Towards Trustworthy Learning and Reasoning under Noisy Data

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ABSTRACT

Trustworthy learning and reasoning are the emerging and critical topics in modern machine learning, since most real-world data are easily noisy, such as online transactions, healthcare, cyber-security, and robotics. Intuitively, trustworthy intelligent system should behave more human-like, which can learn and reason from noisy data. Therefore, in this talk, I will introduce trustworthy learning and reasoning from three human-inspired views, including reliability, robustness, and interaction. Specifically, reliability will consider uncertain cases, namely deep learning with noisy labels. Meanwhile, robustness will discuss adversarial conditions, namely deep learning with noisy (adversarial) features. Then, interaction will focus on the dynamic interaction between noisy labels and noisy features. Besides labels and features, I will discuss other noisy data, such as noisy domains, noisy demonstrations, and noisy graphs. Furthermore, I will introduce the newly established Trustworthy Machine Learning and Reasoning (TMLR) Group at Hong Kong SAR and Greater Bay Area.

Prof Bo HAN
GUEST SPEAKER'S PROFILE

Bo Han is currently an Assistant Professor of Computer Science and a Director of Trustworthy Machine Learning and Reasoning Group at Hong Kong Baptist University, and a BAIHO Visiting Scientist at RIKEN Center for Advanced Intelligence Project (RIKEN AIP). He was a Visiting Faculty Researcher at Microsoft Research (2022) and a Postdoc Fellow at RIKEN AIP (2019-2020). He received his Ph.D. degree in Computer Science from University of Technology Sydney (2015-2019). During 2018-2019, he was a Research Intern with the AI Residency Program at RIKEN AIP, working on trustworthy representation learning (e.g., Co-teaching and Masking). He also works on causal reasoning for trustworthy learning (e.g., CausalAdv and CausalNL). He has co-authored a machine learning monograph, including Machine Learning with Noisy Labels (MIT Press). He has served as area chairs of NeurIPS, ICML and ICLR, senior program committees of KDD, AAAI and IJCAI, and program committees of AISTATS, UAI and CLeaR. He has also served as action (associate) editors of Transactions on Machine Learning Research and IEEE Transactions on Neural Networks and Learning Systems, and editorial board members of Journal of Machine Learning Research and Machine Learning Journal. He received Outstanding Paper Award at NeurIPS and Outstanding Area Chair at ICLR.