Robust Semi-Supervised Learning in Open Environments

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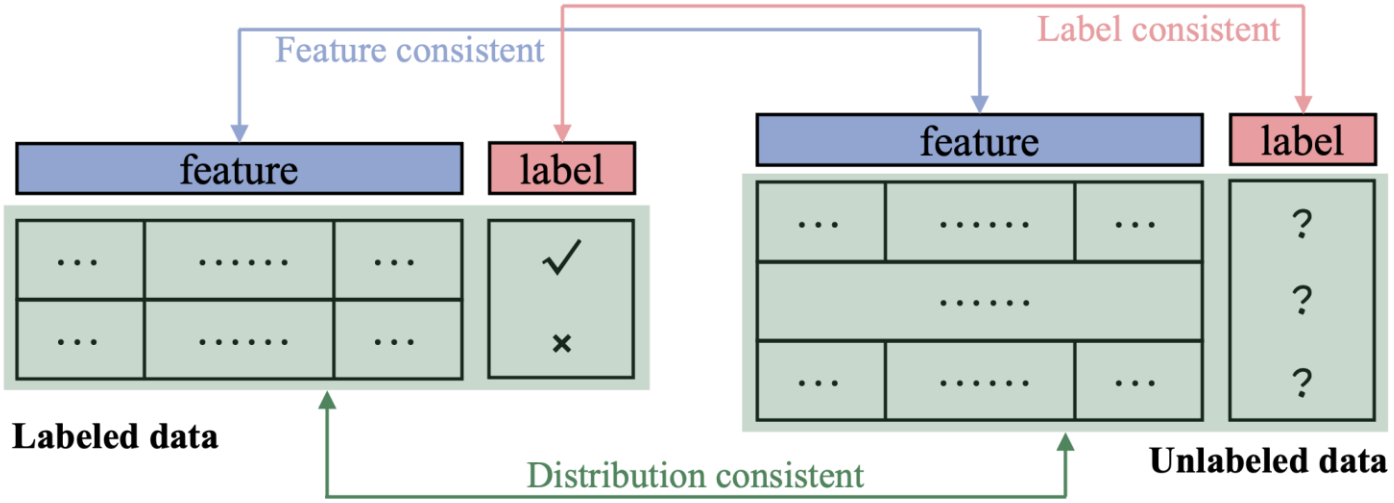
Background

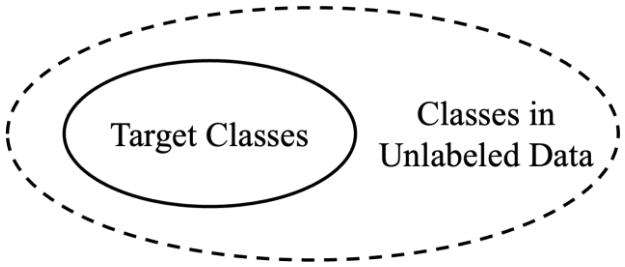
- Semi-Supervised learning typically assume close environments where important factors (e.g., label, feature, distribution are consistent between labeled and unlabeled data.



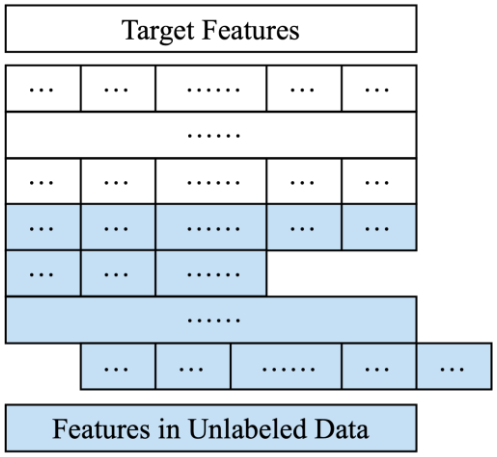
- However, many real-world tasks involve open environments, where class label set, feature space, and data distribution could be inconsistent. This paper give a brief review of advances in this line of research.

Main Contributions

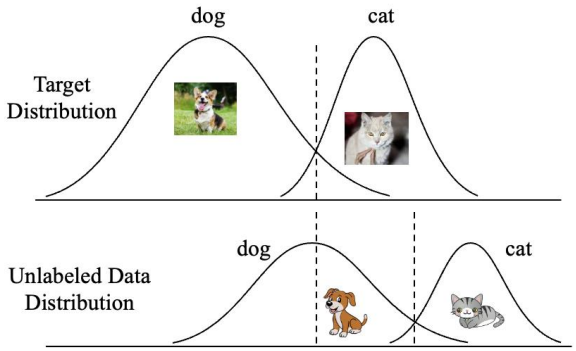
- Contributions:
  - This paper briefly introduces some advances of SSL in open environments, focusing on techniques concerning label space mismatch, feature space mismatch and distribution mismatch between labeled and unlabeled data.
  - A new benchmark is provided to help evaluate the robustness of SSL in open environments. Some novel performance measures and an open-sourced SSL toolkit LAMDA-SSL are provided.



Label space mismatch



Feature space mismatch



Distribution mismatch