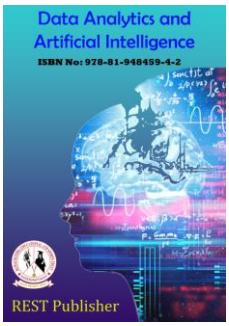
Data Analytics and Artificial Intelligence

Vol: 3(2), 2023

REST Publisher; ISBN: 978-81-948459-4-2

Website: http://restpublisher.com/book-series/daai/

DOI: https://doi.org/10.46632/daai/3/2/2



A Study on Emotion Analysis for Online Learning Based on Students' Feedback via Social Networks

*** R. Pushpavalli, C. Immaculate Mary**

Sri Sarada College for Women (Autonomous) Salem-16.Tamil nadu, India.

*Corresponding Author Email: pushpavallikumarapathy@gmail.com

Abstract. *Educational Data mining (EDM) in e-Learning systems is a rapidly growing phenomenon. It's used to improve education by monitoring student performance and trying to understand the students' learning. Past two decades the teachers collecting the feedback from their students through a written words. This method is very time consuming. Now a dayse-Learning system familiar for the virtual class room environment and learners free to learn at their own pace and to define personal learning path based on their individual needs and interests. This system provides the learning support through explanation, examples, interactive and feedback. The data of feedback is an essential part of effective learning. It helps students understood the subject being studied and gives us idea to give how to improve their learning. The data of feedback can be collected in different ways, such as chart window, SMS, e-Mail, Voice mail and Social Media like twitter, whatsapp. This kind of data should be collected from student in the mode of audio, video and text through social media. This data should be realised the positive and negative or emotion of the students. This paper presents a survey on the analyse of the students feedback by using sentiment analysis methodologies.*

Keywords: *Educational Data Mining (EDM), e-Learning, Student Monitoring system, Sentiment Analysis.*

1. INTRODUCTION

E-Learning system is the use of new multimedia technologies through Internet to improve the quality of learning by facilitating access to resources and services in educational curriculum outside of a traditional classroom. There are many terms used to describe e-Learning that delivered online, via the internet, extending from Distance Education, to computerized electronic learning, online learning, internet learning and many others. E-Learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents and PDFs. The main reason it was familiar for flexibility and the ability to provide learner to study in their own time and place. E-Learning, in comparison with traditional learning, allows for easier access to online resources, databases, periodicals, journals and other material. E-Learning aims at developing different types of skills such as Cognitive skills, Interpersonal skills, Psychomotor skills. The Cognitive skills [18], which involved understanding significant concept, following instructions as well as applying methods in new situations to solve problems. Interpersonal skills consist of active listening, presenting, and negotiation. The psychomotor skills involve the acquisition of physical perceptions and movements. The flexibility of Internet technology creates gray areas around the concepts of synchronous and asynchronous communication in e-Learning system by conducting many activates. The Synchronous activities are Chat, Video and audio conference, Live webcasting, Application sharing, Whiteboard, Polling. The asynchronous activities are E-Mail, Discussion forum, Wiki, Blog, Webcasting. Both the mode of communication is needed to sustain attention and promote learning skill in e-Learning system. There is a large collection of student's feedback data from social networks such as twitter, Facebook, whatsup, etc., video and audio data are gathered from the class room actives which has been recorded from every session. Feedback data is most effective part of the e-Learning system. With the collected data helps the sentimental analysis techniques can be applied to improve the performance of teaching methodology.

2. LITERATURE SURVEY

In [1], Nasukawa and Yi. Illustrate a sentiment analysis through text document, this text contains positive and negative for a specific subjects. To analysis how the sentiment has been expressed and the opinions of subject term like negative or positive terms in the text document. In [2], N. S. Ambekar and Prof .N. L. Bhale is Illustrate a customer

opinion through feedback or expression about the products. In business organization opinion mining is very helpful to improve the growth of the business. Through a customer opinion based the seller to increase the quality of the products.In [3], Illustrate Text miner and SAS are used to collect the textual data through call centers logs, emails, documents on the web, blogs, tweets, customer comments and reviews. This data could be mined by using sentiment mining techniques and find the solution of recommendation personalized to the users taste and preference.In [4], F.Colace,M. De Santo,L.Greco and G. Guerriero Illustrate the tool of Latent Dirchlet allocation approach which is used to sentiment classification of document. In e-Learning measure the mood of a classroom towards about some topics. To detect the facial expression of the students are interactive with the class advisors in the classroom and find the mood of the student interest in the subject.In [5], ArchanaShukla illustrate an annotation contains comments, notes, observe, highlights, underlines, explanation, questions or help. These sentiment annotations could be counted the comments via pdf document by using the tool of KMAD. Finally to analyse what kind of comments, underline and highlights in the documents. In [6], SurrayaEzzat, NeamatEiGayar, and Moustafa M. Ghanem, this paper described, about text mining technique is applied for audio recording data from telecallers conversation between agents or customers, that convert to text format and find the emotions through various classification techniques. In [13] Carlos Busso, Zhigang Deng, SerdarYildirim, MurtazaBulut, Chul Min Lee, Abe Kazemzadeh, Sungbok Lee, Ulrich Neumann, Shrikanth Narayanan, illustrate systematic to find the strength and limitations of the facial expression and acoustic emotion from audio and video. Emotional recognition system is classified the emotional in four ways such as happiness, sadness, neutral and anger. Finally using svc classifier to classify and integrated the emotions from video and audio.

