COSE474-2021F: Final Project Proposal
"GNN based Product Recommendation"

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Abstract

This project is about recommending product using NLP. Based on some text finding out similar style reviews. And recommend what reviewers bought or what reviewers are expected to buy. We will use text similarity for finding out similar style reviews and graph convolutional matrix completion for expecting what reviewers will buy.

1. Introduction

In the web environment, we would see a commercial banner with the product which we have previously viewed. This commercial banner uses statistical analysis on specifically what interests us (or, that which the network infers interests us). Since we thought product relationships could be well represented by a graph, we may be able to improve product recommendation through the use of Graph Neural Networks.

2. Problem definition & challenges

I would like to be shown a useful commercial banner that is precisely what I want, or at least close to what I want
This might require text reviews of a product that I never bought, GNN model, and NLP processed data (or model)

3. Related Works

Graph Convolutional Matrix Completion (van den Berg et al., 2017):
The review node in our graph has the same role as the user node, it will connect each node under the correlation with respect to features and preferences. Through the GNN process, It would be able to predict the rating of an item that the user did not rate.

Text similarity :
Input text will be analyzed and used for finding the most similar review in the graph. After that graph convolutional matrix completion will find out the related review texts.

4. Datasets

Sampled Review set of Amazon
Review set from IMDb (IDK)

5. State-of-the-art methods and baselines

There are many recommendation system. But as far as we know, text based recommendation system without user record does not exist.

6. Schedule & Roles

6.1. Schedule

October: Modeling and formulation
November: Tuning
December: Analysis

6.2. Role

T. Wesley Bailey: modeling, experiment
Hanjin Choi: modeling, experiment
Ju Hwan Yeon: modeling, experiment
Dong Hwan Kim: modeling, experiment

References

van den Berg, R., Kipf, T. N., and Welling, M. Graph convolutional matrix completion, 2017.