybernetics
- Information Fusion
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- Pattern Recognition
- Neural Networks
- ACM Transactions on Asian and Low-Resource Language Information Processing
- IEEE Access
- Neural Computation
- Complexity
- Soft Computing
- Journal of Sports Engineering and Technology
- Complex & Intelligent Systems
- Multimedia Tools and Applications
- Big Data

External Conference Reviewer

- AAAI'18-20, ACM CIKM'18-19, Big Data'18, ICDM'18-19, IJCNN'16-17, ITQM'16-17, KDD'18-21, SDM'18-22, TheWebConf (WWW)'20-22, WSDM'20-21

Conference Volunteer

- The Annual Conference of NAACL-HLT, 2021
- Backuping SDM Session Chairs, 2021
- The 35th AAAI Conference on Artificial Intelligence, 2021
- The 26th SIGKDD Conference on Knowledge Discovery and Data Mining, 2020

PATENTS

- Spatio Temporal Gated Recurrent Unit
  Wei Cheng, Haifeng Chen, and **Dongkuan Xu**
  U.S. Patent. 11,461,619. Oct. 2022

- System and Method for Knowledge-Preserving Neural Network Pruning
  Enxu Yan, **Dongkuan Xu**, and Zhibin Xiao
  U.S. Patent. 11,200,497. Dec. 2021

PATENT APPLICATIONS

- Information-aware Graph Contrastive Learning
  Wei Cheng, **Dongkuan Xu**, and Haifeng Chen
  U.S. Patent App. 17/728,071. Dec. 2022

- Neural Network Pruning Method and System via Layerwise Analysis
  Enxu Yan, **Dongkuan Xu**, and Jiachao Liu
  U.S. Patent App. 17/107,046. Jun. 2022

- Bank-balanced-sparse Activation Feature Maps for Neural Network Models
  Enxu Yan, **Dongkuan Xu**, and Jiachao Liu
  U.S. Patent App. 17/038,557. Mar. 2022

- Tensorized LSTM with Adaptive Shared Memory for Learning Trends
  Wei Cheng, Haifeng Chen, Jingchao Ni, **Dongkuan Xu**, and Wenchao Yu
  U.S. Patent App. 16/987,789. Mar. 2021

- Modular Networks with Dynamic Routing for Multi-task Recurrent Modules
  Wei Cheng, Haifeng Chen, Jingchao Ni, and **Dongkuan Xu**
  U.S. Patent App. 17/158,483. July. 2021

- Unsupervised Multivariate Time Series Trend Detection for Group Behavior Analysis
  Wei Cheng, Haifeng Chen, Jingchao Ni, **Dongkuan Xu**, and Wenchao Yu
  U.S. Patent App. 16/987,734. Mar. 2021

- Adaptive Neural Networks for Node Classification in Dynamic Networks
  Wei Cheng, Haifeng Chen, Wenchao Yu, and **Dongkuan Xu**
  U.S. Patent App. 16/872,546. Nov. 2020

- Automated Anomaly Precursor Detection
  Wei Cheng, **Dongkuan Xu**, Haifeng Chen, and Masanao Natsumeda
  U.S. Patent App. 16/520,632. Feb. 2020

PROFESSIONAL TALKS

- Testing Accuracy is Not All You Need: Less Training Cost & More Testing Reliability
  Rutgers EFficient AI (REFAI) Seminar
  Rutgers University, New Brunswick, USA, Feb 2023

- Resource-efficient Deep Learning: Democratizing AI at Scale
  Pinterest Machine Learning Lunch
  Pinterest, San Francisco, USA, Aug 2022
- Resource-efficient Deep Learning: Democratizing AI at Scale
  Amazon Search (A9), USA, May 2022
- Resource-efficient Deep Learning: Democratizing AI at Scale
  Machine Learning Lunch Seminar
  Vanderbilt University, Nashville, USA, April 2023
- Resource-efficient Deep Learning: Democratizing AI at Scale
  University of Connecticut, Stamford, USA, April 2023
- Parameter Efficiency: Democratizing AI at Scale (Slides)
  Brandeis University, Waltham, USA, Dec 2021
- Chasing Efficiency of Pre-trained Language Models
  Microsoft Research Lab, Redmond, Washington, USA, Jun 2021
- BERT Pruning: Structural vs. Sparse (Slides)
  Brandeis University, Waltham, USA, Apr 2021
- BERT, Compression, and Applications (Slides)
  Xpeng Motors, Mountain View, USA, Apr 2021
- BERT Architecture and Computation Analysis
  Moffett.AI, Los Altos, USA, May 2020.
- Learning Trends in Multivariate Time Series (Slides)
  In AAAI, New York, USA, Feb 2020
- Node Classification in Dynamic Networks (Slides)
  In ICDM, Beijing, China, Nov 2019
- Anomaly Precursor Detection via Multi-Instance Contrastive Learning
  NEC Laboratories America, Princeton, USA, May 2019
- Deep Co-Clustering (Slides)
  In SDM, Calgary, Canada, May 2019
- Efficient Multiple Instance Learning (Slides)
  NEC Laboratories America, Princeton, USA, May 2018

HONORS AND AWARDS

Doctor of Philosophy (Ph.D.)

- **College of IST Award for Excellence in Teaching Support (top 2)** 2019
- Third place winner (Eng.) in the 37rd annual PSU Graduate Exhibition 2022
- IST Travel Award (Fall) 2021
- NAACL Scholarship 2021
- SIAM Student Travel Award 2021
- IST Travel Award (Spring) 2021
- KDD Student Registration Award 2020
- AAAI Student Scholarship 2020
- IST Travel Award (Fall) 2020
- IST Travel Award (Spring) 2019

Master of Science (M.S.)

- **Chinese Academy of Sciences President's Fellowship (top 1)** 2016
- Information Technology and Quantitative Management (ITQM) Best Paper 2016
- National Graduate Scholarship, China (2% in university) 2016
- Graduate Student Academic Scholarship 2017
- Graduate Student Academic Scholarship 2016
- Graduate Student Academic Scholarship 2015

Bachelor of Engineering (B.E.)

- First-class Scholarship of Sashixuan Elite Fund, China (5% in university) 2014
- Kwang-hua Scholarship of RUC, China 2014
- Second-class Scholarship of Excellent Student Cadre 2014
- Meritorious Winner in Mathematical Contest in Modeling, USA 2013
- First-class Scholarship of Social Work and Volunteer Service of RUC 2013

EXTRACURRICULAR ACTIVITIES

- IEEE Membership 2023-Present
- ACM Membership 2021-Present
- ACL Membership 2021-Present
- AAAI Student Membership 2019-2021
- SIAM CAS Student Member 2016-2021
- Volunteer of Beijing Volunteer Service Federation 2012-2014
- President of Youth Volunteers Association of School of Information 2012-2013
- Leader of National Undergraduate Training Programs 2011-2012

SKILLS

- Programming: Python, C, R, MATLAB, SQL, LaTeX
- Tools: PyTorch, TensorFlow, Keras, Scikit-learn, SPSS

REFEREES

Available upon request