CS Seminar

Automated and Scalable Algorithms and Systems for Unsupervised ML

Dr. Yue Zhao
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Date:
August 1, 2023
Tuesday
2:30pm-4:30pm

Venue:
Room 308
Chow Yei Ching Bldg
The University of Hong Kong

Abstract:

Many real-world events do not have outcome labels. For example, the fraudulence of a transaction remains unknown until it is discovered. This is where unsupervised machine learning (ML) becomes crucial in real-world scenarios as it can make decisions based solely on observations. In this talk, I will address two key challenges in unsupervised ML: (i) automating the selection of the best ML model without evaluation and (ii) developing scalable learning systems that can handle large amounts of data. The first part of the talk will describe an automated algorithm called MetaOD, which can select top ML models for various applications without relying on labels or evaluations. The second part will cover an ML system called TOD, which can "transpile" a diverse group of unsupervised ML algorithms for GPU acceleration. Lastly, I will discuss some promising future directions, including the ML+X initiative, which aims to bring the advantages of ML automation and systems to other CS/ECE areas (e.g., power systems, mobility, and hardware), and the creation of a fully automated ML pipeline that chooses hardware, systems, and models seamlessly.

About the Speaker:

Yue Zhao is an Assistant Professor of Computer Science at University of Southern California. His research focuses on creating automated and scalable ML algorithms and systems, and he has published over 30 papers in top ML and systems venues such as VLDB, MLSys, NeurIPS, TKDE, and JMLR. His open-source systems (https://github.com/yzhao062) have been widely deployed in firms and industries such as Morgan Stanley and Tesla, and have received over 15,000 GitHub stars and 20 million downloads. Yue got his Ph.D. from Carnegie Mellon University, with the support of CMU Presidential Fellowship and Norton Graduate Fellowship. More information about him can be found at https://viterbi-web.usc.edu/~yzhao010/.

All are welcome!
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