

Graph Convolutional Networks with Attention Mechanism for learning user sentiments and enhancing Social Recommendation

Team Members

Hemanth N 2019503519

Paavendhan K S 2019503031

Sai Soundharya Lakshmi B 2019503554

Project Guide - Prof. Dr. Jayashree Padmanabhan

ABSTRACT

With the rapid growth of the information era, digital users devote an average of 150 minutes every day on social networks. Over the past several years, the number of social media users has increased by more than 4 billion, as per the survey reports. As a result, relevant businesses use social media to advertise their products and keep in touch with customers. Therefore, efforts to construct GNN-based social recommendation frameworks to collect interactions concurrently and understand user emotions are motivated by recent breakthroughs in Graph Convolutional Neural Networks (GCNs). Social suggestion is not as effective as one may anticipate. Social recommender systems in use now solely focus on the homophily in social networks and ignore the inherent issues with interpersonal relationships. In our proposed work, we aim to develop a deep adversarial framework based on GCNs to address the challenges of social recommendation, that include, (i) majority of users only have a very limited number of neighbors in social networks and can hardly benefit from social relations; (ii) Social relations are noisy but they are indiscriminately used; (iii) Social relations are assumed to be universally applicable to multiple scenarios while they are actually multi-faceted and show heterogeneous strengths in different scenarios. For (i) and (ii), we aim to develop a GCN-based autoencoder to augment the relation data by encoding high-order and complex connectivity patterns. The third issue as mentioned will then be addressed by using the relation attention technique to assign consistent relations with high relevance components for aggregate. In order to perform sentiment analysis on the extracted users, we aim to implement an LSTM-based dependency parsing and a graph convolutional network. We also aim to take into account the significance of syntactic information in the task of processing social media information, both for recommendation and sentiment analysis.