

Task-Oriented Graph Neural Network Training on Large Knowledge Graphs for Accurate and Efficient Modeling [DMDS]

(Supplementary Material)

1 NODE CLASSIFICATION RESULTS

Figures 1,2, and 3 show the results for the six node classification tasks.

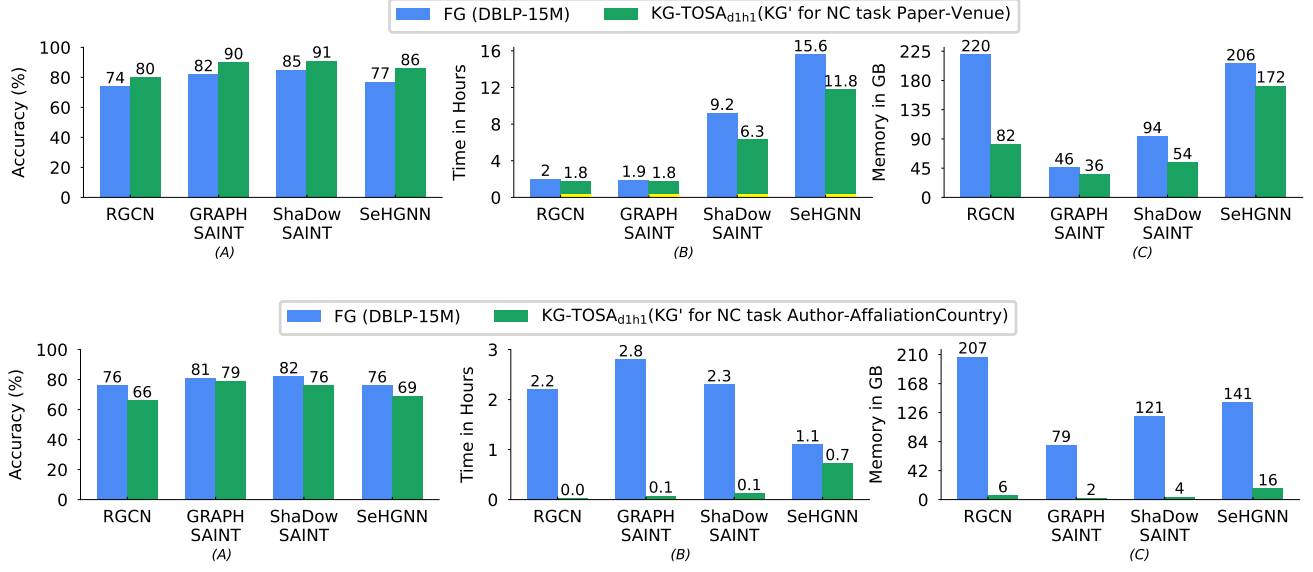


Figure 1: Performance of RGCN, Graph-SAINT, ShaDow-SAINT, and SeHGNN in the NC tasks. (A) Accuracy (higher is better), (B) Training-Time (lower is better), (C) Training-Memory (lower is better). The figures on top show the results for the paper-venue classification task on DBLP. The figures at the bottom show the results for the Author-Affiliation_Country classification task. KG-TOSA enables all methods to reduce memory and time while improving accuracy or keeping comparable scores, even with KG-TOSA's preprocessing time in yellow.

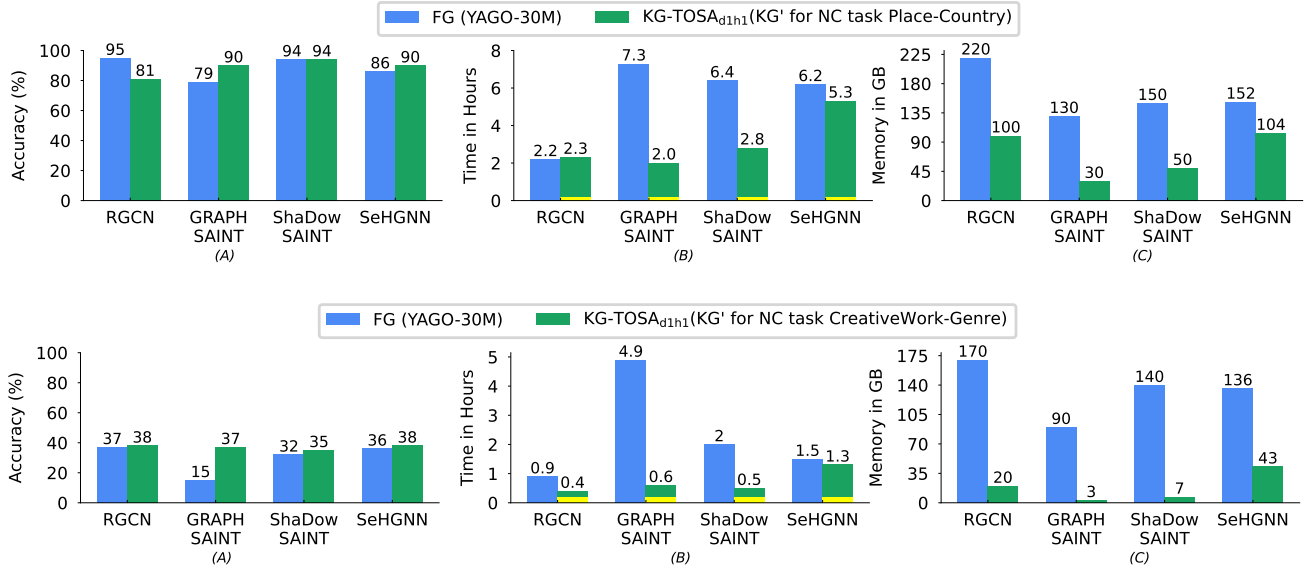


Figure 2: Performance of RGCN, Graph-SAINT, ShaDow-SAINT, and SeHGNN in the NC tasks. (A) Accuracy (higher is better), (B) Training-Time (lower is better), (C) Training-Memory (lower is better). The figures on top show the results for the place-country classification task on YAGO. The figures at the bottom show the results for the CreativeWork-Genre classification task. KG-TOSA enables all methods to reduce memory and time while improving accuracy, even with KG-TOSA's preprocessing time in yellow.