3. STUDENTS FEEDBACK

In e-Learning system feedback is most important thing to improve the education quality and addressing the student problems in their studies. To collect the feedback from their students, often make a solution to the student requirement.

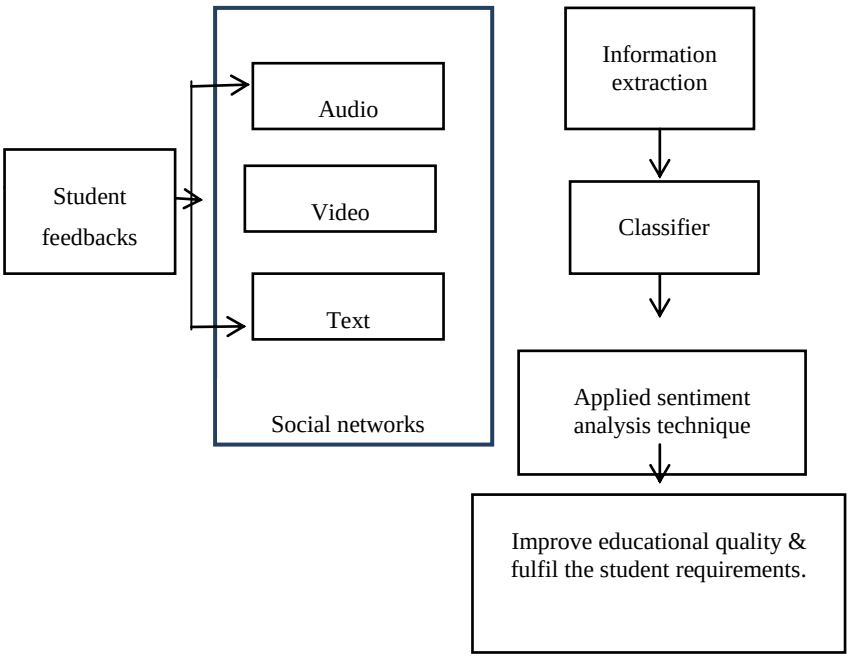


FIGURE 1. Student's feedback from social media networks

The feedback collected through mobile Phones, social media such as twitter, Facebook, email, whatsapp etc. Mobile phones are popular with students, with 98% of students keeping a mobile phone. Students commonly have their mobiles during class, therefore being able to use them for feedback. The same class student's mobile numbers are grouped and named by group name. The students can share the information among the group members related to their course by sending SMS. The negative corner is the students are using mobile phones in the class room; it makes a lot of distractions such as phone ringing, toking in mobile phone, reading or writing unwanted messages, playing with mobile games. The term social media is represent many online communication channels strong to community based input, interaction, content sharing and collaboration using many internet based applications in the well- established social network. The widely used social media applications are Facebook, WhatsApp, Twitter, Skype, We chat, Google Plus. Facebook website allow the registered user to upload the photos and video, also it allow sent the text message to keep people to upload twitter advantages in education is that students are familiar with the. Another great benefit to using

twitter as feedback is that it is free as twitter can be opened from the their own mobiles. The tweets appear sequentially so the lecturer has to read from the beginning to understand what is going on therefore time loss happens. Twitter solved the issue of the SMS cost issue as it is a free tool. The characters are limited which can be seen as an advantage to students using as less words as possible and this makes them focus on the important words to create a sentence as meaningful as possible. Figure-1shows the student feedback from various ways and applied the sentiment analysis technique. Finally improve the quality of the education system and fulfilment of the student's requirements.

4. SENTIMENTAL ANALYSIS TECHNIQUES APPLIED ON FEEDBACK DATA

To extract pieces of knowledge from vast amount of feedback text classification, clustering, association rule mining, data visualization, neural networks, fuzzy logic, Bayesian networks, genetic algorithm, decision tree, etc. are major data mining techniques used to extract the related knowledge and information. As per Literature for extracting sentiment data the following techniques are frequently used. They are SVM Classifiers, Naïve Bayesian Classifier, Neural Network and Natural Language Processing (NLP).

