Exploring the Sparsity of Deep Neural Networks

Dr. Caiwen Ding, Assistant Professor
3 years of service in CSE

Abstract:
Deep neural network (DNN)-based statistical models are increasingly challenge the mainstream computational and storage resources, as well as the user’s data privacy. This challenge exists for both inference and training, and on both high-performance computing systems and low-power embedded systems or IoT devices. In this talk, we will first present efficient training methods and several algorithm-hardware co-design works to enable real-time machine learning on various computing platforms such as GPU, FPGA, ReRAM. We will also discuss how to leverage the deep learning model sparsity to enhance user data privacy.

Harnessing Deep Learning for Understanding Dynamic and Complex Network Data

Dr. Dongjin Song, Assistant Professor
2 years of service in CSE

Abstract:
Time series and complex network data are ubiquitous in various real-world applications, e.g., healthcare, IoT, environmental sciences, etc. Two key challenges to better understand the dynamic and complex network data are: (1) how to perform anomaly detection accurately in time series data, and (2) how to represent complex networks (graphs) effectively. In this talk, based on deep learning techniques, we will first introduce our representative works for time series anomaly detection. Then, we will discuss our recent works on representation learning for complex networks.

Caiwen Ding is an assistant professor in the Department of Computer Science & Engineering at the UConn. His research interests focus on machine learning & deep neural network systems, privacy-preserving machine learning, computer architecture, and neuromorphic computing. His works have been frequently published in high-impact conferences (e.g., ISCA, ASPLOS, MICRO, HPCA, AAAI, EMNLP, IJCAI, SC, FPGA, DAC, ICCAD, DATE). He received the Best Paper Award Nomination at DATE 2018 and DATE 2021. He was a recipient of two USDA-NIFA awards and the 2021 UConn Research Excellence Program award.

Dongjin Song is an assistant professor in the Department of Computer Science & Engineering at the UConn. He has a wide range of research interests in data science, artificial intelligence, deep learning, time-series analysis, graph representation learning, and related applications. Papers describing his research have been published at top-tier conferences such as ICML, ICLR, KDD, ICDM, SDM, AAAI, IJCAI, CVPR, ICCV, MM, etc. Among his publications, two papers have been recognized as the most influential IJCAI and KDD papers based on paperdigest.org. He won the UConn REP award in 2021 and the best scientific project award in the D4D Challenge in 2013.