

A Survey on Opinion mining Techniques on Online Reviews

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Abstract: Today's world is a world of Internet. All work can be done with the help of Internet. Internet has become a new source of entertainment, education, communication and shopping etc. Sentiment Analysis is a subfield of Natural Language Processing concerned with the determination of opinion about a product or topic. Sentiment Analysis also called Opinion Mining, which collects and examines opinions about the product made in blog posts, comments or reviews. Sentiment Analysis is a rapidly growing area. There are numerous e-commerce sites available on Internet which allows users to give feedback about specific products. Users post their feedbacks as reviews in the websites which is helpful for companies and other users. These reviews are analyzed to determine the opinion of the users about the objects. It is impossible to manually analyze those reviews. To overcome the problem, many algorithms are proposed for mining the opinions of the users. Algorithms enable us to extract opinions from the Internet and predict customer's preferences. This paper presents various techniques used for opinion classification by different authors and its accuracy in the classification of opinions.

Index Terms-- Accuracy, Algorithms, Opinion, Opinion Mining, Reviews, Techniques, Sentiment Analysis.

I. INTRODUCTION

Opinion Mining is the field of study that analyzes people's opinion, sentiments, evaluations, attitude and emotion from written text. Opinion Mining is one of the most active research area in Natural Language Processing. Sentiment Analysis defines a process of extracting, identifying, analyzing and characterizing the sentiments or opinions in the form of textual information using Machine Learning, Natural Language Processing or Statistics. Today many companies are using Sentiment Analysis as the basis for developing their marketing strategies. Opinion Mining is the process of analyzing the text about a topic written in natural language and classify them as positive, negative or neutral based on the human sentiments, emotions, opinions expressed in it.

II. LEVELS OF OPINION MINING

Opinion Mining can be done in three levels.

Document Level - In this, the whole document is considered as a single entity and the analysis is applied on the whole document and the result is summarized.

Sentence Level - In this, every sentence in the document is considered as an entity and the analysis is applied on individual sentence and the result is summarized to get the overall result of the document.

Feature Level - In this, object features are extracted from the comment and determines whether the stated opinion is positive or negative. It then groups the feature synonyms and produces a summary report.

III. COMPONENTS OF OPINION MINING

The three main components of opinion mining are,

Opinion Holder - Person who expresses the opinion.

Opinion Object - Object on which opinion is given.

Opinion Orientation - Determines whether the opinion is positive, negative or neutral.

For example, "The picture quality of this mobile is good". In this review, the user who has written this review is the opinion holder. The opinion object is the "picture quality of the mobile" and the opinion is "good" which is a positive orientation.

IV. STRUCTURAL DESIGN OF OPINION MINING:

The opinion mining process involves three steps.

Opinion Retrieval - The process collects reviews about products from different sources and stores in the review database.

Opinion Classification - Opinion Classification is the key step in opinion analysis. Using sample reviews, the classifiers are trained and the trained classifier model is used to predict the category of new reviews.

Opinion Summarization - It sums up the overall positive and negative opinion expressed in the document. It involves the following steps,

- Extract all opinion terms.
- Classify the opinion terms as positive or negative.

If the number of positive terms exceeds the number of negative terms, the document is considered as positive opinion. If the reverse holds, the document is considered as negative opinion.

V. OPINION TYPES

I. Regular and Comparative Opinion

Regular Opinion - A regular opinion is often referred simply as an opinion in the literature and it has two subtypes.

- Direct Opinion
- In direct Opinion

(* **Direct Opinion** - A direct opinion refers to an opinion expressed directly on an entity or an entity aspect. For example, "The sound quality of the mobile phone is good".

(* **In direct Opinion** - It refers to an opinion that is expressed indirectly on an entity or an entity aspect. For example, "After taking this medicine, my joints felt worse"

Comparative opinion - A comparative opinion expresses a relation of similarities or differences between two or more entities. For example, the sentences, "Boost tastes better than Horlicks" and "Boost tastes the best" express two comparative opinions.

II. Explicit and Implicit Opinion

Explicit opinion - An explicit opinion is a subjective statement that gives a regular or comparative opinion, e.g., "Coke tastes great," and "Coke tastes better than Pepsi."

