

Dongkuan Xu

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Research Interests

Deep Learning, Model Compression, Multi-Task Learning, Explainable Models.
Applications to Sequence Data, Time Series Data and Network-Structure Data.

Education

The Pennsylvania State University Ph.D. in Computer Science, Advisor: Prof. Xiang Zhang	2017-2022
University of Chinese Academy of Sciences M.S. in Optimization and Data Mining, Advisor: Prof. Yingjie Tian (Exempt from Admission Exam)	2014-2017
Renmin University of China B.E. in Information Management and System, Advisor: Prof. Wei Xu	2010-2014

Research Experience

The Pennsylvania State University , State College, PA <ul style="list-style-type: none">Graduate Research Assistant, Advisor: Prof. Xiang ZhangDeep Models for Learning Temporal Patterns in Dynamic Networks	08/2017-Present
NEC Labs America , Princeton, NJ <ul style="list-style-type: none">Research Intern, Mentor: Dr. Wei ChengMulti-Task Learning via Routing SelectionTrend Learning in Multivariate Time Series	05/2019-12/2019
NEC Labs America , Princeton, NJ <ul style="list-style-type: none">Research Intern, Mentor: Dr. Wei ChengInterpretable RNN Model for Anomaly Precursor Detection	05/2018-08/2018
Chinese Academy of Sciences , Beijing, CN <ul style="list-style-type: none">Research Assistant, Advisor: Prof. Yingjie TianLarge-Scale Multiple Instance Learning	09/2015-06/2017
Key Lab of Big Data Mining and Knowledge Management , Beijing, CN <ul style="list-style-type: none">Research Assistant, Mentor: Prof. Yong ShiClustering Models	09/2014-08/2015
Taikang Asset Management Co., Ltd. , Beijing, CN <ul style="list-style-type: none">Research Assistant, Mentor: Dr. Shaolei ShiInvestment Risk Identification Model	11/2013-02/2014
Renmin University of China , Beijing, CN <ul style="list-style-type: none">Research Assistant, Advisor: Prof. Wei XuEnsemble Forecasting Model for Time Series Data	09/2012-06/2014

Publications

1. **Dongkuan Xu**, Wei Cheng, Bo Zong, Dongjin Song, Jingchao Ni, Wenchao Yu, Yanchi Liu, Haifeng Chen, 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**)
2. Junjie Liang, **Dongkuan Xu**, Yiwei Sun, Vasant Honavar. Longitudinal Multi-Level Factorization Machines [C]. *The 34th AAAI International Conference on Artificial Intelligence*. (**AAAI'2020**)
3. **Dongkuan Xu**, Wei Cheng, Dongsheng Luo, Yameng Gu, Xiao Liu, Jingchao Ni, Bo Zong, Haifeng Chen, Xiang Zhang. Adaptive Neural Network for Node Classification in Dynamic Networks [C]. *The 19th IEEE International Conference on Data Mining*. (**ICDM'2019**)
4. **Dongkuan Xu**, Wei Cheng, Dongsheng Luo, Xiao Liu, Xiang Zhang. Spatio-Temporal Attentive RNN for Node Classification in Temporal Attributed Graphs [C]. *The 19th The 29th International Joint Conference on Artificial Intelligence*. (**IJCAI'2019**)
5. **Dongkuan Xu**, Wei Cheng, Bo Zong, Jingchao Ni, Dongjin Song, Wenchao Yu, Yuncong Chen, Haifeng Chen, Xiang Zhang. Deep Co-Clustering [C]. *The 19th SIAM International Conference on Data Mining*. (**SDM'2019**)
6. Jingchao Ni, Shiyu Chang, Xiao Liu, Wei Cheng, Haifeng Chen, **Dongkuan Xu**, Xiang Zhang. Co-Regularized Deep Multi-Network Embedding[C]. *The 27th International Conference on World Wide Web*. (**WWW'2018**)
7. **Dongkuan Xu**, Wei Zhang, Jia Wu, Yingjie Tian. Multiple Instance Learning Based on Positive Instance Graph[J]. *arXiv preprint arXiv: 1612.03550 (2016)*.
8. Yingjie Tian, **Dongkuan Xu**, Chunhua Zhang. A Review of Multi-Instance Learning Research [J]. *Operations Research Transactions* , 2018, 02: 1-17.
9. **Dongkuan Xu**, Jia Wu, Dewei Li, Yingjie Tian, Xinquan Zhu, Xindong Wu. SALE: Self-Adaptive LSH Encoding for Multi-Instance Learning[J]. *Pattern Recognition*, 2017. (**Pattern Recognition**)
10. Dewei Li, **Dongkuan Xu**, Jingjing Tang, Yingjie Tian. Metric Learning for Multi-Instance Classification with Collapsed Bags[C]. *The 30th IEEE International Joint Conference on Neural Networks*. (**IEEE IJCNN'2017**)
11. **Dongkuan Xu**, Jia Wu, Wei Zhang, Yingjie Tian. PIGMIL: Positive Instance Detection via Graph Updating for Multiple Instance Learning[C]. *arXiv preprint arXiv:1612.03550*, 2016.
12. **Dongkuan Xu**, Yingjie Tian. A Comprehensive Survey of Clustering Algorithms[J]. *Annals of Data Science*, 2015, 2(2): 165-193. (**457 citations**)
13. Dewei Li, Wei Zhang, **Dongkuan Xu**, Yingjie Tian. Multi-Metrics Classification Machine[C]. *International Conference on Information Technology and Quantitative Management*. (**ITQM'2016**) (**Best Paper Award**)
14. **Dongkuan Xu**, Tianjia Chen, 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.
15. **Dongkuan Xu**, Yi Zhang, Cheng Cheng, Wei Xu, Likuan Zhang. A Neural Network-Based Ensemble Prediction Using PMRS and ECM[C]. *The 47th IEEE Hawaii International Conference on System Sciences*. (**HICSS'2014**)

