Students Learning Experiences and Psychological Pressure in Social Media Analytics

T. Ambikadevi Amma[1], K. Arun[2], K. M. Vipin[3], A. B. Neethu[4*]

[1]*Professor & Principal, Department of Computer Science and Engineering, Nehru College of Engineering and Research Centre, Pampady, India*

[2,3]*Assistant Professor, Department of Computer Science and Engineering, Nehru College of Engineering and Research Centre, Pampady, India*

[4]*PG Student, Department of Computer Science and Engineering, Nehru College of Engineering and Research Centre, Pampady, India*

*Corresponding author: neethuab488@gmail.com

Abstract: **The real time application mainly focuses on the sentiments and behavioural analysis which includes the social media. The main objective is to analyse the social media to extract sentiments that determine the learning experiences. The Microblogging services like twitter is used popular, where the create messages for all status is called tweets and post opinions about some events based on real time. The sentiment analysis is to classify positive, negative and neutral based on the tweets they posted in social media. The psychological pressure is predicts levels of stress depends on the tweets. The qualitative analysis is performed by the Naïve Bayes Multi label classifier and analyse word frequency counts using tweets. To analyse the students overall performance in the learning environments.**

Keywords: **Learning experiences, Psychological pressure, Naive Bayes Multi label classifier.**

1. Introduction

The social media sites provide great tasks for students to share their experience and to get social support from them. The students share their experiences in an informal and formal manner on various social media site. The Twitter is very popular microblogging services, where users create status messages known as tweets and post their opinion about the real world. The People share comments and ideas.

Then the large number of tweets include opinions about services, happiness etc.

Here, the student's behaviour is determined by analysing these tweets to extract opinions. This understanding helps decision-making about students, education quality improvement, and enhancement of student recruitments. To understand students' experiences are provided by the helps of social media, but the social media for educational activities. It is necessary to develop an analysing system of learning student experiences for education institution to updates the education platform. The sentiment analysis is to classify positive, negative and neutral based on the tweets they posted in social media. The qualitative analysis is performed by the Naïve Bayes Multi label classifier and analyse word frequency counts using tweets. To analyse the students overall performance in the learning environments. The test environments such as Windows 10 operating system, Visual Studio 2013 IDE, Google Chrome browser and Tomcat Version 8 web server.

A. Problem Statement

The student is more advantage to the social media, the analysis of social media status helps in different opinion mining. The opinion mining helps in understand student learning experiences. The text and smiles used in mining the emotion expressed, it helps to predicting the stress level. The prediction of the stress levels helps in maintaining the health and other psychological problems. The social media is an environment for the user to share their personal and other issues, so it makes the easier for identifying stress factors of the users. The opinion is categorizes it to the neutral, negative or positive emotion are considered as the main objective for the sentimental analysis. The student's tweets are also understand learning experiences by following clustering approach.

To classify tweets reflecting student's problems by creates clusters. The observations are in the same cluster to be similar and different clusters to be dissimilar. The psychological pressure also predicts their stress level based on tweets. The qualitative analysis is performed by the Naïve Bayes Multi label classifier and analyse word frequency counts using tweets. To analyse the students overall performance in the learning environments.

2. Related Studies

To analyse the social media to extract sentiments that determine the learning experiences. The Psychological pressure

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-7, July-2020
journals.resaim.com/ijresm | ISSN (Online): 2581-5792

83

is predicts the levels of stress depends on the tweets. The qualitative analysis is performed by the Naïve Bayes Multi Label classifier and analyse word frequency counts using tweets. To analyse the students overall performance in the learning platforms.

A. Learning Experiences

It is a process of analysing social media, which are positive, negative or neutral based on the sentiments. Because these micro-blogs become the personal for the user from their working and share personal feelings. The Naive Bayes multi-label classification is used for the classification each mutual exclusive sentence in the social media.

B. Psychological Pressure

The emotional states such as happy, sad etc., classification are used in the polarity measure. The classification of sentiment depends on the opinion of the user about personal feelings, mainly level of stress and the pressure in daily activities.

C. Naïve Bayes Multi-label Classifier

The Naive Bayesian algorithm is efficient for the real-time world. The multi-label classification algorithm should be adapted to multi-label data. There is a factor that negatively affect its performance. The method of Naïve Bayes multi label classifier has the effect of given class is independent of the values of others and the classification is supports the multi-class.