Implicit (or implied) opinion - An implicit opinion is an objective statement that implies a regular or comparative opinion. Such an objective statement usually expresses a desirable or undesirable fact, e.g., "The sound quality of Nokia mobiles is longer than Samsung mobiles."

VI. OBJECTIVE AND SUBJECTIVE SENTENCE

An objective sentence presents some factual information about the world, while a subjective sentence expresses some personal feelings, views, or beliefs. An example of objective sentence is "Smart Phone is an Apple product." An example subjective sentence is "I like this mobile."

VII. SURVEY ON OPINION MINING TECHNIQUES AND ITS ACCURACY

| S.No. | Month and Year of Publication | Authors | Title | Techniques used for Opinion Mining | Accuracy Produced |
|-------|-------------------------------|---|---|---|-------------------|
| 1. | July, 2013 | Norlela Samsudin, Mazidah Puteh, Abdul Razah Hamdan, Mind Zakree, Ahmad Nazri | Immune Based Feature Selection for Opinion Mining | Naive Bayes K Nearest Neighbor Support Vector Machine | 91% 79% 92% |
| 2. | January, 2014 | Gaurangi Patel, Varsha Galande, Vedant Kekan, Kalpana Dange | Sentiment Analysis using SVM | SVM | N/A |
| 3. | February, 2014 | Pravesh kumar Singh, Mohd Shahid Husain | Methodological Study of Opinion Mining and Sentiment Analysis | Naive Bayes Multi Layer Perceptron | 76% 81% |

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|-----|-----------------|--|--|---|--------------------------|
| | | | Techniques | Support Vector Machine | 81% |
| 4. | March, 2014 | R.Vinoth, Anjana Jayachandran, M.Balaji, R.Srinivâsan | A Hybrid Text Classification Approach using KNN and SVM | NN-SVM | N/A |
| 5. | April, 2014 | Gayathri Deepthi, K. Sashi Rekha | Opinion Mining and Classification of User Reviews in Social Media | Naive Bayes | 84% |
| 6. | April, 2014 | Nidhi R. Sharma, Prof. Vidya D Chitre | Opinion Mining, Analysis and its Challenges | Expectation Maximization based on Naive Bayes | N/A |
| 7. | May, 2014 | Richa Sharma, Shweta Nigam, Rekha Jain | Mining of Product Reviews at Aspect Level | Dictionary based Approach | 67% |
| 8. | October, 2014 | Vaishali Mehta, Prof. Ritesh K Shah | Approaches of Opinion Mining and Performance Analysis: A Survey | Naive Bayes Genetic Algorithm Naive Bayes+Genetic Algorithm | 91% 91% 93% |
| 9. | March, 2015 | Md.Safdar, Dr.Md.Jawed Ikbal Khan, Md. Daiyan | Mining Explicit Features for Opinion mining of Customer Reviews | Support Vector Machine+ Naïve Bayes | N/A |
| 10. | March, 2015 | Poobana.S, Sashi Rekha.K | Opinion Mining from Text Reviews using Machine Learning Algorithm | Support Vector Machine+Naïve Bayes | N/A |
| 11. | April, 2015 | Aamera Z.H.Khan, Dr.Mohammed Atique, Dr.V.M.Thakare | Sentiment Analysis using SVM | Support Vector Machine | N/A |
| 12. | June, 2015 | Gautami Tripathi, Naganna.S | Feature Selection and Classification approach for Sentiment Analysis | Support Vector Machine | 85% |
| 13. | August, 2015 | Gagandeep Singh, Kamaljeet Kaur Mangat | Performance Analysis of Supervised Learning Methodologies for Sentiment Analysis of Tweets | Naive Bayes Maximum Entropy Support Vector Machine K Nearest Neighbour | 71% 75% 81% 85% |
| 14. | August, 2015 | Dola Saha, Prajna Paramita Ray | Sentiment Analysis on Tweet Dataset using Datamining Techniques | K-means | 77% |
| 15. | September, 2015 | Preety, Sunny Dahiya | Sentiment Analysis using Support Vector Machine And Naïve Bayes Algorithm | Naïve Bayes Support Vector Machine Naïve Bayes+K Means | 80% 84% 89% |
| 16. | 2015 | K. Uma Maheswari, S.P. Raja Mohana, G. Aishwarya Lakshmi | Opinion Mining using Hybrid Methods | Support Vector Machine Support Vector Machine+Particle Swarm Optimization | 68% 82% |
| 17. | 2015 | Chetashri Bhadane, Hardi Dalal, Heenal Doshi | Sentiment Analysis: Measuring Opinions | Support Vector Machine | 78% |
| 18. | February, 2016 | A.G.Dongre, Sushmit Dharurkar, Swanand Nagarkar, Rahul Shukla, Vivek Pandita | A Survey on Aspect based Opinion Mining from Product Reviews | Syntactic Based Approach – SentiwordNet | N/A |

