Xiaoran (Sean) Xu

Personal Data

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Education

Sept 2013 - Sept 2015 Ph.D. (dropout), **University of California, Los Angeles**, US
Department: *Computer Science* | Major: *Artificial Intelligence*
Focused on optimization on low-rank matrices with sparsity and deep learning.

Sept 2009 - July 2012 Master of Science, **Peking University**, Beijing, China
Department: *EECS* | Major: *Computer Science (Machine Intelligence)*
Focused on graph clustering and recommendation tasks in heterogeneous information networks modeled by graphical probabilistic models with belief propagation for inference.

Sept 2005 - July 2009 Bachelor of Science, **Peking University**, Beijing, China
Department: *EECS* | Major: *Computer Science (Machine Intelligence)*

Work Experience

Spet 2017 - Present **Hulu Innovation Lab**, Hulu LLC, Beijing
Researcher on Deep Learning
Working in the Recommendation Research team. My work focuses on recommendation reasoning, using differentiable reasoning and stochastic reasoning approaches to discover latent causal connections and bring better interpretability. I developed a generalized backpropagation framework, **Backprop-Q**, making complex stochastic systems systematically trainable in an end-to-end style. I also proposed a novel flow-based attention mechanism, **attention flow**, to effectively address reasoning tasks on graph-structured data.

Feb 2017 - Oct 2017 **Qihoo 360 Artificial Intelligence Institute**, Beijing
Algorithm Engineer on Deep Learning
Worked in the Video Recommendation team. My job focused on short text semantic relevance computing, such as matching query texts with bid words for advertising, mining videos with relevant titles for video recommendation. I exploited user click data with traditional language models to design objectives to learn the embeddings of short texts.

Sept 2015 - Dec 2016 **Bangbangzhixin (Beijing) Education Investment Co. Ltd.**, Beijing
Co-founder
Led a team to attempt to develop a personal credit scoring system for education.

June 2014 -Sept 2014 **Rand Corporation**, Los Angeles
Summer Associate
Studied optimized matrix computation algorithms on the Spark platform.

Mar 2010 -Sept 2010 **Baidu Inc.**, Beijing
Data Mining Intern
Studied user behavior and built a user-behavior data warehouse application.

Publications

Recent Papers

2018 **Xiaoran Xu**, Songpeng Zu, Chengliang Gao, Yuan Zhang, and Wei Feng. **Modeling Attention Flow on Graphs**. *Relational Representation Learning Workshop at NIPS 2018*.

2018 **Xiaoran Xu**, Laming Chen, Songpeng Zu, and Hanning Zhou. **Hulu Video Recommendation: from Relevance to Reasoning**. *Proceedings of the 12th ACM Conference on Recommender Systems, 482-482*.

2018 **Xiaoran Xu**, Songpeng Zu, Yuan Zhang, Hanning Zhou, and Wei Feng. **Backprop-Q: Generalized Backpropagation for Stochastic Computation Graphs**. *Deep Reinforcement Learning Workshop at NIPS 2018*.

2018 Yuan Zhang, **Xiaoran Xu**, Hanning Zhou and Yan Zhang. **Distilling Structured Knowledge into Embeddings for Explainable and Accurate Recommendation**. *Submitted to WWW 2019*.

Early Published Papers

2016 Zhi-Hong Deng and **Xiaoran Xu**. A novel probabilistic clustering model for heterogeneous networks. *Machine Learning 104 (1), 1-24*.

2015 Weiwei Liu, Zhi-Hong Deng, Longbing Cao, **Xiaoran Xu**, He Liu, and Xiuwen Gong. Mining top K spread sources for a specific topic and a given node. *IEEE transactions on cybernetics 45 (11), 2472-2483*.

2012 Zhi-Hong Deng and **Xiaoran Xu**. Fast mining erasable itemsets using NC_sets. *Expert Systems with Applications 39 (4), 4453-4463*.

2011 **Xiaoran Xu** and Zhi-Hong Deng. BibClus: A clustering algorithm of bibliographic networks by message passing on center linkage structure. *Data Mining (ICDM), 2011 IEEE 11th International Conference on, 864-873*.

2011 Zhi-Hong Deng, Ning Gao, and **Xiaoran Xu**. Mop: An Efficient Algorithm for Mining Frequent Pattern with Subtree Traversing. *Fundamenta Informaticae 111 (4), 373-390*.

2011 Zhihong Deng and **Xiaoran Xu**. Mining top-rank-k erasable itemsets. *ICIC Express Letter 5 (1), 15-20*.

2010 Zhihong Deng and **Xiaoran Xu**. An efficient algorithm for mining erasable itemsets. *International Conference on Advanced Data Mining and Applications, 214-225*.

2009 Zhi-Hong Deng, Guo-Dong Fang, Zhong-Hui Wang, **Xiao-Ran Xu**. Mining erasable itemsets. *Machine Learning and Cybernetics, 2009 International Conference on 1, 67-73*.

Books

2018 Yue Zhuge, 14 Hulugans (Zhe Wang, Yunsheng Jiang, Fanding Li, Yujing Wang, Hanning Zhou, Xiaohui Xie, Laming Chen, Chunyang Liu, Chenhao Liu, **Xiaoran Xu**, Wei Feng, Jianqiang Dong, Mengyi Liu, Guoxie Zhang).The Quest for Machine Learning: 100+ Interview Questions for Algorithm Engineer (In Chinese), *China, Beijing: Posts and Telecom Press, 2018*

Patents

2016-09-07 Xiaoran Xu. Automated Credit Scoring System and Method based on Deep Learning Mechanism (In Chinese). *Patent No.: CN105931116A*.

2011-05-18 Xiaoran Xu, Zhi-Hong Deng. Content Extraction Method based on Regular Expression Group and Control Logic (In Chinese). *Patent No.: CN102063493A*.

2010-10-06 Xiaoran Xu, Zhi-Hong Deng. Method for Generating Preorder and Postorder Code in a Single Tree Traversal (In Chinese). *Patent No.: CN101853310A*.

Honors and Awards

2008 **National First Class Prize**, 2008 China Undergraduate Mathematical Contest in Modeling (CUMCM 2008)
China Society for Industrial and Applied Mathematics, and Ministry of Education of the People's Republic of China

Teaching Experience

Fall 2014 **CS 31: Introduction to Computer Science I**, UCLA
Teaching Assistant, Instructor: David Smallberg

Winter 2015 **CS 180: Algorithms & Complexity**, UCLA
Teaching Assistant, Instructor: Stott Parker

Languages

Chinese: Mother Tongue
English: Fluent

Related Skills

Computer Languages:	Python, C/C++, HTML, JavaScript, Java, Linux Shell
Computing Platforms:	TensorFlow, Spark, Hadoop
Theoretical Knowledge:	Deep Learning, Reinforcement Learning, Graphical Probabilistic Models, Matrix Computation, Numerical Optimization