ICLR Comments Rebuttal

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1 For AC

We thank the reviewers for their thought provoking and insightful comments. We updated the paper as per the reviewers' suggestions, and the major changes are as follows:

* We have added more information and explanations for both Graph-based semi-supervised learning and Fractional graph-based semi-supervised learning in Section.3 Methodology.

* We have provided theoretical justification behind the proposed parallel structure Section.3 Methodology.

* We have expanded our numerical experiments by adding the new baselines on graph neural networks: Graph Markov Neural Networks (GMNN) and Large-Scale Learnable Graph Convolutional Networks (LGCNs) in Section.4 Experiments.

* We have conducted our experiments on the two additional weighted-directed graphs (i.e., Texas 2000-Bus system and South Carolina 500-Bus system) in Section.4 Experiments.

* We have provided discussion on the intuition of graph-based semi-supervised learning (G-SSL) and added the proof of the classification functions for G-SSL in the Appendix.

2 R3: Intuition of GSSL

Q: "Moreover, the intuition of the fractional approach is not clear too, e.g., how the optimization (equation (2)) is derived?"

A: The minimization of the first term in Eq. 2 corresponds to the idea that if two nodes are close in graph with respect to some metric, they should belong to the same class; and by minimizing the second term we would like to bring the classification function $F_{\cdot k}$ as close as possible to the labelling function $Y_{\cdot k}$.

Q: "Some explanations are unnatural to demonstrate the methodology, e.g., equation (4)."

A: Eq. 4 provides transition probabilities for the Lévy Flights. Unlike the standard random walk the Lévy Flights can jump immediately over several hops in a graph. This feature makes Lévy Flights a very good exploratory process. There is a price to pay for this: the typically sparse transition probability matrix becomes nonsparse. We can mitigate nonsparsity by taking a reasonable number of principal singular eigenvectors or limiting the number of terms in the Taylor expansion.