HYPERPARAMETER SETTING

The hyperparameter settings for baselines are described as follows:

- DeepWalk. $embedding\ dimension = 128$. For node classification, $walk\ length = 80$, $window\ size = 10$, $walks\ per\ node = 40$. For link prediction and network reconstruction, $walk\ length = 40$, $walks\ per\ node = 10$, $window\ size = 5$.
- node2vec. $embedding\ dimension = 128$. For node classification, $walk\ length = 80$, $window\ size = 10$, $walks\ per\ node = 40$. For link prediction and network reconstruction, $walk\ length = 40$, $walks\ per\ node = 10$, $window\ size = 5$. For Cora, $p = 0.25$, $q = 1$. For Citeseer, $p = 4$, $q = 0.25$. For BlogCatalog, $p = 0.25$, $q = 0.25$. For PPI, $p = 4$, $q = 1$. For Amazon, $p = 2$, $q = 1$. For HepTh, $p = 4$, $q = 1$.
- HOPE. $embedding\ dimension = 128$. We use RPR for constructing similarity matrices. For node classification, we set $\alpha = 0.5$. For link prediction and network reconstruction, we set $\alpha = 0.2$.
- SDNE. $embedding\ dimension = 128$. For node classification, $\alpha = 10^{-5}$, $\beta = 10$. For link prediction and network reconstruction, $\alpha = 10^{-5}$, $\beta = 5$.
- ProNE. $embedding\ dimension = 128$, $step = 10$, $\theta = 0.5$, $\mu = 0.2$.
- AttentionWalk. $embedding\ dimension = 128$, $\beta = 0.5$, $C = 5$.
- GAT. $dropout\ rate = 0.6$, $\lambda = 0.0005$, $K = 8$, $number\ of\ hidden\ units = 8$.
- LINE. $embedding\ dimension = 128$. The $number\ of\ negative\ samples = 5$.
- struc2vec. $walk\ length = 10$, $walks\ per\ node = 40$, $embedding\ dimension = 128$.
- DRNE. $k = 16$, $\lambda = 0.5$, $S = 100$.
- RiWalk. $walk\ length = 80$, $window\ size = 10$, $walks\ per\ node = 10$, $neighborhood\ size = 4$, $embedding\ dimension = 128$.
- Role2Vec. $walk\ length = 80$, $window\ size = 5$, $walks\ per\ node = 10$, $P = 1$, $Q = 1$, $embedding\ dimension = 128$.