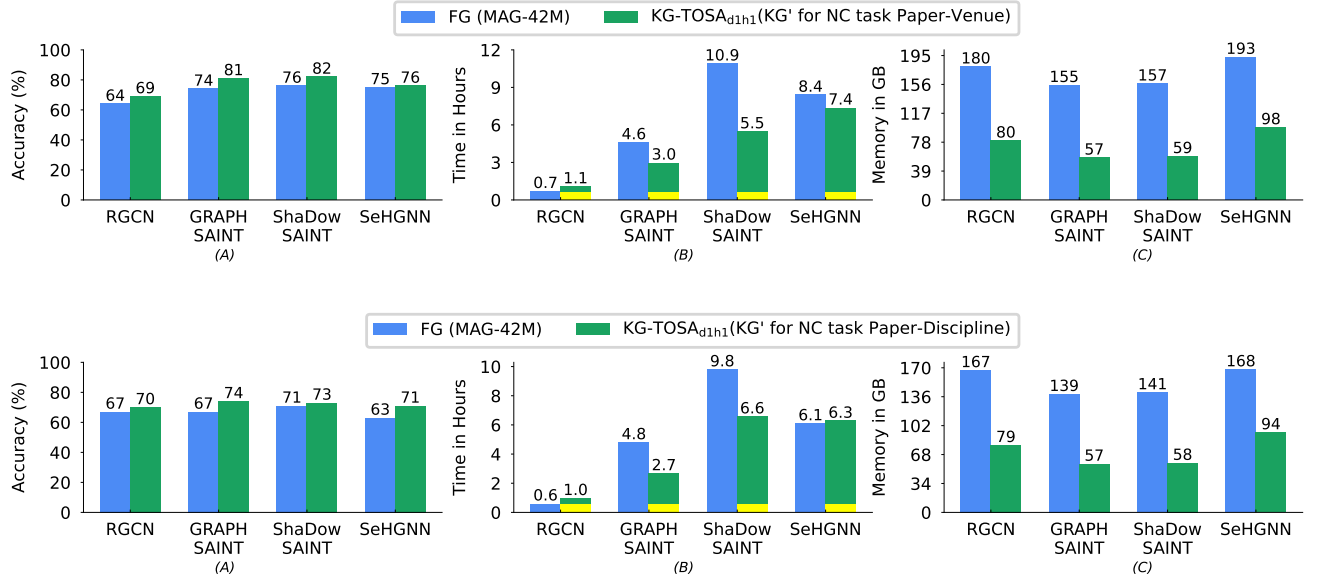


Figure 3: Performance of RGCN, Graph-SAINT, ShaDow-SAINT, and SeHGNN in the NC tasks. (A) Accuracy (higher is better), (B) Training-Time (lower is better), (C) Training-Memory (lower is better). The figures on top show the results for the paper-venue classification task on MAG. The figures at the bottom show the results for the Paper-Discipline classification task on MAG. KG-TOSA enables all methods to reduce memory, time and accuracy, even with KG-TOSA’s preprocessing time in yellow

2 TRAINING CONVERGENCE RATE RESULTS

Figure 4 shows the convergence rate of RGCN (50 epochs) on the six node classification tasks.

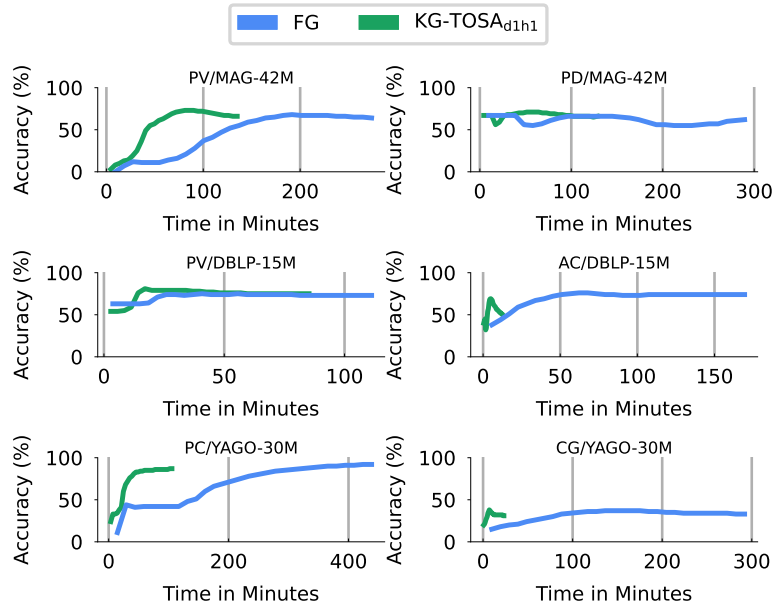


Figure 4: Convergence rate analysis. RGCN while training the six NC tasks using the full graph (FG) and KG' extracted by KG-TOSA. KG-TOSA enables the GNN method to generalize faster with comparable accuracy.