

# S4L: Self-Supervised Semi-Supervised Learning

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## 1 Summary

The Author proposes a new learning framework based on both self-supervised and semi-supervised learning which is named S4L. The model is trained in self-supervised and then on semi-supervised method to train their model. These frameworks can be used on any self-supervised pretexts such as L-Rotation and L-Exemplar and then semi-supervised learning models such as VAT, Conditional Entropy Minimization or Pseudo Labels. The framework works as a complementary technique to existing semi-supervised techniques, MOAM(Mix of All Model), leads to state-of-the-art performance.

## 2 Good points

The author was able to achieve state-of-the-art results using the MOAM/S4L approach which clearly shows that all semi and self supervised learning methods are complementary to each other. The validation set that the author's considering is really small and they are able to support it with their studies that the best tuned model trained on less validation set will be the best model if we train it on a huge validation data as well.

## 3 Weak points

While the model performance while using MOAM is superior to the actual performance of the S4L, the author states that the performance gain is due to the fact that the S4L model is capable of complementing the semi-supervised learning technique that being used. However, the model size is also improving with the MOAM as compared to the S4L framework. The performance gain can be attributed to the model's size/capacity as well.

## 4 Questions

If the validation set is small, there is a possibility that there is a lot of distribution mismatch as the process is random to some extent(including the corner cases) in the validation set. How much it affects in self-supervised classification tasks.

## 5 Ideas