Teaching Experience

DS402 - Introduction to Social Media Mining

Instructor: Prof. Suhang Wang

Course Materials: Social Media Mining: An Introduction

IST210 - Organization of Data

Instructor: Prof. Xiang Zhang

Course Materials: Database Systems Concepts

(The Award for Excellence in Teaching Support)

SRA365 - Statistics for Security and Risk Analysis

Instructor: Dr. Katherine Hamilton

Course Materials: Theoretical Foundations and Practice of Intermediate Statistics

Talks

Learning Trends in Multivariate Time Series

New York, USA, Feb. 2020.

AAAI'2020

Node Classification in Dynamic Networks

Beijing, China, Nov. 2019.

ICDM'2019

Anomaly Precursor Detection via Deep Multi-Instance RNN

Princeton, USA, May. 2019.

NEC Laboratories America

Deep Co-Clustering

Calgary, Canada, May 2019.

SDM'2019

Efficient Multiple Instance Learning

Princeton, USA, May. 2018.

NEC Laboratories America

Professional Services

Program Committee Member:

AAAI'20, ACM CIKM'20, AACL-IJCNLP'20, IJCAI'20, IJCNN'18, 19, 20

External Conference Reviewer:

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

Journal Reviewer:

IEEE Transactions on Cybernetics, ACM Transactions on Knowledge Discovery from Data (TKDD), Pattern Recognition, IEEE Access, Neural Computation, Complexity, Soft Computing, Complex & Intelligent Systems

Honors and Awards

AAAI Student Scholarship	2020
IST Travel Award	2020
IST Travel Award	2019
College of IST Award for Excellence in Teaching Support	2019
President's Fellowship of Chinese Academy of Sciences (1%)	2016

National Graduate Scholarship (2%)	2015
First-class Scholarship of Sashixuan Elite Fund (5%)	2014
Kwang-Hua Scholarship of RUC	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

AAAI (Association for the Advancement of Artificial Intelligence) Student Membership	2019-Present
SIAM (Society of Industrial and Applied Mathematics) CAS Student Member	2016-Present
President of Youth Volunteers Association of School of Information of RUC	2012-2013
Volunteer of Beijing Volunteer Service Federation (BVF)	2012-Present
Leader of National Undergraduate Training Programs for Innovation and Entrepreneurship	2011-2012

Technical Skills

TensorFlow, Keras, Numpy, Matlab, C, SQL, Latex, OriginLab, SPSS
 Optimization Methods, Machine Learning, Artificial Intelligence, Data Mining