

# Bo Zong

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## Research Interest

My current research focuses on hard machine learning and mining problems from complex data, such as graphs, sequences, time series, and natural languages.

## Education

**University of California, Santa Barbara**, Santa Barbara, CA Sept. 2010 – Sept. 2015  
Ph.D., Computer Science  
Advisors: Prof. Ambuj K. Singh and Prof. Xifeng Yan

**Nanjing University**, Nanjing, China Jul. 2010  
Master, Computer Science

**Nanjing University**, Nanjing, China Jul. 2007  
Bachelor, Computer Science

## Work Experience

**NEC Labs America**, Princeton, NJ 2020 – present  
*Senior Research Staff member, Department of Data Science and System Security*

**NEC Labs America**, Princeton, NJ 2015 – 2020  
*Research Staff member, Department of Data Science and System Security*

**University of California, Santa Barbara**, Santa Barbara, CA 2010 – 2015  
*Research Assistant, Computer Science*  
Advisors: Prof. Ambuj K. Singh and Prof. Xifeng Yan

**NEC Labs America**, Princeton, NJ Summer 2014  
*Research Intern, Autonomous Management*  
Mentor: Dr. Zhichun Li

**Microsoft Research Cambridge**, Cambridge, UK Summer 2013  
*Research Intern, System and Network Group*  
Mentors: Dr. Milan Vojnovic and Dr. Christos Gkantsidis

**IBM TJ Watson Research Lab**, Yorktown Heights, NY Summer 2012  
*Research Intern, Wireless Networking Group*  
Mentors: Dr. Ramya Raghavendra and Dr. Mudhakar Srivatsa

## Publications

(Publications marked with ‘\*’ order authors alphabetically)

- [1] Cheng Zheng, **Bo Zong**, Wei Cheng, Dongjin Song, Jingchao Ni, Wenchao Yu, Haifeng Chen, and Wei Wang. *Robust Graph Representation Learning via Neural Sparsification*, in ICML’20.
- [2] Lichen Wang, **Bo Zong**, Qianqian Ma, Wei Cheng, Jingchao Ni, Wenchao Yu, Yanchi Liu, Dongjin Song, Haifeng Chen, and Yun Fu. *Inductive and Unsupervised Representation Learning on Graph Structured Objects*, in ICLR 2020.
- [3] Cheng Zheng, **Bo Zong**, Wei Cheng, Dongjin Song, Jingchao Ni, Wenchao Yu, Haifeng Chen, and Wei Wang. *Node Classification in Temporal Graphs through Stochastic Sparsification and Temporal Structural Convolution*, in ECML-PKDD’20.
- [4] Lu Wang, Wenchao Yu, Xiaofeng He, Wei Cheng, Martin Renqiang Ren, Wei Wang, **Bo Zong**, Haifeng Chen, Hongyuan Zha. *Adversarial Cooperative Imitation Learning for Dynamic Treatment Regimes*, in the Web Conference 2020 (WWW 2020).
- [5] 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*, in AAAI 2020.
- [6] Xin Dong, Jingchao Ni, Wei Cheng, Zhengzhang Chen, **Bo Zong**, Dongjin Song, Yanchi Liu, Haifeng Chen, and Gerard de Melo. *Asymmetrical Hierarchical Networks with Attentive Interactions for Interpretable Review-Based Recommendation*, in AAAI 2020.
- [7] Dixian Zhu, Dongjin Song, Yuncong Chen, Cristian Lumezanu, Wei Cheng, **Bo Zong**, Jingchao Ni, Takehiko Mizoguchi, Tianbao Yang, and Haifeng Chen. *Deep Unsupervised Binary Coding Networks for Multivariate Time Series Retrieval*, in AAAI 2020.
- [8] Xuchao Zhang, Wei Cheng, **Bo Zong**, Yuncong Chen, Jianwu Xu, Ding Li, and Haifeng Chen. *Temporal Context-Aware Representation Learning for Question Routing*, in WSDM 2020.
- [9] Wenchao Yu, Wei Cheng, Charu Aggarwal, **Bo Zong**, Haifeng Chen, and Wei Wang. *Self-Attentive Attributed Network Embedding Through Adversarial Learning*, in ICDM 2019.
- [10] 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*, in ICDM 2019.
- [11] Dongkuan Xu, Wei Cheng, **Bo Zong**, Jingchao Ni, Dongjin Song, Wenchao Yu, Yuncong Chen, Haifeng Chen, and Xiang Zhang. *Deep Co-Clustering*, in SDM 2019.
- [12] Chuxu Zhang, Dongjin Song, Yuncong Chen, Xinyang Feng, Cristian Lumezanu, Wei Cheng, Jingchao Ni, **Bo Zong**, Haifeng Chen, and Nitesh V. Chawla. *A Deep Neural Network for Unsupervised Anomaly Detection and Diagnosis in Multivariate Time Series Data*, in AAAI 2019.
- [13] Qi Song, **Bo Zong**, Yinghui Wu, Lu-An Tang, Hui Zhang, Guofei Jiang, and Haifeng Chen. *TGNet: Learning to Rank Nodes in Temporal Graphs*, in CIKM 2018;
- [14] **Bo Zong**, Qi Song, Martin Renqiang Min, Wei Cheng, Cristian Lumezanu, Daeki Cho, and Haifeng Chen. *Deep Autoencoding Gaussian Mixture Model for Unsupervised Anomaly Detection*, in ICLR 2018;
- [15] Mingda Li, Cristian Lumezanu, **Bo Zong**, and Haifeng Chen. *Deep Learning IP Network Representations*, in SIGCOMM 2018 Workshop on Big Data Analytics and Machine Learning for Data Communication Networks (Best paper award);
- [16] Wenchao Yu, Cheng Zheng, Wei Cheng, Charu Aggarwal, Dongjin Song, **Bo Zong**, Haifeng Chen, and Wei Wang. *Learning Deep Network Representations with Adversarially Regularized Autoencoders*, in KDD 2018;
- [17] Xiaohan Zhao, **Bo Zong**, Ziyu Guan, Kai Zhang, and Wei Zhao. *Substructure Assembling Network for Graph Classification*, in AAAI 2018;
- [18] Biplob Debnath, Mohiuddin Solaimani, Muhammad Ali Gulzar, Nipun Arora, Cristian Lumezanu, Jianwu Xu, **Bo Zong**, Hui Zhang, Guofei Jiang, and Latifur Khan. *LogLens: A Real-time Log Analysis System*, in ICDCS 2018;