Sentiment classification: The feedback of the student has been collected from Social media and stored in the form of text. Sentiment analysis identifies the sentiment words, and organise their polarity like positive polarity or negative polarity or neutral polarity from text using classification process. There are three main classification levels in Sentiment Analysis: Document-level, Sentence-Level and aspect-level. Sentiment classification techniques approaches are Machine Learning Approach, Lexicon-based Approach and Hybrid Approaches.

a) The Machine Learning Approach applies the famous Machine Learning algorithms and use linguistic features. This approach is also called as Supervised Learning Technique.

b) The Lexicon-based Approach relies on a sentiment lexicon, a collection of known and precompiled sentiment terms. It divided into Dictionary-based Approach and Corpus-based Approach which use statistical or semantic methods to find sentiment polarity.

c) The Hybrid Approach combines both the Approaches and is very common with sentiment lexicons playing a key role in the majority of methods.

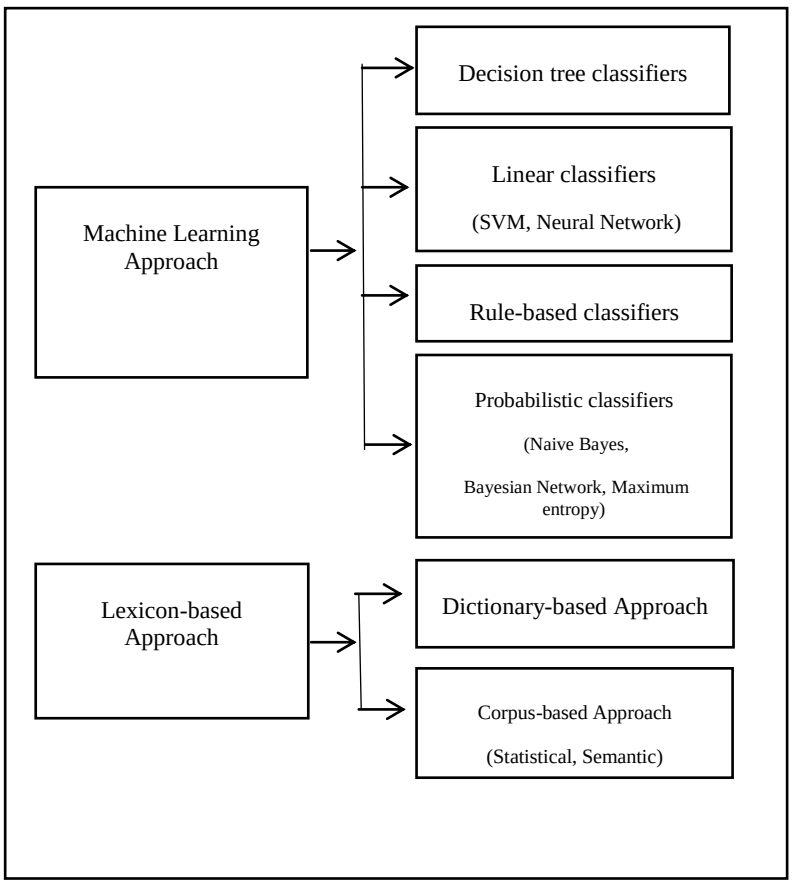


FIGURE 2. Sentiment Analysis Approach

Naïve Bayesian Classifier: The Naive Bayesian classifier is mostly used for sentence level based for classification. A Naive Bayesian model is easy to build, with no complicated iterative parameter estimation which makes it particularly useful for very large datasets. Naive Bayes is a simple technique for constructing classifiers models that assign class labels to problem instances, represented as vectors of feature values, where the class labels are drawn from some finite set. Naive Bayes classifiers can be trained very efficiently in a supervised learning setting. In many practical applications, parameter estimation for naive Bayes models uses the method of maximum likelihood. Despite its simplicity, the Naive Bayesian classifier often does surprisingly well and is widely used because it often outperforms more sophisticated classification methods.

Support Vector Machine (SVM): SVM is a supervised machine learning algorithm which can be used for classification or regression problems. A support vector machine constructs a hyperplane or set of hyperplanes in a high or infinite dimensional space, which can be used for classification, regression or other tasks. Intuitively, a good separation is achieved by the hyperplane that has the largest distance to the nearest training data points of any class (so-called functional margin), since in general the larger the margin the lower the generalization error of the classifier.

