

DEPARTMENT OF COMPUTER SCIENCE

SEMINAR

2025 SERIES

Exploring Insights with Partial Labels

DATE & TIME

6 MAY 2025 (TUE) 4:30 - 5:30 PM

VENUE

DLB 637, 6/F, DAVID C. LAM BUILDING, SHAW CAMPUS



PROF. GANG NIU

Senior Research Scientist
RIKEN Center for Advanced Intelligence Project

ABSTRACT

A partial label (PL) specifies a set of candidate labels for an instance and partial-label learning (PLL) trains multi-class classifiers with PLs. Recently, many methods that incorporate techniques from other domains have shown strong potential. The expectation that stronger techniques would enhance performance has resulted in prominent PLL methods becoming not only highly complicated but also quite different from one another, making it challenging to choose the best direction for future algorithm design. While it is exciting to see higher performance, this leaves open a fundamental question: what makes a PLL method effective? We present a comprehensive empirical analysis of this question and summarize the success of PLL so far into some minimal algorithm design principles. Our findings reveal that high accuracy on benchmark-simulated datasets with PLs can misleadingly amplify the perceived effectiveness of some general techniques, which may improve representation learning but have limited impact on addressing the inherent challenges of PLs. We further identify the common behavior among successful PLL methods as a progressive transition from uniform to one-hot pseudo-labels, highlighting the critical role of mini-batch PL purification in achieving top performance. Based on our findings, we introduce a minimal working algorithm that is surprisingly simple yet effective, and propose an improved strategy to implement the design principles, suggesting a promising direction for improvements in PLL.



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