Xia Hu

Personal Information

Homepage: xia-hu.github.io
Address: Burnaby, BC, Canada V5A 2B5
Phone: (+1) 604-720-8996
Email: amber.hx01@gmail.com

Research Interests

My research interest lies in the understanding of machine learning and deep learning models, with an emphasis on the interpretation and model complexity of deep architectures.

Keywords: Model Interpretation, Model Explanation, Expressive Power, Model Complexity

Education

Simon Fraser University, B.C., Canada — Sept 2016 - Sept 2021
Ph.D. in Computing Science
Thesis Topic: "Understanding Deep Neural Networks from the Perspective of Piecewise Linear Property"
GPA: 3.96/4.3 | Supervisor: Prof. Jian Pei

University of Science and Technology of China, Anhui, China — Aug 2009 - Jul 2013
B.E. in Computer Science
GPA: 3.24/4.3

Work Experience

Intern Researcher — May 2019 - May 2020
Microsoft Research Asia, Beijing, China

- Implemented state-of-the-art model interpretation approaches to deep learning models on finance applications.
- Researched model complexity problem and proposed an approach to measure model complexity of deep learning models with the idea of piecewise linear approximation.
- Published a paper of our proposed model complexity approach on the KDD'20 research track.

Software Engineer — Jul 2014 - Jul 2016
Sogou Inc., Beijing, China

- Constructed the internal Hadoop/Spark distributed platform for over 2,000 engineers.
- Added user authentication, fair scheduling, and other functions to Hadoop/Spark open-source framework.
- Established a Wechat text analysis platform based on Spark including keywords extraction, user portraits, etc.

Software Engineer — Dec 2012 - Apr 2014
Baidu Inc., Beijing, China

- Participated in building the internal cloud computing platform, responsible for the distributed storage part.
- Investigated and analyzed distributed storage systems including NFS, MFS, GFS.
- Implemented a distributed storage scheduler which increased storage utilization by 25%.

Publications and Tutorials

1. **Xia Hu**, Lingyang Chu, Jian Pei, Weiqing Liu, Jiang Bian.
   "Model Complexity of Deep Learning: A Survey". Knowledge and Information Systems (KAIS), 2021.
2. **Xia Hu**, Lingyang Chu, Jian Pei, Jiang Bian, Weiqing Liu.
   "Deep Learning Model Complexity: Concepts and Approaches". SIAM International Conference on Data Mining (SDM) 2021 Tutorial.
3. **Xia Hu**, Weiqing Liu, Jiang Bian, Jian Pei.
   "Measuring Model Complexity of Deep Neural Networks with Curve Activation Functions". 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'20).
4. Zicun Cong, Lingyang Chu, Lanjun Wang, **Xia Hu** and Jian Pei.
   "Exact and Consistent Interpretation of Piecewise Linear Models Hidden behind APIs: A Closed-Form Solution". 36th IEEE International Conference on Data Engineering (ICDE'20).
5. Lingyang Chu, **Xia Hu**, Juhua Hu, Lanjun Wang, Jian Pei.
   "Exact and Consistent Interpretation for Piecewise Linear Neural Networks: A Closed-Form Solution". 24th ACM SIGKDD Conference On Knowledge Discovery and Data Mining (KDD'18).

Academic Service

- PC Member: SDM'20, SDM'21
- External Reviewer: KDD'19, KDD'20, KDD'21, WSDM'21, AAAI'21, CIKM'21

Awards and Honors

- Stars of Tomorrow Internship Program (Microsoft Research Asia) 2020
- SIGKDD Student Travel Award (KDD'18) 2018
- Graduate Fellowship (Simon Fraser University) 2016, 2018, 2019
- Outstanding Service Awards (Sogou Inc, Top 5%) 2015
- Student Scholarship (University of Science and Technology of China) 2009, 2012

Teaching Experience

Teaching Assistant at Simon Fraser University

- CMPT 880 - Deep Learning Spring 2019, Spring 2021
- CMPT 307 - Data Structures Summer 2020
- CMPT 371 - Data Communications and Networking Summer 2018
- CMPT 276 - Introduction to Software Engineer Spring 2017
- CMPT 295 - Introduction to Computer Science Fall 2016

Computer Skills

- Deep Learning, Machine Learning
- Python, Java, Scala
- Linux, Hadoop, Spark, Matlab, Jenkins