

Table 3: *(Deep) Neural network methods.* Input HG: Hom/Het stand for homogeneous/heterogeneous, (N)U for (non-)uniform, MC for multi-channel, and D for dynamic. Learning Task: Class stands for Classification, Clus for Clustering, LP for Link Prediction, Recomm for Recommendation, and Regr for Regression.

Method	Input HG	Learning approach							Learning Task	Venue	Code (github.com/)
		Message-passing	Skip-connection	Attention	Gated updates	Spectral	Random walk	Encoder-based			
DHNE [Tu <i>et al.</i> , 2018]	Het, U							✓	Class, LP	AAAI	tadpole/DHNE
HHNE [Baytas <i>et al.</i> , 2018]	Het, NU	✓	✓						LP	ICDM	illidanlab/HHNE
HpLapGCN [Fu <i>et al.</i> , 2019]	Hom, NU					✓			Class	Neurocomputing	-
HGNN [Feng <i>et al.</i> , 2019]	Hom, NU	✓	✓						Class	AAAI	iMoonLab/HGNN
HyperGCN [Yadati <i>et al.</i> , 2019]	Hom, NU	✓							Class	NeurIPS	malllabiisc/HyperGCN
Hyper-gram [Huang <i>et al.</i> , 2019]	Het, U						✓		LP	CIKM	HKUST-KnowComp/HPHG
Event2Vec [Chu <i>et al.</i> , 2019]	Het, NU							✓	Class, Clus	ICDM	fuguoji/Event2vec
DHGNN [Jiang <i>et al.</i> , 2019]	Hom, NU	✓		✓					Class	IJCAI	iMoonLab/DHGNN
DHE [Payne, 2019]	Hom, NU, MC						✓	✓	Class	NeurIPS	Josh-Payne/deep-hyperedges
NHNE [Huang <i>et al.</i> , 2020]	Hom, NU, MC				✓		✓		Class, LP	TOIS	jeffhj/NHNE
NHP [Yadati <i>et al.</i> , 2020]	Het, NU	✓							LP	CIKM	-
HyperRec [Wang <i>et al.</i> , 2020]	Het, NU, D	✓	✓	✓	✓				Recomm	SIGIR	-
SHCN [Chen <i>et al.</i> , 2020c]	Het, U	✓							LP, Recomm	TOIS	-
MGCN [Chen <i>et al.</i> , 2020b]	Hom, NU	✓	✓	✓					LP	KDD	-
Hyper-SAGNN [Zhang <i>et al.</i> , 2020]	Het, NU			✓			✓	✓	LP	ICLR	ma-compbio/Hyper-SAGNN
HGC-RNN [Yi and Park, 2020]	Hom, NU, D	✓	✓	✓	✓				Regr	KDD	-
DHCF [Ji <i>et al.</i> , 2020]	Hom, NU, MC	✓	✓						Recomm	KDD	-
AdaHGNN [Wu <i>et al.</i> , 2020]	Hom, NU	✓							Class	MM	-
SHARE [Wang <i>et al.</i> , 2021]	Hom, NU	✓			✓				Recomm	ICDM	-
MHCN [Yu <i>et al.</i> , 2021]	Het, NU, MC	✓	✓	✓					Recomm	WWW	Coder-Yu/QRec
DHCN [Xia <i>et al.</i> , 2021b]	Hom, NU	✓	✓	✓					Recomm	AAAI	xiaxin1998/DHCN
DualHGCN [Xue <i>et al.</i> , 2021]	Hom, NU, MC	✓	✓						Class, LP	WWW	xuehansheng/DualHGCN
HNN [Sun <i>et al.</i> , 2021b]	Hom, NU			✓					LP	WWW	-
HGWNN [Nong <i>et al.</i> , 2021]	Hom, NU					✓			Class	Neurocomputing	-
HCHA [Bai <i>et al.</i> , 2021]	Hom, NU	✓	✓	✓					Class	Pattern Recognition	-
H2SeqRec [Li <i>et al.</i> , 2021]	Het, NU, MC, R	✓		✓					Recomm	CIKM	Abigale001/h2seqrec
HeteHG-VAE [Fan <i>et al.</i> , 2021]	Het, NU							✓	LP	PAMI	haoyfan/HeteHG-VAE
HWNN [Sun <i>et al.</i> , 2021a]	Het, NU, MC					✓			Class	WSDM	-
DualHGNN [Wu <i>et al.</i> , 2021a]	Hom, NU, MC	✓	✓	✓					Class	J Kno Sys	-
HHGR [Zhang <i>et al.</i> , 2021]	Hom, NU	✓	✓						Recomm	CIKM	0411tony/HHGR
[Xia <i>et al.</i> , 2021a]	Het, NU, D	✓	✓	✓	✓				Regr	J IM	-