DS200: Research Methods
Module4: Literature review
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Paper1

@Article{technologies8020035,
AUTHOR = {Toldo, Marco and Maracani, Andrea and Michieli, Umberto and Zanuttigh, Pietro},
TITLE = {Unsupervised Domain Adaptation in Semantic Segmentation: A Review},
JOURNAL = {Technologies},
VOLUME = {8},
YEAR = {2020},
NUMBER = {2},
ARTICLE-NUMBER = {35},
URL = {https://www.mdpi.com/2227-7080/8/2/35},
ISSN = {2227-7080},
DOI = {10.3390/technologies8020035}
}

Strengths:

- It's a review paper, so it explains the recent advancements in the Unsupervised Domain Adaptation (UDA) of deep networks for semantic segmentation in great detail. It covers a comparison of the performance of the various methods widely used in this domain.
- It also talks about novel research directions briefly to give a hint of interesting open problems in the field.

Weakness:

- Almost all the prior arts reviewed by this paper assumes concurrent access to both labelled source and unlabeled target. In a practical scenario, source and target data may not be available together to perform domain adaptation.

Paper2

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@article{zheng2020unsupervised,
  title={Rectifying Pseudo Label Learning via Uncertainty Estimation for Domain Adaptive Semantic Segmentation },
  author={Zheng, Zhedong and Yang, Yi},
  journal={International Journal of Computer Vision (IJCV)},
  doi={10.1007/s11263-020-01395-y},
  year={2020}
}
```

Strengths:

- It proposed a novel training strategy for source free domain adaptation using auxiliary network, which helps in selecting reliable pseudo labels.
- Uncertainty estimation and variance regularization are two untouched fields in unsupervised domain adaptation framework for semantic segmentation, which are covered in greater detail in this work.

Weakness:

- Auxiliary network help in generating reliable pseudo labels, but it increases training time with significant amount.
- Paper has used a constant thresholding based method in generating pseudo labels. Instead, an adaptive thresholding can be used, as proposed by prior arts.
