Recommendation Ranking based on online comment mining and sentiment analysis

Wangzhihui Mei, Hongyi Huang, Liting Lv, Yueyue He

CCNU-UOW JI

maywzh@gmail.com

December 4, 2019

Overview

Introduction

The Recommendation Ranking is the process of generating business content for users depend on user's interests and hobbies. We are introducting an approach that using online comment mining and sentiment analysis to for its implementation.

Background

With the rapid increase in online review content, the consumer experience of users has become tangible. The development of sentiment analysis technology and text mining technology has greatly enhanced the ability of merchants to perceive customer needs and provide timely feedback.

Problems

- which reviews are useful?
- how can we combine useful online reviews with classic research models?

Methodology

- Data pre-procession
- Data Helpfulness analysis
- Sentiment Analysis

Data pre-procession

A large number of online reviews are text, and text is unstructured content. If modeling is needed, it needs to be converted into structured, analyzable, and quantifiable content. Regarding data collection and preprocessing, we first conduct research, crawling, thesaurus construction, and sentiment analysis, and then transform it into structured data and input it into the second and third modules.

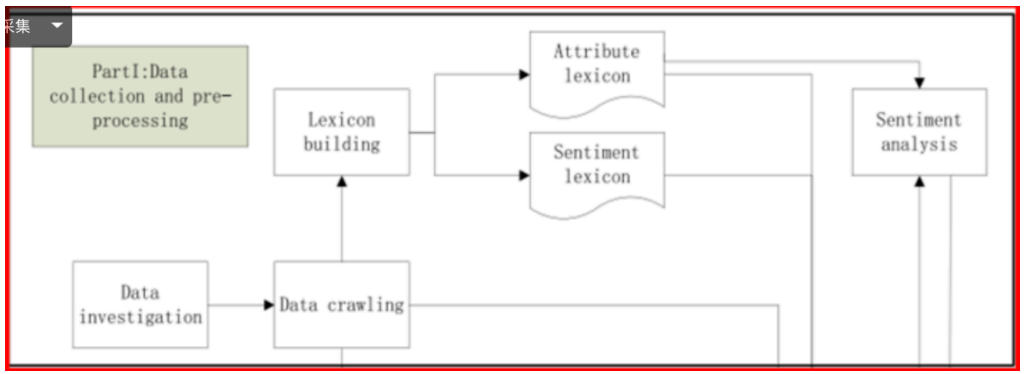

Figure: Preprocess

Data Helpfulness analysis

The unevenness of the quality of reviews seriously interferes with the accuracy and credibility of demand mining. How to find useful comments that can accurately describe user needs is a prerequisite guarantee for improving the effectiveness of demand acquisition technology. Aiming at this problem, this article proposes a method for analyzing the usefulness of reviews based on complex networks, using the semantic relationship between reviews to analyze the reviews from a macro perspective.

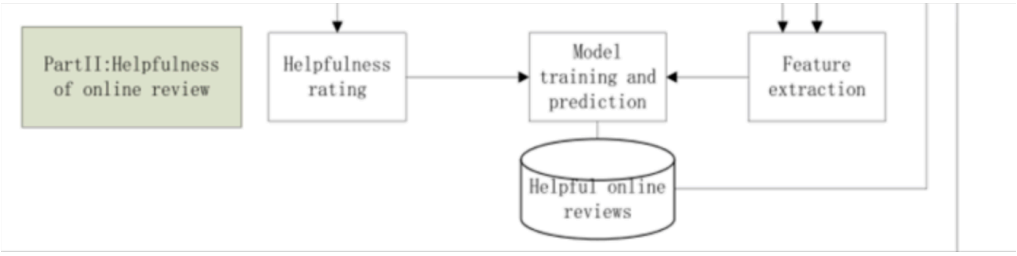

Figure: Data Helpfulness Process

Sentiment Analysis

How to mine evaluation objects that have appeared in the text. There are four main methods, namely noun mining, association of evaluation words and objects, supervised learning methods, and topic models.

Figure: 5 Factors of Sentiment Analysis

Reference I

[1] Da Cao, Xiangnan He, Lianhai Miao, Yahui An, Chao Yang, and Richang Hong. Attentive group recommendation. In *The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval*, pages 645–654. ACM, 2018.

[2] Paul Covington, Jay Adams, and Emre Sargin. Deep neural networks for youtube recommendations. In *Proceedings of the 10th ACM conference on recommender systems*, pages 191–198. ACM, 2016.

[3] Ali Mamdouh Elkahky, Yang Song, and Xiaodong He. A multi-view deep learning approach for cross domain user modeling in recommendation systems. In *Proceedings of the 24th International Conference on World*

Reference II

[4] Ronen Feldman. Techniques and applications for sentiment analysis. *Commun. ACM*, 56(4):82–89, 2013.

[5] Abdul Majid, Ling Chen, Gencai Chen, Hamid Turab Mirza, Ibrar Hussain, and John Woodward. A context-aware personalized travel recommendation system based on geotagged social media data mining. *International Journal of Geographical Information Science*, 27(4):662–684, 2013.

[6] Ankur P Parikh, Oscar Täckström, Dipanjan Das, and Jakob Uszkoreit. A decomposable attention model for natural language inference. *arXiv preprint arXiv:1606.01933*, 2016.

[7] Lin Yang, Patrick Z Dong, and Baohua Sun. Natural language processing using a cnn based integrated circuit, September 25 2018. US Patent 10,083,171.

[8] Wenpeng Yin, Hinrich Schütze, Bing Xiang, and Bowen Zhou. Abcnn: Attention-based convolutional neural network for modeling sentence pairs. *Transactions of the Association for Computational Linguistics*, 4:259–272, 2016.

[9] Tom Young, Devamanyu Hazarika, Soujanya Poria, and Erik Cambria. Recent trends in deep learning based natural language processing. *ieee Computational intelligenCe magazine*, 13(3):55–75, 2018.

[10] Fei Yu, An Zeng, Sébastien Gillard, and Matúš Medo. Network-based recommendation algorithms: A review. *Physica A: Statistical Mechanics and its Applications*, 452:192–208, 2016.

The End