

Unsupervised learning

Clustering

1. Deep Clustering for Unsupervised Learning of Visual Features [[ECCV18](#)]: Unsupervised Classification using k-means on cons
-

Distillation

- **Segmentation**

1. Improved Knowledge Distillation via Teacher Assistant: Bridging the Gap Between Student and Teacher [arxiv1902]: teacher-student model in three branches. Through a teacher assistant branch.
 2. ROAD: Reality Oriented Adaptation for Semantic Segmentation of Urban Scenes [[CVPR2017](#)]: distillation using the pre-trained model on IMAGENET
 3. Structured Knowledge Distillation for Semantic Segmentation [[CVPR19](#)]: teacher-student network, loss in different level: feature (pair wise), output (pixel wise) and discriminator feature (holistic).
-

Domain generalization

- **Classification**

1. Domain Generalization by Solving Jigsaw Puzzles [[CVPR19oral](#)] [[code](#)]:
2. THE LOTTERY TICKET HYPOTHESIS: FINDING SPARSE, TRAINABLE NEURAL NETWORKS [[ICLR2019](#)]
3. MetaPruning: Meta Learning for Automatic Neural Network Channel

Pruning [arxiv1904]: learning weight for network

4. *Deeper, Broader and Artier Domain Generalization*. [ICCV 2017] ; multi source domain: low-rank parameterized CNNs, nit equally weight for each source domain, new dataset. Disadvanges: overfit on source domain, minimise the distance within dataset
 5. *Domain Generalization with Adversarial Feature Learning* [CVPR 2018][CODE]; [motivation]: learn an universal representation need prior distribution (achieved by adversarial learning). AAE-MMD to calculate distance.
 6. ♥♥♥[CLS]Unified Deep Supervised Domain Adaptation and Generalization [ICCV 2017] [CODESDA]; 2 loss functions 类内间距最小，类间间距最大
 7. *Agnostic Domain Generalization* [arxiv]: image, feature adaptation[discriminator has S outputs]. Domain weight for classifier.meta-parameters rule
 8. *Multiple Source Domain Adaptation with Adversarial Learning* [ICLR2018]:
 9. *Domain-Adversarial Training of Neural Networks* [Journal of machine learning research]:
 10. *Domain Generalization for Object Recognition with Multi-task Autoencoders* [ICCV2015]: multi-task VAE. 自创domain dataset experiments可以参考一下
 11. *Learning Attributes Equals Multi-Source Domain Generalization* []: attribute
 12. *Learning to Generalize: Meta-Learning for Domain Generalization*. [AAAI18]: virtual split training datasets into training and testing for better generalization
 13. MetaPruning: Meta Learning for Automatic Neural Network Channel Pruning [paper]
-
1. MULTI-DOMAIN ADVERSARIAL LEARNING [ICLR19][CODE]: add multiple classifiers using adversarial learning.
 2. Episodic Training for Domain Generalization [arxiv1902]: classifiers training with shared encoder

3. Domain Generalization by Solving Jigsaw Puzzles[[CVPR19oral](#)]: data augmentation, with reorder

- **Segmentation**

1. When unseen domain generalisation is unnecessary? Rethinking Data Augmentation. [[paper](#)]
2. Improving the generalizability of convolutional neural network-based segmentation on CMR images.[[paper](#)]

Domain adaptation

- **History**

1. Domain Adaptation from Multiple Sources via Auxiliary Classifiers [[ICML09](#)]

- **Network Architecture**

1. Domain-Agnostic Learning with Anatomy-Consistent Embedding for Cross-Modality Liver Segmentation [paper](#)201908: DA DAL medical segmentation , using disentangle, GAN
2. ♥♥♥♥♥ ROAD: Reality Oriented Adaptation for Semantic Segmentation of Urban Scenes [paper](#) code : model distillation from pre-trained model, patch-based adversarial learning
3. ♥♥♥♥♥DOMAIN ADAPTATION FOR STRUCTURED OUTPUT VIA DISCRIMINATIVE PATCH REPRESENTATIONS [ICCV19][paper](#): patch label clustering and adversarial learning
4. ♥♥♥♥♥♥♥Learning to Adapt **Structured Output Space** for Semantic Segmentation [CVPR 2018] [paper](#) [link](#) [code](#) :multi scale, discriminative output is a map with same size of input
5. Unsupervised Domain Adaptation With **Similarity** Learning. [CVPR

2018] [paper](#) code : similarity analysis, many theory.

