

# AWESOME-NETWORK-EMBEDDING

Also called network representation learning, graph embedding, knowledge embedding, etc.

The task is to learn the representations of the vertices from a given network.

***Contributions Welcome :)***

## PAPER REFERENCES WITH THE IMPLEMENTATION(S)

### **GraphSAGE**

Inductive Representation Learning on Large Graphs, NIPS'17

[\(arxiv\)](#) [\(Python\)](#)

### **ICE**

ICE: Item Concept Embedding via Textual Information, SIGIR'17

[\(demo\)](#) [\(code\)](#)

### **struc2vec**

struc2vec: Learning Node Representations from Structural Identity, KDD'17

[\(arxiv\)](#) [\(Python\)](#)

### **metapath2vec**

metapath2vec: Scalable Representation Learning for Heterogeneous Networks, KDD'17

[\(paper\)](#) [\(project website\)](#)

## **GCN**

Semi-Supervised Classification with Graph Convolutional Networks, ICLR'17

(arxiv) (Python Tensorflow)

## **GAE**

Variational Graph Auto-Encoders, arxiv

(arxiv) (Python Tensorflow)

## **CANE**

CANE: Context-Aware Network Embedding for Relation Modeling, ACL'17

(paper) (Python)

## **TransNet**

TransNet: Translation-Based Network Representation Learning for Social Relation Extraction, IJCAI'17

(Python Tensorflow)

## **ConvE**

Convolutional 2D Knowledge Graph Embeddings, arxiv

(source)

## **node2vec**

node2vec: Scalable Feature Learning for Networks, KDD'16

(arxiv) (Python)

(Python-2)

## **DNGR**

Deep Neural Networks for Learning Graph Representations, AAAI'16

(Matlab) (Python Keras)

## **HoIE**

Holographic Embeddings of Knowledge Graphs, AAAI'16

(Python-sklearn) (Python-sklearn2)

## **ComplEx**

Complex Embeddings for Simple Link Prediction, ICML'16

(arxiv) (Python)

## **MMDW**

Max-Margin DeepWalk: Discriminative Learning of Network Representation, IJCAI'16

(paper) (Java)

## **planetoid**

Revisiting Semi-supervised Learning with Graph Embeddings, ICML'16

(arxiv) (Python)

## **LINE**

LINE: Large-scale information network embedding, WWW'15

(arxiv) (C++)

## **PTE**

PTE: Predictive Text Embedding through Large-scale Heterogeneous Text Networks, KDD'15

(C++)

## **GraRep**

Grarep: Learning graph representations with global structural information, CIKM'15

(Matlab)

## **KB2E**

Learning Entity and Relation Embeddings for Knowledge Graph Completion, AAAI'15

(paper) (C++) (faster version)

## **TADW**

Network Representation Learning with Rich Text Information, IJCAI'15

(paper) (Matlab)

## **DeepWalk**

DeepWalk: Online Learning of Social Representations, KDD'14

(arxiv) (Python)

## **GEM**

Graph Embedding Techniques, Applications, and Performance: A Survey

(arxiv) (MIX)

# PAPER REFERENCES

## **Graph2Gauss,**

Deep Gaussian Embedding of Attributed Graphs: Unsupervised Inductive Learning via Ranking, arxiv  
(Bonus Animation)

Scalable Graph Embedding for Asymmetric Proximity, AAAI'17

Structural Deep Network Embedding, KDD'16

Query-based Music Recommendations via Preference Embedding, RecSys'16

Tri-party deep network representation, IJCAI'16

Heterogeneous Network Embedding via Deep Architectures, KDD'15

Neural Word Embedding As Implicit Matrix Factorization, NIPS'14

Distributed large-scale natural graph factorization, WWW'13

From Node Embedding To Community Embedding, arxiv

Walklets: Multiscale Graph Embeddings for Interpretable Network Classification, arxiv

Comprehend DeepWalk as Matrix Factorization, arxiv

## RELATED GITHUB LINKS

[Must-read papers on NRL/NE.](#)

[Network Embedding Resources](#)

[2vec-type embedding models](#)