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Weighted estimation of information diffusion probabilities for independent cascade model

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Abstract:

In recent years, social networks have become popular among Internet users, and various studies have been performed on analysis of such networks. One of the important issues in analyzing social networks is information diffusion analysis. In this context, users' behavior is assumed to be influenced by other social network users. Several models have been designed to simulate and analyze how information is disseminated in social networks. In this paper, we study the problem of learning the diffusion probabilities for the independent cascade model. We first outline the importance of the subject, and then we propose a method to estimate diffusion probabilities. In this method, we assign a weight to each individual diffusion sample of each link in the network based on its parameters. We propose two weighting schemes to consider the different effects of diffusion samples. Then, we evaluate our method for learning diffusion probabilities with the help of several datasets and present the results. Also, the method presented in this paper is compared with other methods in terms of mean absolute error and training time.

Published in: 2018 4th International Conference on Web Research (ICWR)

Date of Conference: 25-26 April 2018

DOI: 10.1109/ICWR.2018.8387239

Date Added to IEEE Xplore: 18 June 2018

Publisher: IEEE

ISBN Information:

Conference Location: Tehran, Iran, Iran

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I. Introduction

In recent years, online social networks have become a major source of information. The growing importance of social networks is the result of huge amount of data they produce. Users' actions in a social network like sharing a content, retweet, like and comment produce a large amount of information. This information can be used and analyzed due to the understanding of user behavior. Several problems are studied in this area like community detection, link prediction or information diffusion. Study of information diffusion aims at studying how a content propagates in the networks via user interactions.

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