SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Signal Analysis & Machine Intelligence

Host: Dr. Wang Xinchao

TOPIC	**:**	**Adversarial Domain Adaptation with Prototype-Based Normalized Output Conditioner**
SPEAKER	**:**	**Mr Hu Dapeng** **Graduate Student, ECE Dept, NUS**
DATE	**:**	**Thursday, 21 April 2022**
TIME	**:**	**3.00PM to 3.30PM**
WEBINAR	**:**	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/8913056966** **Meeting ID: 891 305 6966**

ABSTRACT

Domain adversarial training has become a prevailing and effective paradigm for unsupervised domain adaptation (UDA). To successfully align the multi-modal data structures across domains, the following works exploit discriminative information in the adversarial training process, e.g., using multiple class-wise discriminators and involving conditional information in the input or output of the domain discriminator. However, these methods either require non-trivial model designs or are inefficient for UDA tasks. In this work, we attempt to address this dilemma by devising simple and compact conditional domain adversarial training methods. We first revisit the simple concatenation conditioning strategy where features are concatenated with output predictions as the input of the discriminator. We find the concatenation strategy suffers from the weak conditioning strength. We further demonstrate that enlarging the norm of concatenated predictions can effectively energize the conditional domain alignment. Thus, we improve concatenation conditioning by normalizing the output predictions to have the same norm of features, and term the derived method as Normalized OutpUt coNditioner (NOUN). However, conditioning on raw output predictions for domain alignment, NOUN suffers from inaccurate predictions of the target domain. To this end, we propose to condition the cross-domain feature alignment in the prototype space rather than in the output space. Combining the novel prototype-based conditioning with NOUN, we term the enhanced method as PROtotype-based Normalized OutpUt coNditioner (PRONOUN). Experiments on both object recognition and semantic segmentation show that NOUN can effectively align the multi-modal structures across domains and even outperform state-of-the-art domain adversarial training methods. Together with prototype-based conditioning, PRONOUN further improves the adaptation performance over NOUN on multiple object recognition benchmarks for UDA.

BIOGRAPHY

Mr Hu Dapeng is a PhD candidate at National University of Singapore (NUS), advised by Prof. Wang Xinchao. His research interest covers representation learning and transfer learning.