Invited Talk Abstract

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Tackling Dimensional Collapse toward Comprehensive Universal Domain Adaptation

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Date	July 29, 2026
Time	11:00–11:30
Session	Session 6
Venue	S102, Lecture Hall, Gong-Guan Campus, NTNU

Abstract

Universal Domain Adaptation (UniDA) addresses unsupervised domain adaptation where target classes may differ arbitrarily from source ones, except for a shared subset. A widely used approach, partial domain matching (PDM), aligns only shared classes but struggles in extreme cases where many source classes are absent in the target domain, underperforming the most naive baseline that trains on only source data. In this work, we identify that the failure of PDM for extreme UniDA stems from dimensional collapse (DC) in target representations. To address target DC, we propose to jointly leverage the alignment and uniformity techniques in self-supervised learning on the unlabeled target data to preserve the intrinsic structure of the learned representations. Our experimental results confirm that SSL consistently advances PDM and delivers new stateof-the-art results across a broader benchmark of UniDA scenarios with different portions of shared classes, representing a crucial step toward truly comprehensive UniDA.