VIII.CONCLUSION

Opinion mining is an emerging field of data mining used to extract the pearl knowledge from huge volume of customer comments, feedback and reviews on any product or topic etc. A lot of work has been conducted to mine opinions in form of document, sentence and feature level sentiment analysis. Information from micro-blogs, blogs and forums as well as news source, is widely used in SA recently. This media information plays a great role in expressing people's feelings, or opinions about a certain topic or product. Using social network sites and micro-blogging sites as a source of data still needs deeper analysis.

This paper presented an overview on opinion mining sentiment analysis, its levels and types. The paper focused on the various opinion mining techniques applied by the authors and the accuracy produced in it.

References:

- [1] Aamera Z.H.Khan, Dr.Mohammed Atique, Dr.V.M.Thakare, "Sentiment Analysis using SVM", International Journal of Advanced Research in Computer Science and Software Engineering, Vol.5, Issue.04, April 2015. (ISSN: 2277 - 128X).
- [2] Ananta Arora, Chinmay Patil, Stevina Correia, "Opinion Mining: An Overview", International Journal of Advanced Research in Computer and Communication Engineering, Vol.4, Issue.11, November 2015. (ISSN: 2278-1021).
- [3] G.Angulakshmi, Dr.R.ManickaChezian, "An Analysis on Opinion Mining: Techniques and Tools", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 3, Issue 7, July 2014.
- [4] Asmita Dhokrat, Sunil Khilare, C. Namrata Mahender, "Review on Techniques and Tools used for Opinion Mining", International Journal of Computer Applications Technology and Research, Vol.4, Issue.6, 2015. (ISSN:2319 - 8656).
- [5] Bing Liu, "Sentiment Analysis and Opinion Mining", Morgan and Claypool Publishers, 2012.
- [6] Chetashri Bhadane, Hardi Dalal, Heenal Doshi, "Sentiment Analysis: Measuring Opinions", Science Direct, 2015.
- [7] Dola Saha, Prajna Paramita Ray, "Sentiment Analysis on Tweet Dataset using Datamining Techniques", International Journal of Advanced Research in Computer Science and Software Engineering, Vol.5, Issue.08, August 2015.(ISSN: 2277 - 128X).
- [8] A.G.Dongre, Sushmit Dharurkar, Swanand Nagarkar, Rahul Shukla, Vivek Pandita, "A Survey on Aspect based Opinion Mining from Product Reviews", International Journal of Innovative Research in Science, Engineering and Technology, Vol.5, Issue.2, February 2016. (ISSN: 2319 - 8753).
- [9] Gagandeep Singh, Kamaljeet Kaur Mangat, "Performance Analysis of Supervised Learning Methodologies for Sentiment Analysis of Tweets", International Journal of Advanced Research in Computer Science and Software Engineering, Vol.5, Issue.8, August 2015. (ISSN: 2277 - 128X).
- [10]Gaurangi Patel, Varsha Galande, Vedant Kekan, Kalpana Dange, "Sentiment Analysis using SVM", International Journal of Innovative Research in Computer and Communication Engineering, Vol.2, Issue 1, January 2014. (ISSN: 2320 - 9801).
- [11]Gautami Tripathi, Naganna.S, "Feature Selection and Classification approach for Sentiment Analysis", An International Journal, Vol.2, No.2, June 2015.
- [12]Gayathri Deepthi, K. Sashi Rekha, "Opinion Mining and Classification of User Reviews in Social Media", International Journal of Advance Research in Computer Science and Management Studies, Vol.2, Issue.4, April 2014. (ISSN: 2321 - 7782).
- [13]Kh airullah Khan, Baharum Baharudin, Aurnagzeb Khan, Ashraf Ullah, "Mining Opinion Components from Unstructured Reviews: A Review", Journal of King Saud University - Computer and Information Sciences, 26, 2014.
- [14]Nidhi R. Sharma, Prof. Vidya D Chitre, "Opinion Mining, Analysis and its Challenges", International Journal of Innovations and Advancement in Computer Science, vol.3, Issue 1, April 2014. (ISSN: 2347 - 8616).
- [15]Norlela Samsudin, Mazidah Puteh, Abdul Razah Hamdan, Mind Zakree, Ahmad Nazri, "Immune Based Feature Selection for Opinion Mining", Proceedings of the World Congress on Engineering, Vol.3, July 3-5, 2013. (ISSN:2078 - 0966).
- [16]Pravesh kumar Singh, Mohd Shahid Husain, "Methodological Study of Opinion Mining and Sentiment Analysis Techniques", International Journal on Soft Computing, Vol.5, No.1, February 2014.

