Graph Optimal Transport for Cross-Domain Alignment

Challenge

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Reactions

Contribution:

- Define *graph optimal transport*, a generalized notion for "optimal transport".

Strength:

- Good solution property.
  - The nature of the *sparsity* for the solution of transportation plan works pretty well.
  - Solve the current dense attention matrix problem.
- Extensive experiments.
  - The experiments indeed address several important tasks in CDA.

Challenge

Framework Weakness:

- *Topology*: GOT assumes:
  - *topological structures* $\mathcal{T}$ between domains is close.
  - $\mathcal{T}$ is artificially constructed: $e_{ij} = \mathbb{1}(\max(\cos(x_i, x_j) - \tau, 0) > 0)$ (based on τ).
- *Complexity*: Hyperparameters: β, λ, $c(\cdot, \cdot)$, $L(\cdot, \cdot, \cdot, \cdot)$, τ, etc.

Remark

Overall, lots of artificial components in GOT.

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References

[Che+] Liqun Chen et al. "Graph Optimal Transport for Cross-Domain Alignment". In: *Proceedings of the 37th International Conference on Machine Learning*. International Conference on Machine Learning. PMLR, pp. 1542–1553. URL: https://proceedings.mlr.press/v119/chen20e.html.