

# 1 Hyperparameter Configurations

Table 1: The hyperparameters providing best accuracy for each baseline model on all datasets. These parameters are listed as (# of layers / # of neurons used in hidden layers / learning-rate / optimizer’s weight-decay/\*additional-details). The same parameters were used in Node2vec whose additional details include (walk-length:20, context-size:10,walk-per-node:1,negative-sample=5)

Framework	Dataset	Acc.	Configuration
GAT	CiteSeer	74.0±0.7	2 / 64 / 0.0005 / 0.005 / attention-heads:8
	Cora	86.0±0.7	2 / 128 / 0.0005 / 0.005 / attention-heads:8
	PubMed	86.4 ±0.3	3 / 64 / 0.01 / 0.00005 / attention-heads:8
	Co-P	95.7 ±0.1	3 / 64 / 0.01 / 0.00005 / attention-heads:8
	Co-CS	92.2 ±0.2	3 / 64 / 0.01 / 0.00005 / attention-heads:8
	Cora Full	64.8 ±0.5	2 / 128 / 0.005 / 0.00005 / attention-heads:8
	Amz-P	93.7±0.6	2 / 128 / 0.005 / 0.00005 / attention-heads:8
	Amz-C	90.0±0.7	2 / 128 / 0.005 / 0.00005 / attention-heads:8
GCN	CiteSeer	74.0±0.6	2 / 128 / 0.0005 / 0.05 / —
	Cora	85.0±0.7	2 / 128 / 0.01 / 0.0005 / —
	PubMed	87.2 ± 0.2	2 / 128 / 0.01 / 0.0005 / —
	Co-P	95.9 ±0.1	2 / 64 / 0.01 / 0.0005 / —
	Co-CS	93.1±0.2	2 / 128 / 0.01 / 0.0005 / —
	Cora Full	67.3 ±0.5	2 / 128 / 0.01 / 0.0005 / —
	Amz-P	93.5±0.2	2 / 128 / 0.01 / 0.0005 / —
	Amz-C	89.4±0.5	2 / 128 / 0.01 / 0.0005 / —
GraphSAGE	CiteSeer	73.7 ±0.7	2 / 64 / 0.0005 / 0.005 / —
	Cora	86.0±0.7	2 / 64 / 0.0005 / 0.005 / —
	PubMed	86.2 ±0.3	2 / 64 / 0.05 / 0.0005 / —
	Co-P	95.4 ±0.2	2 / 64 / 0.005 / 0.0005 / —
	Co-CS	93.4±0.2	2 / 64 / 0.001 / 0.0005 / —
	Cora Full	64.9 ±0.3	3 / 128 / 0.005 / 0.0005 / —
	Amz-P	94.4 ±0.5	2 / 64 / 0.005 / 0.0005 / —
	Amz-C	90.2 ±0.5	3 / 128 / 0.005 / 0.0005 / —
MLP	CiteSeer	68.5±0.8	3 / 128 / 0.005 / 0.05 / —
	Cora	69.3±1.2	2 / 64 / 0.005 / 0.0005 / —
	PubMed	86.0 ±0.3	3 / 128 / 0.005 / 0.0005 / —
	Co-P	94.9 ±0.1	3 / 64 / 0.005 / 0.0005 / —
	Co-CS	92.7 ±0.1	3 / 128 / 0.005 / 0.0005 / —
	Cora Full	54.5 ±0.5	3 / 128 / 0.005 / 0.0005 / —
	Amz-C	83.1 ±0.2	3 / 128 / 0.005 / 0.0005 / —
	Amz-P	90.2±0.4	3 / 128 / 0.005 / 0.0005 / —
Node2vec	*	*	1 / 64 / 0.005 / — / —
NODE-SELECT	CiteSeer	73.9±1.0	3 / — / 0.01 / 0.05 / depth:2
	Cora	85.8±0.6	3 / — / 0.005 / 0.05 / depth:2
	PubMed	88.1 ±0.3	8 / — / 0.05 / 0.00005 / depth:1
	Co-P	96.5±0.1	10 / — / 0.005 / 0.00005 / depth:1
	Co-CS	94.8±0.1	8 / — / 0.005 / 0.00005 / depth:1
	Cora Full	67.3 ±0.6	8 / — / 0.005 / 0.00005 / depth:1
	Amz-C	89.6±0.4	25 / — / 0.001 / 0.00005 / depth:1
	Amz-P	94.4±0.3	25 / — / 0.001 / 0.05 / depth:1