- [17]Poobana.S, Sashi Rekha.K, “Opinion Mining from Text Reviews using Machine Learning Algorithm”, International Journal of Innovative Research in Computer and Communication Engineering, Vol.3, Issue.3, March 2015. (ISSN: 2320 - 9801).
- [18]Preety, Sunny Dahiya, “Sentiment Analysis using SVM and Naïve Bayes Algorithm”, International Journal of Computer science and Mobile Computing, Vol.4, Issue 9, September 2015. (ISSN: 2320 - 088X).
- [19]Reema Verma, Dr.Kiranjyoti, "Opinion Mining and Analysis of the Techniques for User Generated Content", International Journal of Advanced Research in Computer Science and Software Engineering, Vol.5, Issue 5, May 2015. (ISSN:2277 - 128X).
- [20]Richa Sharma, Shweta Nigam, Rekha Jain, “Mining of Product Reviews at Aspect Level”, International Journal in Foundations of Computer Science & Technology, Vol.4, No.3, May 2014.
- [21]Rushabh Shah, Bhoomit Patel, “Procedure of Opinion Mining and Sentiment Analysis: A Study ”, International Journal of Current Engineering and Technology, Vol.4, No.6, December 2014.
- [22]Md.Safdar, Dr.Md.Jawed Iqbal Khan, Md. Daiyan, “Mining Explicit Features for Opinion mining of Customer Reviews”, International Journal of Emerging Technology and Advanced Engineering, Vol.5, Issue 3, March 2015. (ISSN: 2250 - 2459).
- [23]G. Sneha, CT.Vidhya, "Algorithms for Opinion Mining and Sentiment Analysis: An Overview", International Journal of Advanced Research in Computer Science and Software Engineering, Vol.6, Issue.02, February 2016. (ISSN: 2277 - 128X).
- [24]K. Uma Maheswari, S.P. Raja Mohana, G. Aishwarya Lakshmi, “Opinion Mining using Hybrid Methods”, International Journal of Computer Applications, 2015. (ISSN: 0975 - 8887).
- [25]Vaishali Mehta, Prof. Ritesh K Shah, “Approaches of Opinion Mining and Performance Analysis: A Survey”, International Journal of Advanced Research in Computer Science and Software Engineering, Vol.4, Issue.10, October 2014. (ISSN: 2277 - 128X).
- [26]Vidisha M. Pradhan, Jay Vala, Prem Balani, “A Survey on Sentiment Analysis Algorithms for Opinion Mining”, International Journal of Computer Applications, Vol.133, No.9, January 2016. (ISSN: 0975 - 8887).
- [27]R.Vinoth, Anjana Jayachandran, M.Balaji, R.Srinivâsan, ” A Hybrid Text Classification Approach using KNN and SVM”, International Journal of Advance Foundation and Research in Computer, Vol.1, Issue.3, March 2014.(ISSN:2348 - 4853).
- [28]Walaa Medhat, Ahmed Hassan, Hoda Korashy, “Sentiment Analysis: A Survey”, Ain shams Engineering Journal, 5, 2014. (1093 - 1113).