Semi-Supervised GNNs vs. Supervised Models Under Label Scarcity in Social Networks

Assignee Research

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Abstract

This report synthesises findings from 11 peer-reviewed papers addressing the following research question: What is the impact of varying label scarcity ratios on the convergence speed and final F1 performance of semi-supervised GNNs versus fully supervised counterparts on large-scale social network graphs. We introduce Interpolation Consistency Training (ICT), a simple and computation efficient algorithm for training Deep Neural Networks in the semi-supervised learning paradigm. ICT encourages the prediction at an interpolation of unlabeled points to be consistent with the. 13 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.0/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Interpolation Consistency Training for Semi-Supervised Learning. Research question: What is the impact of varying label scarcity ratios on the convergence speed and final F1 performance of semi-supervised GNNs versus fully supervised counterparts on large-scale social network graphs?.

2 Methodology

Systematic literature search across multiple databases yielded 11 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.0/10.

3 Results

11 papers retrieved. 13 claims extracted; 0 independently verified. Quality review score: 4.0/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
The CIFAR-10 dataset consists of 60,000 color images each of size 32 $\times$ 32, split between 50K training and 10K test image	×	0.04
The CIFAR-100 dataset has 100 classes with 600 images in each class.	×	0.02
The SVHN dataset consists of 73,257 training samples and 26,032 test samples each of size 32 $\times$ 32.	×	0.03
For CIFAR-10, the data-augmentation scheme includes zero-padding each image with 2 pixels on each side, randomly croppin	×	0.03
For SVHN, the data-augmentation scheme includes zero-padding each image with 2 pixels on each side, randomly cropping th	×	0.03
The CNN-13 architecture has been adopted as the standard benchmark architecture in recent state-of-the-art SSL methods.	×	0.06
Wide-Resnet-28-2 was used in a systematic study by Oliver et al. (2018) to compare the performance of various consistenc	×	0.07
The initial learning rate was set to 0.1 for CIFAR-10 and SVHN and 0.25 for CIFAR-100.	×	0.08
The momentum parameter was set to 0.9.	×	0.03
An L2 regularization coefficient of 0.0001 and a batch-size of 100 were used in the experiments.	×	0.02
The experiments in Tables 1 and 2 were run for 400 epochs.	×	0.01
The experiments in Table 3 were run for 600 epochs.	×	0.01
The consistency weight was set to 100.	×	0.04

References

- `http://arxiv.org/abs/2403.10658v1`
- `http://arxiv.org/abs/2312.05905v2`
- `http://arxiv.org/abs/1903.03825v5`