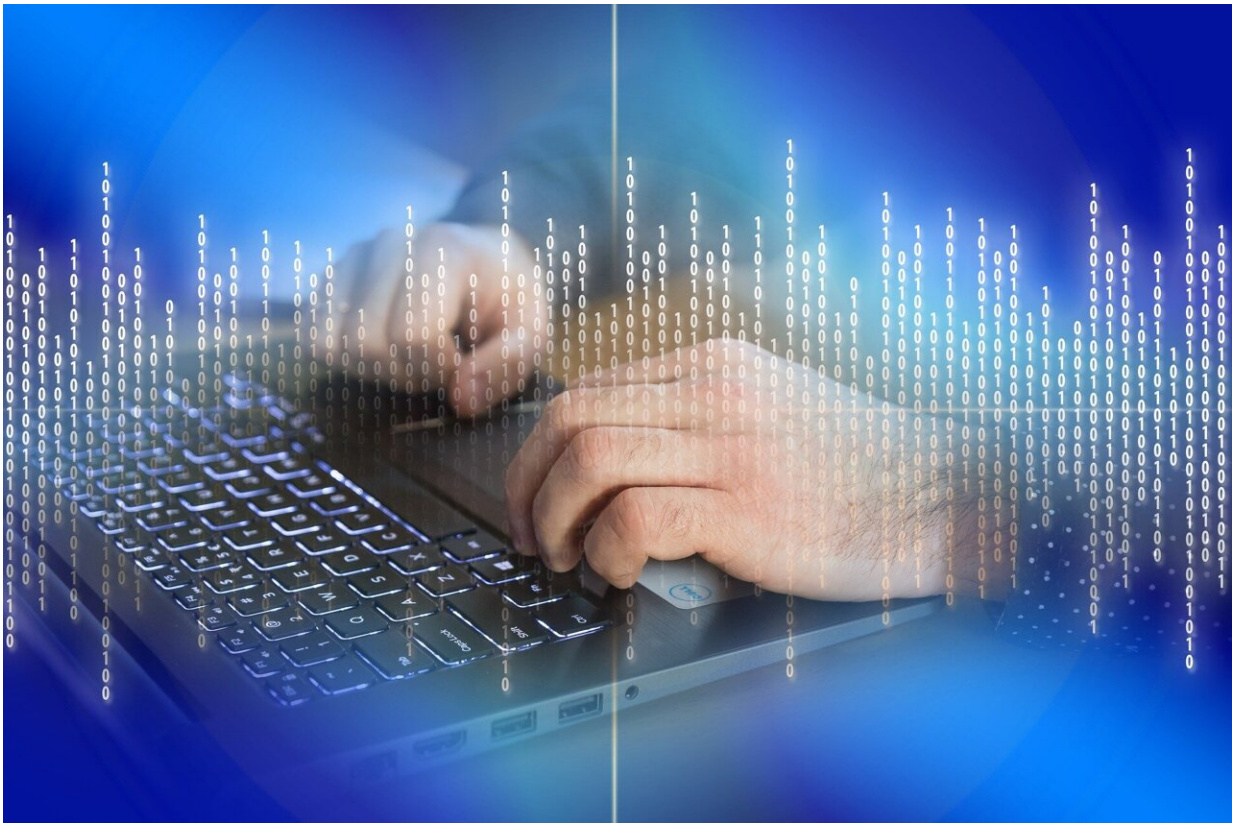


# Active label distribution learning via kernel maximum mean discrepancy

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Label distribution learning (LDL) is a new learning paradigm to deal with label ambiguity. Compared with traditional supervised learning scenarios, annotation with label distribution is more expensive. Direct

use of existing active learning (AL) approaches, which aim to reduce the annotation cost in traditional learning, may lead to the degradation of their performance.

With a proposal to solve these problems, a research team led by Tingjin Luo published new research in *Frontiers of Computer Science*.

The team proposes the Active Label Distribution Learning via Kernel Maximum Mean Discrepancy (ALDL-kMMD) method. Compared with the traditional AL methods, the effectiveness of the proposed method is validated with extensive experiments on real-world datasets, and the performance of the ALDL-kMMD method outperforms others.

ALDL-kMMD captures the structural information of both data and label, extracts the most representative instances from the unlabeled examples by incorporating the nonlinear model and marginal probability distribution matching. In addition, it also markedly decreases the amount of queried unlabeled instances. And an effective solution is proposed for the original optimization problem of ALDL-kMMD by constructing auxiliary variables. The effectiveness of the method is validated with experiments on the real-world datasets.

Future work can focus on applying the proposed [active learning](#) method to deep learning structures and designing a novel deep active learning method to reduce the dependence of [label](#) information.

**More information:** Xinyue Dong et al, Active label distribution learning via kernel maximum mean discrepancy, *Frontiers of Computer Science* (2022). [DOI: 10.1007/s11704-022-1624-5](https://doi.org/10.1007/s11704-022-1624-5)

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