- [19] **Bo Zong**, Xusheng Xiao, Zhichun Li, Zhenyu Wu, Zhiyun Qian, Xifeng Yan, Ambuj K. Singh, and Guofei Jiang, *Behavior Query Discovery in System-Generated Temporal Graphs*, in VLDB 2016;
- [20] Vishwakarma Singh, **Bo Zong**, and Ambuj K. Singh. *Nearest Keyword Set Search in Multi-dimensional Datasets*, in TKDE 2016;
- [21] **Bo Zong**, Christos Gkantsidis, and Milan Vojnovic, *Herding “Small” Streaming Queries*, in DEBS 2015;
- [22] **Bo Zong**, Yinghui Wu, Jie Song, Ambuj K. Singh, Hasan Cam, Jiawei Han, and Xifeng Yan, *Towards Scalable Critical Alert Mining*, in KDD 2014;
- [23] **Bo Zong**, Ramya Raghavendra, Mudhakar Srivatsa, Xifeng Yan, Ambuj K. Singh, and Kang-Won Lee, *Cloud Service Placement via Subgraph Matching*, in ICDE 2014;
- [24] **Bo Zong**, Yinghui Wu, Ambuj K. Singh, and Xifeng Yan, *Inferring the Underlying Structure of Information Cascades*, in ICDM 2012;
- [25] Shengqi Yang, Xifeng Yan, **Bo Zong**, and Arijit Khan, *Towards Effective Partition Management for Large Graphs*, in SIGMOD 2012;
- [26] \* Misael Mongiovì, Konstantinos Psounis, Ambuj K. Singh, Xifeng Yan, and **Bo Zong**, *Efficient Multicasting for Delay Tolerant Networks using Graph Indexing*, in INFOCOM 2012;
- [27] **Bo Zong**, Feng Xu, Jun Jiao, and Jian Lü, *A Broker-assisting Trust and Reputation System Based on Artificial Neural Network*, in SMC 2009.
- [28] **Bo Zong**, Feng Xu, Jing Pan, and Jian Lü, *Comparing and Evaluating Collection Strategies in Trust-Based Reputation Systems in Distributed Environments*, Symposia and Workshops in UIC-ATC 2009.

## Patents

- [1] **Bo Zong**, Hui Zhang, and Jianwu Xu. *Automatic and Scalable Log Pattern Learning In Security Log Analysis*. US Patent, 2020.
- [2] **Bo Zong**, Lu-An Tang, Qi Song, Biplob Debnath, Hui Zhang, and Guofei Jiang. *Discovering critical alerts through learning over heterogeneous temporal graphs*. US Patent, 2019;
- [3] Lu-An Tang, Hengtong Zhang, Zhengzhang Chen, **Bo Zong**, Zhichun Li, Guofei Jiang, and Kenji Yoshihira. *Constructing graph models of event correlation in enterprise security systems*. US Patent, 2019;
- [4] Zhichun Li, Lu-An Tang, **Bo Zong**, Zhengzhang Chen, Guofei Jiang, Kenji Yoshihira, and Hengtong Zhang. *Graph based attack chain discovery in enterprise security system*. US Patent, 2019;
- [5] Zhichun Li, Xusheng Xiao, Zhenyu Wu, **Bo Zong**, and Guofei Jiang. *Behavior Query Discovery in Temporal Graphs*. Japan Patent, 2019;
- [6] Milan Vojnovic, Christos Gkantsidis, and **Bo Zong**. *Streaming Query Resource Control*. US Patent, 2015.

## Honors and Awards (Since 2015)

<i>Business Contribution Award</i> , in NEC Labs, America	2019
<i>First Grade Contribution Award</i> , in NEC Central Research	2018
<i>Business Contribution Award</i> , in NEC Labs, America	2017
<i>Spot Recognition Award</i> , in NEC Labs, America	2016