6. Conditional Generative Adversarial Network for Structured Domain Adaptation [CVPR 2018] [paper](#) code : noise input, feature space discriminator
7. Adversarial Feature Augmentation for Unsupervised Domain Adaptation [CVPR 2018] [paper](#) code : noise input combined with shallow features
8. Adversarial Domain Adaptation for Classification of Prostate Histopathology Whole-Slide Images [MICCAI 2018] [paper](#) code : Domain adaptation on different Histopathology dataset. feature space discriminator + constraint on target domain (feature similarity on the patches from same domain)
9. Unsupervised Cross-Modality Domain Adaptation of ConvNets for Biomedical Image Segmentations with Adversarial Loss [IJCAI 2018] [paper](#) code : MRI → CT. reuse features trained in source domain in different depth[big influence]; combine different level feature before adversarial loss.
10. Translating and Segmenting Multimodal Medical Volumes with Cycle- and Shape-Consistency Generative Adversarial Network [CVPR 2018] [paper](#) code : cycle GAN, + 2 segmentation network for shape constraints.
11. *No More Discrimination: Cross City Adaptation of Road Scene Segmenters* [ICCV 2017] [CODE]: keep source and target same from local and class-wise aspect. Generate pseudo labels for source (output space) and target (feature space) push them to be similar using discriminators. Generate a new dataset with google map through different time. Statistic object unchanged to train.
12. [training strategy: proxy label] *Adaptive Semantic Segmentation with a Strategic Curriculum of Proxy Labels* [arxiv1811][CODE]: decoder ensemble, → proxy labels, target easy mining, and source hard mining. Cosine loss for weight to push the encoder far away.
13. ADVENT: Adversarial Entropy Minimization for Domain Adaptation in Semantic Segmentation [paper](#) [CVPR2019]
14. Adaptive Semantic Segmentation with a Strategic Curriculum of Proxy Labels []: Domain adaptation without adversarial learning, with basic ideas like source hard mining target easy mining, self training etc.

- **Feature alignment / similarity**

1. Dual Adaptive Pyramid Network for Cross-Stain Histopathology Image Segmentation [[MICCAI19](#)] feature alignment for gland segmentation
2. UNSUPERVISED DOMAIN ADAPTATION THROUGH SELF-SUPERVISION [[arxiv](#)] self-supervision through rotation, flip etc. transformations.
3. Learning to Transfer Examples for Partial Domain Adaptation [[CVPR19](#)][[CODE](#)]
4. Significance-aware Information Bottleneck for Domain Adaptive Semantic Segmentation [[19](#)]: feature level KL distance constraints and SE attention used as significance factor.
5. DCAN: **Dual Channel-wise Alignment** Networks for Unsupervised Scene Adaptation [[ECCV2018](#)] [paper](#) [code](#) : feature alignment between source and target and minimise the feature distance between synthetic source images and target images.
6. ♥♥♥Deep Metric Learning by Online Soft Mining and Class-Aware Attention [[AAAI2019](#)] [[CODE](#)]: 类内类间间距 , loss
7. ♥♥Exploiting Local Feature Patterns for Unsupervised Domain Adaptation [[AAAI2019](#)][[CODE](#)]: local global feature alignment and adversarial learning *Classification
8. ♥♥♥♥Joint Domain Alignment and Discriminative Feature Learning for Unsupervised Deep Domain Adaptation [[AAAI 2019](#)][[CODE](#)]: Loss for discriminative learning, same class similar, different class dissimilar centre discriminative loss. *Classification*
9. ♥♥♥♥♥Transferable Attention for Domain Adaptation [[AAAI2019](#)] [[CODE](#)] adversarial learning combined with attention. *Classification*
10. ♥♥♥Sliced Wasserstein Discrepancy for Unsupervised Domain Adaptation [[CVPR19](#)] [[CODE](#)] : classification loss function based on Wasserstein Discrepancy distance
11. Synergistic Image and Feature Adaptation: Towards Cross-Modality Domain Adaptation for Medical Image Segmentation [[AAAI19](#)] [[CODE](#)] : feature , mask space alignment

- **Fusion**

1. Adversarial Variational Domain Adaptation [[arxiv1909](#)]: few-shot domain adaptation, using label from target domain for number classification. Perform not very well on unsupervised setting. May somethings good with 1 or 5 shot learnig.

- **Self-training**

1. Unsupervised domain adaptation for semantic segmentation via class-balanced self-training [[ECCV2018](#)] [link](#) [code](#) : change self-training loss function, add a parameter and weights

- **Disentangle**

1. All about Structure: Adapting Structural Information across Domains for Boosting Semantic Segmentation [[CVPR19](#)]: disentangle the feature into specific and domain-invariant features.

Style Transfer

1. ♥♥♥♥♥[CycleGAN]
2. ♥♥♥♥♥GANimation: Anatomically-aware Facial Animation from a Single Image [[ECCV2018](#)][[CODE](#)]: ccyleGAN + attention+how to build a more realistic image. losses
3. ♥♥♥♥♥[UNIT] Unsupervised image2image translation networks [[NIPS2017](#)][[CODE](#)]: cycleGAN + same latent space
4. ♥♥♥♥♥[DRIT] Diverse Image-to-Image Translation via Disentangled Representations [[ECCV2018](#)][[CODE](#)]: UNIT + attribution

Train GAN

1. ♥♥♥ Fictitious GAN: Training GANs with Historical Models
[[ECCV2018](#)][[CODE](#)]: utilise history models[queue to save to update another part of the framework.

Regularization

1. ♥♥♥ Regularizing Deep Networks by Modeling and Predicting Label Structure [[CVPR2018](#)] [paper](#) code: combining hyper column feature segmentation network with auto encoder. Use encoder or decoder to regularise the segmentation network. Good paper, not work