Natural Language Processing: The aim of Natural language processing is to make software that will analyse, understand and generate languages that humans use naturally. The analysis of the text done semantically (meaning wise) as well as syntactically (grammatical wise).It is symbol system that is very easy for humans to learn and use. In Morphological analysis text data that is broken into words (example adjectives, particles, nouns, and verbs) then into components called morphemes. In addition to Natural language processing is a component of text mining that performs a special kind of linguistic analysis that essentially helps a machine "read" text. NLP uses a variety of methodologies to decipher the ambiguities in human language, including the following: automatic summarization, part-of-speech tagging, disambiguation, entity extraction and relations extraction, as well as disambiguation and natural language understanding and recognition.

Neural Network: Neural Networks is suitable to model the problem of predicting polarity of student feedback as there are a large number of inputs, and any mathematical relationship between input and output is unknown. Unlike many other machine learning techniques, neural networks are able to model the output as any arbitrary function of inputs and considered extremely robust if network structure, cost function and learning algorithm are selected appropriately through experiments. A neural network based approach for sentiment classification in the blogosphere proposed a neural network based approach which combines the advantages of the Machine language techniques and the Information Retrieval techniques.

5. CONCLUSION

E-Learning is known as learning management system. E-Learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users. To collect data of feedback of subject content needs, about lecture from their student in the classroom. Regularly applying the sentiment analysis technique on the feedback data. It helps to measure the positive and negative opinions of the student. Finally the result is helpful for us to develop the e-Learning system, fulfilment of the student satisfaction, improve the quality of the subject, aware of the subject content, change the way of teaching method of class advisor.

REFERENCES

[1]. Tetsuya Nasuka and JeongheeYi,"Sentiment Analysis: Capturing Favorability Using Natural Language Processing", ISSN 1520-6149-2013

[2]. N. S. Ambekar and Prof .N. L. Bhale, "A Survey on Aspect-based Opinion Polling fromOnline (web) R eviews", 2014 - (IJERT).

[3]. Dr.GoutamChakrabortyand Murali Krishna Pagolu, "Analysis of Unstructured Data: Applications of Text Analytics and Sentiment Mining", Paper 1288-2014

[4]. F. Colace, M. De Santo, L. Greco1 and G. Guerrier , "Sentiment Anaysis and E-Learning: a Proposal"

[5]. ArchanaShukla, "Sentiment Analysis of Document Based on Annotation", 2011, (IJWest).

[6]. SourayaEzzat, Neamat El Gayar, and MoustafaM. Ghanem, "Sentiment Analysis of Call Centre Audio Conversations using Text Classification, ISSN 2150-7988, Vol 4(2012)

[7]. https :/ www.analyticsvidhya.com/ blog/2015/10/understaing-support-vector-machine-example-code

[8]. MonishaKanakaraj and Ram Mohana Reddy Guddeti , "NLP Based Sentiment Analysis in Twitter Data Using Ensemble Classifier",3rd International Conference on Siganl Processing, Communication and Networking, 2015, IEEE.

[9]. A. Pak and P. Paroubek. Twitter as a corpus for sentiment analysis and opinion mining. In Proceedings of the Seventh Conference on International Language Resources and Evaluation, volume 10, pages, http://www.wikipedia.org

[10]. Chen, L. S., Liu, C. H., & Chiu, H. J. (2011) neural network based approach for sentiment classification in the blogosphere". Journal of Informetrics, Vol.5(2), pp.313-322.
[11]. PragatiVaidya, "Opinion Mining and Sentiment Analysis in Data Mining", Apaji Institute, Banasthali University, Rajasthan, India, Sch. J. Eng. Tech., 2015; 3(1B):71-75
[12]. Carlos Busso, Zhigang Deng, SerdarYildirim, MurtazaBulut, Chul Min Lee, Abe Kazemzadeh, Sungbok Lee, Ulrich Neumann, Shrikanth Narayanan. "Analysis of Emotion Recognition using Facial
[13]. Expressions, Speech and Multimodal Information", IEEE Transactions on Visualization and Computer Graphics, Vol 12(6), 2006.
[14]. Tapas Kumar Patra, BiplabPatra and PuspanjaliMohapatra, " Text to Speech Conversion with Phonematic Concatenation", 2012 (IJECCT).
[15]. Long-Sheng Chen and Hui-Ju Chiu, "Developing a Neural Network based Index forSentiment Classification",2009 Vol I
[16]. IMECS 2009, March 18 - 20, 2009 Hong Kong.
[17].Rahmat Ullah Khan, Hafiz Muhammad Inamullah and Hafiz M. Irshadullah "Effects of E- Learning Media on Cognitive Skills Enhancement of Students",2018 e- 2616-793X.