

Chapter 6

Conclusions



In this book we have examined *social and information networks*, and their analysis. Specifically, we considered the following aspects.

1. A fundamental problem in *data analysis* is representation. So, *representation learning* is the most important step in dealing with almost any large-scale practical problem.
2. In this book we have examined in detail different schemes for *network representation learning (NRL)*.
3. There was more emphasis on *social and information networks* in the book. However, the schemes discussed are generic and can be applied to any other complex network.
4. It is important to note that data in the form of networks is either explicit or implicit where the networks are typically represented as graphs.
5. The importance of *networks* in dealing with any application need not be over emphasized. They are so important that the schemes considered in the book are useful in both implicit and explicit cases.
6. The basic problem examined in detail in the book is embedding network entities. Both node and graph embedding schemes are examined in detail. Further, state-of-the-art embedding schemes are compared using several benchmark datasets.
7. The background required in terms of graphs, adjacency matrices, matrix factorization, random walks, representing words as vectors, neural networks, and deep learning schemes are discussed in detail in Chaps. 2 and 3.
8. Evaluation of various embedding schemes is typically done with the help of downstream *ML* tasks including classification, community detection, link prediction and visualization. We have explained these *ML* tasks in Chap. 2.

9. Different schemes for embedding nodes in a network are examined in Chap. 4. In Chap. 5, various schemes for embedding an entire graph are considered.
10. A brief summary of the importance of networks and their representations is done in the current chapter with a view that networks will play an important role, in every practical application, in the near future.