Social Network Analysis: Book RecommendationSystem Using Sentimental Analysis

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Abstract :

Sentiment analysis is one of the quickest growing analysis areas in engineering, creating it challenging to stay on track of all the activities within the space.This research paper uses text mining and qualitative secret writing to analyze and understand book lovers' scientific discipline and what area unit they were trying to find. Humans express/show their feelings through texts and sentences written on the web. Therefore, the texts or comments on social networks and blogs help understand folks' overall opinions regarding books to advocate some quality books to others trying to find reading books perhaps of a similar genre or story. As a result, this information will be wont to improve the performance of current recommendation systems; because of this sentiment intensity, the user will be utilized as an extra parameter with the user's profile information to see the foremost acceptable content to send out a suggested message. This research article focuses on the comments in Book Recommendation. Commenting or reviewing book victimization, our approach (sentiment analysis) will facilitate a book reader to grasp regarding the ratings of thebook and what is it smart regarding in keywords, at the side of reader's satisfaction.

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1 Introduction

Many people like to surf online to review a couple of books before buying them because it is alleged by the legends that you cannot choose a book by its cowl. There area unit over and over once a book reader is confused a couple of books, for sure he/she will raise his/her friends, family regarding the book, review it then perhaps purchase it. However, what if the book itself is unknown to the family, friends. What if his/her families or friends do not have a similar style or preferences a couple of books. This can be wherever public opinion mining(sentimental analysis) is required to assist a reader find a book or review of a book helped by others like the same genre or story of a book.

Customers' input will be solicited in order to enhance the product. Managing the enormous amount of information on websites, evaluating it, and ultimately storing it manually is very time-intensive. A technique for extracting valuable information and creating an aim, high-quality products The linked research field is seeing an increase in the need for automated testing systems capable of managing massive quantities of data. Opinion mining is a technology-assisted text mining and language communication technique. It describes how to handle the issue[5][6]. As a result, several scholars have shown interest in creating a product outline throughout the years. Sentiment analysis at the document level is used to determine the emotional tone of each review[7]. It identifies the author's unique viewpoint on the contents, fo-cuses on sentence-level opinion mining, and treats the assertions of the merchandise selections for each perspective as analysis objects, after which the author's opinion preferences are determined[8]. As a result, opinion mining's primary function is to do sentence-level sentiment analysis. Although the procedure is very involved, the tech- nique may extract specific information from comments and maintain high secrecy. When people write articles, they use grammatical rules to organize their sentences. However, when people write informal assessments, they often ignore this, increasing the probability of grammatical mistakes and caustic language in comments. This trend is most apparent when people give comments after making an online purchase. Sentiment analysis, often known as opinion mining, extracts personal information and categories viewpoints from provided data using natural language processing andcomputational linguistics[9][10].

2 Related Works

The analysis of the reader's behaviour in book recommendations will be disbursed in an exceeding variety of how. Over the years, multiple variants of behaviours are known and targeted with strategic solutions. These solutions specialize in the reader's expertise and assisting the user gain trust and build them feel comfy.[11]

Sentiment analysis is one of the most rapidly growing areas of engineering study, making it challenging to keep the pace of all the work in the field. This paper examines Scopus articles utilizing text mining and qualitative secret writing. The term "sentiment analysis" refers to a collection of techniques, tactics, and instru- ments for conducting police investigations and extracting personal information from languages, such as views and attitudes.[12]

Allocation modelling with qualitative secret writing to combine sentiment analysis papers and provide a comprehensive classification of articles. Sixth, we examine the most frequently cited papers on Scopus and Google Scholar to find sentiment analysis features.[13][14-23]

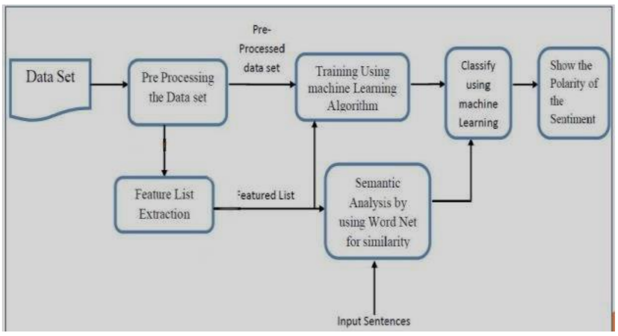

Fig. 1 System Model

The following 5 sub-sections describe in details the event of the algorithmic ruleapplied during this study.

3 Proposed Work

The evolved emotion vocabulary has a huge number of terms. It was built manually from the ground up using SentiWordNet as a starting point. Each word in the lexiconhas been assigned an emotional value between 10 (least positive) and ten (most positive). According to scientific evidence[25-30], a number of positive and negative words sometimes appear in a neutral-meaning phrase context. For example, the phrase "Enjoying my lazy Sunday!!" sends a good message by combining one positive (enjoy) and one negative (lazy) word. Choosing between the good and the evil should be difficult in such a situation. To address this problem, we calculate a probability (designated by P) in addition to the emotion price, as indicated in Combining weight probability (designated by P) as provided in Equation 1.

$$P\,(\text{positive} \mid G)\, f\, orpositiveGGP(negative \mid G)\, f\, orpositiveG \quad (1)$$

For each positive word in labelled data, we estimate the likelihood that a ran- dom message including this word is positive. Similarly, the probability for each negative word was calculated. We investigated if including such information into the sentiment classification technique would make handling mixed-sentiment communications (positive and negative) easier. We used a Stanford-provided coaching knowledge collection to create the choices that include 1. 6 million labelled Comments (800,000 positives and 800,000 negatives). The automated generation of the coaching dataset confirmed the lack of emoticons in dialogue. Previously, it was believed that any remark that included a positive emoticon was positive, while any comment that included a negative emoji was negative. The emoticon list was used as a query in the Twitter API, and the resultant messages were automatically categorized as positive or negative based on the kind of facial expression they contained.We used the following technique for probability planning[30-36]. We randomly selected favourable and unfavourable comments. Following that, for the positive and negative messages selected, the frequency of usage of each signifier in the lexicon, indicatedby w, was computed. As demonstrated in combining weight Equation 2, the word'spositive or negative meaning affected the probability.

where w_P and w_N Denote the proportion of messages in the sample that include the word wand. Many times, the two methods were employed to forecast thelikelihood of positive and negative words. The process was repeated ten times to get a more precise result, and the average probability achieved for each word was stored in the lexicon, as stated in the research.[37-40]

3.1 Intensity

Intensifiers are named after the terms terrible, exceptionally, and most. These are thewords that change the feeling evoked by the surrounding non-neutral sentences. They will be classified as amplifiers (very, most) or downtoners (slightly) that fluctuate between raising and reducing the intensity of sensation. Twenty-five of the most often used intensifiers were selected and classified into three groups based on their polarity: downtoners, weak amplifiers, and robust amplifiers. Downtoners, according to scientific data, act as intensifiers, lowering the cost of emotion by 50%. Amplifiers, whether minor or significant, boost emotion by 50%. The emotion language is devoid of negators and intensifiers. As a result, they are called neutral words if they appear entirely inside a phrase composed entirely of neutral material. However, they are considered non-neutral if they occur near positive or negative words and affect theoverall tone of a phrase.

There are no negators or intensifiers in the emotion vocabulary. Consequently, ifthey occur entirely inside a sentence of neutral content, they are considered neutral words. However, they are regarded as non-neutral if they appear near positive or negative words and have an impact on the overall tone of a sentence.

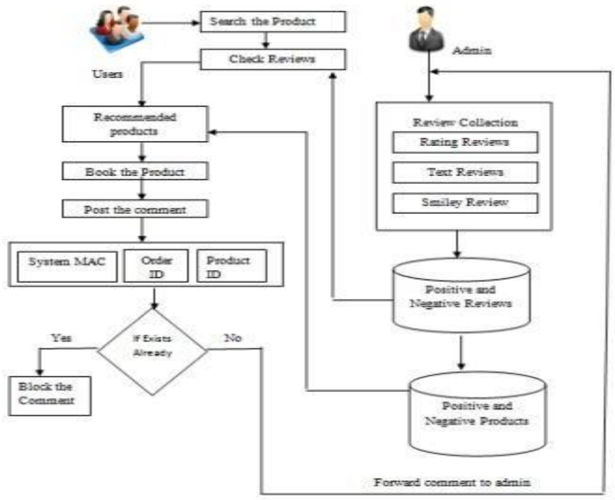

Fig 2: Proposed Framework

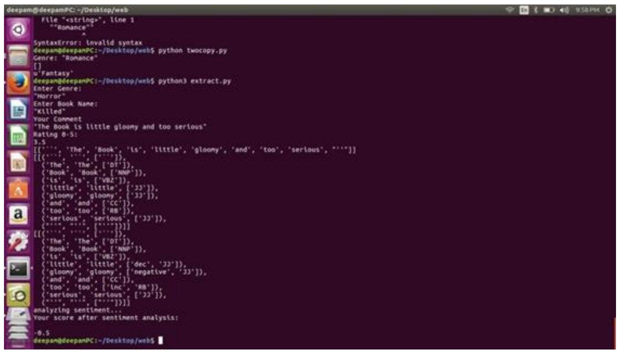

Fig 3: Sentiment Analysis

4 Conclusion and Future Work

We might use if sentiment analysis with other techniques to predict disruption associated with upcoming public events. As the first stage in our study, we want togenerate our data to establish a source of knowledge. Four different demonstrations were chosen, and we assessed the negative feeling associated with each over a half-dozen days before each encounter.

We could show a correlation between negative emotion and disorder within a series of particular novels through the case study and other research. Any analysis isonly necessary for this area to ensure the accuracy of the findings and conclusions. We can only guess how sentiment analysis of book recommendations will offer critical information about people's views about security. The next phase will gather more data on belief and examine the connection between negative sentiment and the book's genre. Following that, we would want to develop a forecasting model that canget input on different publications.

References

1. Mounika, Addanki, and S. Saraswathi. "Design of Book Recommendation System Using Sentiment Analysis." In Evolutionary Computing and Mobile Sustainable Networks, pp. 95-101. Springer, Singapore, 2021.
2. Karthik, R. V., and Sannasi Ganapathy. "A fuzzy recommendation system for predicting the customers interests using sentiment analysis and ontology in e-commerce." Applied Soft Computing 108 (2021): 107396.
3. Sirisati, Ranga Swamy, Kalavala Gowthami Prasanthi, and Anga Gautami Latha. "An Aviation Delay Prediction and Recommendation System Using Machine Learning Techniques." In Proceedings of Integrated Intelligence Enable Networks and Computing, pp. 239-253. Springer, Singapore, 2021.
4. Kudori, Dio Saputra. "Event Recommendation System using Hybrid Method Based on Mobile Device." JITeCS (Journal of Information Technology and Computer Science) 6, no. 1 (2021):107-116.
5. Ray, Biswarup, Avishek Garain, and Ram Sarkar. "An ensemble-based hotel recommender system using sentiment analysis and aspect categorization of hotel reviews." Applied Soft Computing 98 (2021): 106935.
6. Joshi, Shubham, Rochit Dubey, Aryav Tiwari, and Poonam Jindal. "Sentiment Analysis Al- gorithms: Classifiers and Their Comparison." In Intelligent Computing and Communication Systems, pp. 201-210. Springer, Singapore, 2021.
7. Kumari, Suman, Basant Agarwal, and Mamta Mittal. "A Deep Neural Network Model for Cross-Domain Sentiment Analysis." International Journal of Information System Modeling and Design (IJISMD) 12, no. 2 (2021): 1-16.
8. Khattak, Asad, Muhammad Zubair Asghar, Anam Saeed, Ibrahim A. Hameed, Syed Asif Hassan, and Shakeel Ahmad. "A survey on sentiment analysis in Urdu: A resource-poor language." Egyptian Informatics Journal 22, no. 1 (2021): 53-74.
9. Sen, Sudipta, Akash Mehta, Runa Ganguli, and Soumya Sen. "Recommendation of Influenced Products Using Association Rule Mining: Neo4j as a Case Study." SN Computer Science 2, no. 2 (2021): 1-17.
10. Poomka, Pumrapee, Nittaya Kerdprasop, and Kittisak Kerdprasop. "Machine Learning Versus Deep Learning Performances on the Sentiment Analysis of Product Reviews." International Journal of Machine Learning and Computing 11, no. 2 (2021).
11. Yan Zhang, M. M. Kamruzzaman, and Lu Feng "Complex System of Vertical Baduanjin Lifting Motion Sensing Recognition under the Background of Big Data," Complexity, vol. 2021, Article ID 6690606, 10 pages, 2021. https://doi.org/10.1155/2021/6690606
12. Rathore, M. S., Poongodi, M., Saurabh, P., Lilhore, U. K., Bourouis, S., Alhakami, W., ... & Hamdi, M. (2022). A novel trust-based security and privacy model for Internet of Vehicles using encryption and steganography. Computers and Electrical Engineering, 102, 108205.
13. Gupta, S., Iyer, S., Agarwal, G., Manoharan, P., Algarni, A. D., Aldehim, G., & Raahemifar, K. (2022). Efficient Prioritization and Processor Selection Schemes for HEFT Algorithm: A Makespan Optimizer for Task Scheduling in Cloud Environment. Electronics, 11(16), 2557.
14. Balyan, A. K., Ahuja, S., Lilhore, U. K., Sharma, S. K., Manoharan, P., Algarni, A. D., ... & Raahemifar, K. (2022). A Hybrid Intrusion Detection Model Using EGA-PSO and Improved Random Forest Method. Sensors, 22(16), 5986.
15. Poongodi, M., Bourouis, S., Ahmed, A. N., Vijayaragavan, M., Venkatesan, K. G. S., Alhakami, W., & Hamdi, M. (2022). A Novel Secured Multi-Access Edge Computing based VANET with Neuro fuzzy systems based Blockchain Framework. Computer

Communications.

16. Ramesh, T. R., Lilhore, U. K., Poongodi, M., Simaiya, S., Kaur, A., & Hamdi, M. (2022). PREDICTIVE ANALYSIS OF HEART DISEASES WITH MACHINE LEARNING APPROACHES. Malaysian Journal of Computer Science, 132-148.
17. Poongodi, M., Malviya, M., Hamdi, M., Vijayakumar, V., Mohammed, M. A., Rauf, H. T., & Al-Dhlan, K. A. (2022). 5G based Blockchain network for authentic and ethical keyword search engine. IET Commun., 16(5), 442-448.
18. Poongodi, M., Malviya, M., Kumar, C., Hamdi, M., Vijayakumar, V., Nebhen, J., & Alyamani, H. (2022). New York City taxi trip duration prediction using MLP and XGBoost. International Journal of System Assurance Engineering and Management, 13(1), 16-27.
19. Poongodi, M., Hamdi, M., & Wang, H. (2022). Image and audio caps: automated captioning of background sounds and images using deep learning. Multimedia Systems, 1-9.
20. Poongodi, M., Hamdi, M., Gao, J., & Rauf, H. T. (2021, December). A Novel Security Mechanism of 6G for IMD using Authentication and Key Agreement Scheme. In 2021 IEEE Globecom Workshops (GC Wkshps) (pp. 1-6). IEEE.
21. Ramesh, T. R., Vijayaragavan, M., Poongodi, M., Hamdi, M., Wang, H., & Bourouis, S. (2022). Peer-to-peer trust management in intelligent transportation system: An Aumann's agreement theorem based approach. ICT Express.
22. Hamdi, M., Bourouis, S., Rastislav, K., & Mohmed, F. (2022). Evaluation of Neuro Image for the Diagnosis of Alzhimer's Disease Using Deep Learning Neural Network. Frontiers in Public Health, 35.
23. Poongodi, M., Hamdi, M., Malviya, M., Sharma, A., Dhiman, G., & Vimal, S. (2022). Diagnosis and combating COVID-19 using wearable Oura smart ring with deep learning methods. Personal and ubiquitous computing, 26(1), 25-35.
24. Sahoo, S. K., Mudligiriyappa, N., Algethami, A. A., Manoharan, P., Hamdi, M., & Raahemifar, K. (2022). Intelligent Trust-Based Utility and Reusability Model: Enhanced Security Using Unmanned Aerial Vehicles on Sensor Nodes. Applied Sciences, 12(3), 1317.
25. Muniyappan, A., Sundarappan, B., Manoharan, P., Hamdi, M., Raahemifar, K., Bourouis, S., & Varadarajan, V. (2022). Stability and numerical solutions of second wave mathematical modeling on covid-19 and omicron outbreak strategy of pandemic: Analytical and error analysis of approximate series solutions by using hpm. Mathematics, 10(3), 343.

26. Rawal, B. S., Manogaran, G., & Poongodi, M. (2022). Implementing and Leveraging Blockchain Programming.
27. Bourouis, S., Band, S. S., Mosavi, A., Agrawal, S., & Hamdi, M. (2022). Meta-Heuristic Algorithm-Tuned Neural Network for Breast Cancer Diagnosis Using Ultrasound Images. Frontiers in Oncology, 12, 834028.
28. Lilhore, U. K., Poongodi, M., Kaur, A., Simaiya, S., Algarni, A. D., Elmannai, H., ... & Hamdi, M. (2022). Hybrid Model for Detection of Cervical Cancer Using Causal Analysis and Machine Learning Techniques. Computational and Mathematical Methods in Medicine, 2022.
29. Dhiman, P., Kukreja, V., Manoharan, P., Kaur, A., Kamruzzaman, M. M., Dhaou, I. B., & Iwendi, C. (2022). A Novel Deep Learning Model for Detection of Severity Level of the Disease in Citrus Fruits. Electronics, 11(3), 495.
30. Dhanaraj, R. K., Ramakrishnan, V., Poongodi, M., Krishnasamy, L., Hamdi, M., Kotecha, K., & Vijayakumar, V. (2021). Random Forest Bagging and X-Means Clustered Antipattern Detection from SQL Query Log for Accessing Secure Mobile Data. Wireless Communications and Mobile Computing, 2021.
31. Maurya, S., Joseph, S., Asokan, A., Algethami, A. A., Hamdi, M., & Rauf, H. T. (2021). Federated transfer learning for authentication and privacy preservation using novel supportive twin delayed DDPG (S-TD3) algorithm for IIoT. Sensors, 21(23), 7793.
32. Poongodi, M., Nguyen, T. N., Hamdi, M., & Cengiz, K. (2021). Global cryptocurrency

trend prediction using social media. Information Processing & Management, 58(6), 102708.

33. Poongodi, M., Sharma, A., Hamdi, M., Maode, M., & Chilamkurti, N. (2021). Smart healthcare in smart cities: wireless patient monitoring system using IoT. The Journal of Supercomputing, 77(11), 12230-12255.

34. Rawal, B. S., Manogaran, G., & Hamdi, M. (2021). Multi-Tier Stack of Block Chain with Proxy Re-Encryption Method Scheme on the Internet of Things Platform. ACM Transactions on Internet Technology (TOIT), 22(2), 1-20.

35. Poongodi, M., Malviya, M., Hamdi, M., Rauf, H. T., Kadry, S., & Thinnukool, O. (2021). The recent technologies to curb the second-wave of COVID-19 pandemic. Ieee Access, 9, 97906-97928.

36. Rawal, B. S., Manogaran, G., Singh, R., Poongodi, M., & Hamdi, M. (2021, June). Network augmentation by dynamically splitting the switching function in SDN. In 2021 IEEE International Conference on Communications Workshops (ICC Workshops) (pp. 1-6). IEEE.
Poongodi, M., Hamdi, M., Varadarajan, V., Rawal, B. S., & Maode, M. (2020, July). Building an authentic and ethical keyword search by applying decentralised (Blockchain) verification. In IEEE INFOCOM 2020-IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS) (pp. 746-753). IEEE.

37. Poongodi, M., Vijayakumar, V., Al-Turjman, F., Hamdi, M., & Ma, M. (2019). Intrusion prevention system for DDoS attack on VANET with reCAPTCHA controller using information based metrics. IEEE Access, 7, 158481-158491.

38. Poongodi, M., Hamdi, M., Sharma, A., Ma, M., & Singh, P. K. (2019). DDoS detection mechanism using trust-based evaluation system in VANET. IEEE Access, 7, 183532-183544.

39. Md Hossain, MM Kamruzzaman, Shuvo Sen, Mir Mohammad Azad, Mohammad Sarwar Hossain Mollah, Hexahedron Core with Sensor Based Photonic Crystal Fiber,2021

40. Md Nazirul Islam Sarker, Md Lamiur Raihan, Yang Peng, Tahmina Chumky, MM Kamruzzaman, Roger C Shouse, Huh Chang Deog, "COVID-19: Access to Information, Health Service, Daily Life Facility and Risk Perception of Foreigners during Coronavirus pandemic in South Korea," Archives of Medical Science, 2021, https://doi.org/10.5114/aoms/141164

41. Y. Shi, S. Wang, S. Zhou and M. M. Kamruzzaman. (2020). Study on Modeling Method of Forest Tree Image Recognition Based on CCD and Theodolite. IEEE Access, vol. 8, pp. 159067-159076, 2020, doi: 10.1109/ACCESS.2020.3018180

42. Guobin Chen, Zhiyong Jiang, M.M. Kamruzzaman. (2020). Radar remote sensing image retrieval algorithm based on improved Sobel operator, Journal of Visual Communication and Image Representation, Volume 71, 2020, 102720, ISSN 1047-3203 https://doi.org/10.1016/j.jvcir.2019.102720.

43. M. M. Kamruzzaman, ""New Opportunities, Challenges, and Applications of Edge-AI for Connected Healthcare in Smart Cities,"" 2021 IEEE Globecom Workshops (GC Wkshps),
2021, pp. 1-6, doi: 10.1109/GCWkshps52748.2021.9682055."

44. Md Selim Hossain, MM Kamruzzaman, Shuvo Sen, Mir Mohammad Azad, Mohammad Sarwar Hossain Mollah, Hexahedron core with sensor based photonic crystal fiber: An approach of design and performance analysis," Sensing and Bio-Sensing Research, 32, 100426

45. Mingju Chen, Xiaofeng Han, Hua Zhang, Guojun Lin, M.M. Kamruzzaman, Quality-guided key frames selection from video stream based on object detection, Journal of Visual Communication and Image Representation, Volume 65, 2019, 102678, ISSN 1047-3203

46. M. M. Kamruzzaman: Performance of Decode and Forward MIMO Relaying using STBC for Wireless Uplink. JNW 9(12): 3200-3206 (2014)

47. M. M. Kamruzzaman, "Performance of Turbo Coded Vertical Bell Laboratories Layered Space Time Multiple Input Multiple Output system," Computer and Information Technology (ICCIT), 2013 16th

International Conference on, Khulna, 2014, pp. 455-459.

48. S. V. N. Sreenivasu, S. Gomathi, M. Jogendra Kumar, Lavanya Prathap, Abhishek Madduri, Khalid M. A. Almutairi, Wadi B. Alonazi, D. Kali, S. Arockia Jayadhas, "Dense Convolutional Neural Network for Detection of Cancer from CT Images", BioMed Research International, vol. 2022, Article ID 1293548, 8 pages, 2022.
49. Mukesh Soni, Ihtiram Raza Khan, K. Suresh Babu, Syed Nasrullah, Abhishek Madduri, Saima Ahmed Rahin, "Light Weighted Healthcare CNN Model to Detect Prostate Cancer on Multiparametric MRI", Computational Intelligence and Neuroscience, vol. 2022, Article ID 5497120, 11 pages, 2022.
50. Mehraj, Haider, D. Jayadevappa, Sulaima Lebbe Abdul Haleem, Rehana Parveen, Abhishek Madduri, Maruthi Rohit Ayyagari, and Dharmesh Dhabliya. "Protection motivation theory using multi-factor authentication for providing security over social networking sites." Pattern Recognition Letters 152 (2021): 218-224.
51. Abhishek Madduri. "Human Gait Recognition using Discrete Wavelet and Discrete Cosine and Transformation Based Features." International Journal of Computer Trends and Technology, vol. 69, no. 6, June. 2021, pp.22-27.
52. Abhishek Madduri. Content based Image Retrieval System using Local Feature Extraction Techniques. International Journal of Computer Applications 183(20):16-20, August 2021.
53. Sharma, D. K., Chakravarthi, D. S., Boddu, R. S. K., Madduri, A., Ayyagari, M. R., & Khaja Mohiddin, M. (2023). Effectiveness of Machine Learning Technology in Detecting Patterns of Certain Diseases Within Patient Electronic Healthcare Records. In Proceedings of Second International Conference in Mechanical and Energy Technology (pp. 73-81). Springer, Singapore.