

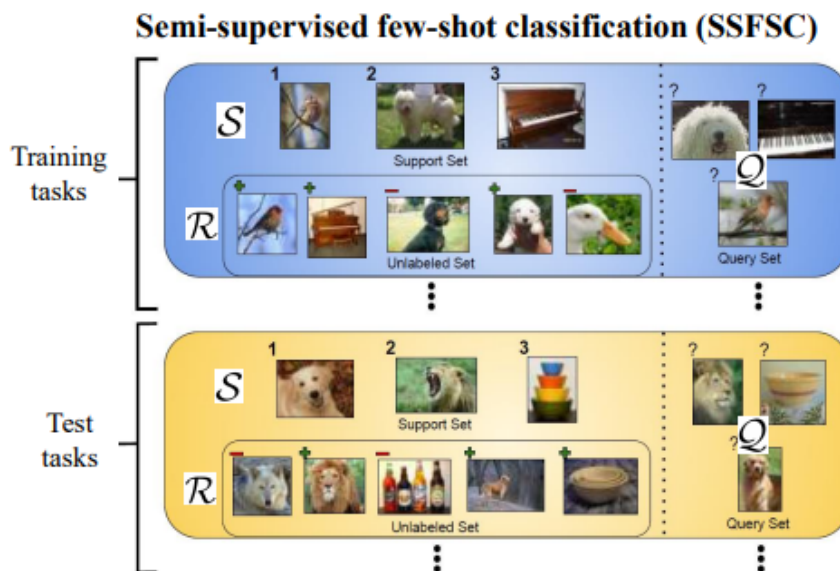
Learning to Self-Train for Semi-Supervised Few-Shot Classification

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1 Motivation and Contributions

- Few-shot classification (FSC) is challenging due to the scarcity of labeled training data, e.g. only one labeled image per class.
- One solution is meta-learning that transfers experiences learned from similar tasks to the target task.
- Another solution is semi-supervised learning that additionally use unlabeled data in training.
- In our work, we combine these two solutions and achieve the top performance, e.g. 70.1% on miniImageNet 5-way 1-shot setting.

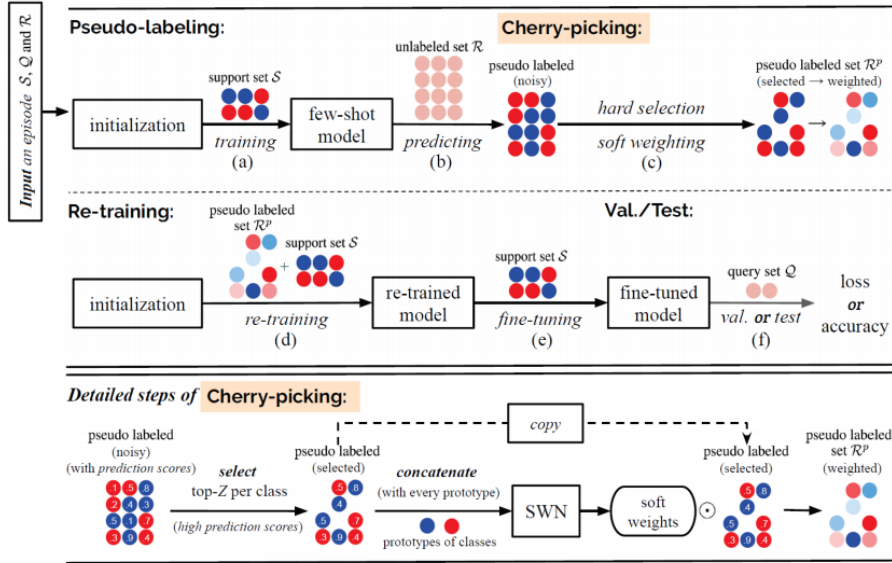


- A novel self-training strategy that prevents the model from drifting due to label noise and enables robust recursive training.
- A novel meta-learned cherry-picking method that optimizes the weights of pseudo labels particularly for fast and efficient self-training.
- Extensive experiments on two benchmarks — miniImageNet and tiered-ImageNet, on which our method achieves the top performance.

2 Framework and Optimization Flow

1. Self-Training (inner-loop; base-learning)

- Pseudo-labeling the unlabeled data
- Cherry-picking the better pseudo-labeled data
- Re-training the base-learner with cherry-picked data



2. Learning to Self-Train (outer-loop; meta-learning)

Optimization flow:

