Datasets	#nodes	#edges	#view	#label
Last.fm	10,197	1,325,367	12	11
Flickr	6,163	378,547	5	10

Table 1: Summary of Flickr and Last.fm data

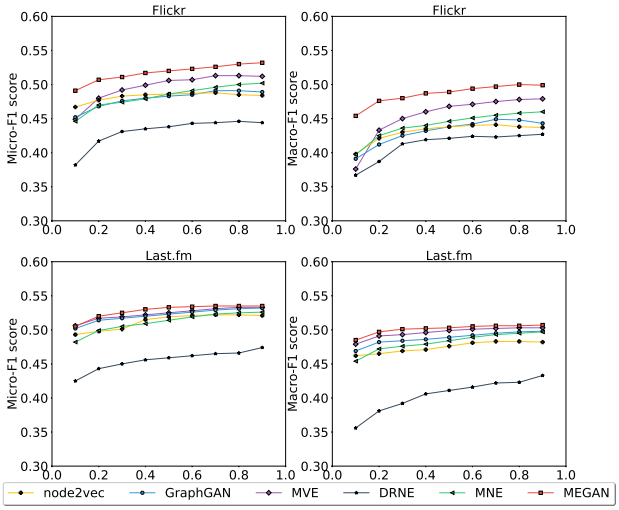


Figure 3: Performance comparison of node classification tasks on Flickr and Last.fm as a function of the fraction of nodes used for training the node classifier

4.2 Experiments

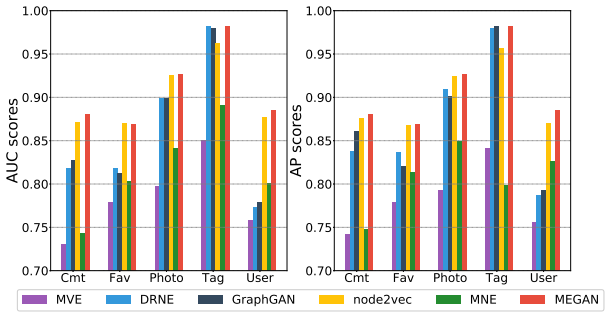
We compare MEGAN with the state-of-the-art single view as well as multi-view network embedding methods. To apply single-view method, we generate a single-view network from the multi-view network by placing an edge between a pair of nodes if they are linked by an edge in at least one of the views. The single view methods included in the comparison are:

- node2vec [Grover and Leskovec, 2016], a single view network embedding method, which learns network embedding that maximizes the likelihood of preserving network neighborhoods of nodes.
- GraphGAN [Wang *et al.*, 2018], which is a variant of GAN for learning single-view network embedding.
- DRNE [Tu *et al.*, 2018], which constructs utilizes an LSTM to recursively aggregate the representations of node neighborhoods.

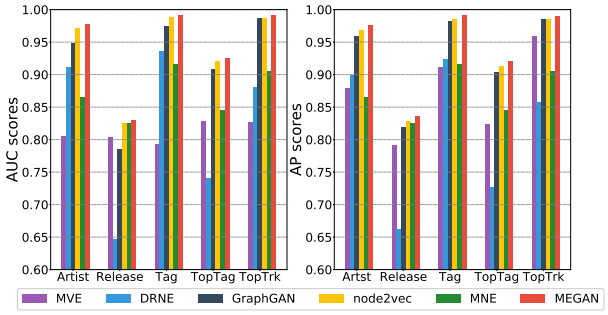
The multi-view methods included in the comparison are:

- MNE [Zhang *et al.*, 2018a], which jointly learns view-specific embeddings and an embedding that is common to all views with the latter providing a conduit for sharing information across views.
- MVE [Qu *et al.*, 2017], which constructs a multi-view network embedding as a weighted combination of the constituent single view embeddings.

In each case, the hyperparameters were set according to the suggestions of the authors of the respective methods. The embedding dimension was set to 128 in all of our experiments.



(a) Flickr



(b) Last.fm

Figure 4: Performance comparison of link prediction tasks

4.3 Results

Node Classification

We report results of experiments using the node representations produced by each of the network embedding methods included in our comparison on the transductive node classification task. In each case, the network embedding is learned in an unsupervised fashion from the available multi-view network data without making use of the node labels. We randomly select x fraction of the nodes as training data (with the associated node labels added) and the remaining $(1 - x)$ fraction of the nodes for testing. We run the experiments for different choices of $x \in \{0.1, 0.2, \ldots, 0.9\}$. In each case, we train a standard one-versus-rest L2-regularized logistic regression classifier on the training data and evaluate its performance on the test data. We report the performance of the node classification using the Micro-F1 and Macro-F1 scores averaged over the 10 runs for each choice of x in Fig. 3.

Our experiments results show that: **(i)** The single view methods, GraphGAN and Node2vec achieve comparable performance; **(ii)** Multi-view methods, MVE and MVGAN outperform the single-view methods. **(iii)** MEGAN outperforms all of the other methods on both data sets. These results further show that multi-view methods that construct embeddings that incorporate complementary information from all of the views outperform those that do not. GAN framework offers the additional advantage of robustness and improved generalization that comes from the use of adversarial samples.

Link Prediction

We report results of experiments using the node representations produced by each of the network embedding methods included in our comparison on the link prediction task. Given