Data from such a site are mainly unstructured to perform analysis, then the analysis of such a data is a challenge. The learning experiences in each tweets are detect student problems, which is performed by Naive Bayes Multi-Label Classifier.

3. Literature Review

A. Mining social media data for understanding students' learning experiences

This paper refers to the student learning experiences are integrate the qualitative analysis and then the large-scale mining are used [1]. The twitter posts to problems in personal life and others, where consider multi label classification is developed.

B. A depression detection model based on sentiment analysis in the micro-blog social network

From this paper follows mining to psychology for detecting users in social network services [4]. A sentiment analysis is utilizing vocabulary and human rules. Calculate the depression for all micro-blog, an application is proposed model for health online.

C. Twitter archaeology of learning analytics and knowledge conferences

This paper refers to the learning analytics through analysis of description, interaction, hashtag, and modelling of topics [5]. The interactions among all members of persistent and in persistent participation.

D. Characterizing debate performance via aggregated twitter sentiment

The micro-blogging systems creates social video experiences and conjunction with aggregates of sentiments [7]. An methodology and visuals that understand the sentiment in the video. These visuals are detect sentiment pulse.

E. Data mining in social media

This paper follows social media is a process, which follows the extraction, analysis and representation. Which deriving from mining, which handling amounts of information [8]. The data mining also involve the extraction of information, which is difficult to acquire.

F. Social media as a measurement tool of depression in populations

This refers to the social media as type of understanding depression [9]. Where traditional techniques in ability to provide measurements over the time. The postings on Twitter that shared by depression. A probabilistic model is determine if posts are depression. The depression that characterize levels of depression.

G. Learning analytics and educational data mining: Towards communication and collaboration

The analytics in education, learning improves the priority for analytics. There are two communities, there are mining of educational and learning and knowledge are developed [12]. Then increased and formal communication between communities. In order to share methods for mining and analysis of both communities.

H. Interpreting the public sentiment variations on twitter

This paper refers to the users share opinions on Twitter and analysing common sentiment [13]. To build topics and filter topics, where foreground can potential of the various variations. To rank the popularity within the periods of variations, results shows methods can effectively.

I. Short text classification in twitter to improve information filtering

This paper refers to the microblogging services, this problem is the classification of messages, which is not provide sufficient word occurrences such as "Bag-Of-Words". A set of domain objectives extracted from approach in proposed that is effectively classified to set of general classes [19].

J. An empirical study of sentiment analysis for Chinese documents

This paper refers to the sentiments on Chinese documents, the selection methods and learning methods [20]. The methods are mainly K-nearest method, centroid and winnow classifier, Naive Bayes and SVM are investigated on a Chinese documents. The results of experiments that performs the selection and SVM are the performance.

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-7, July-2020
journals.resaim.com/ijresm | ISSN (Online): 2581-5792

84

4. Methodology

The student social media to extract sentiments that determine the learning experiences. A sentiment tool for analysing all tweets, which is used to determining the student experiences for learning. The qualitative analysis is performed by Naive Bayes algorithm for multi label. For each label categorised in different and attributes are independent, in this situation used multi label classification is used.

The psychological pressure of the student is their stress level depends on feelings in the tweet and others. The other social media to provide their experience about all get the social support. The Microblogging services like twitter is used popular where creates messages for all status is called tweets and post opinions about some events based on real time. The social media for purposes of education and increases the logical difficulties because limited tweets. So, which is develop an automatically understands experiences for learning and predicts the pressure. The mining on social networking can provide to make changes in the education system.

A. Techniques

The college student is more helpful for the social media where compared to others. The analysis of social media which helps in opinion mining.

There is helps in understands student interestingness and post the student behaviour that can be analysed. The changing status and posting helps in understands the behaviour in various time. The mining the emotion expressed by the user are used the text and smiles, which helpful for predicts the stress level of the student. There is helps in maintaining health and other psychological problems. The social media are share all factors in problems and therefore all these are identifying stress factors of the users.

1) Sentiment Analysis

The sentiment analysis is always the learning experiences, the emotions are positive, negative and neutral. The main task is to classification of polarities for given text, sentence, etc. The emotions of learning experiences is based on the tweet that are post in social media. The emotional states classification are advanced the measure of polarity. The classification of sentiment focus on the opinions and depends to daily life activities of the users.

2) Classification

The group of membership for instances of data is predicted by mining technique known as classification and which helps in prediction of the group, that in which the particular entity belongs to the user. For example, the classification is to predict whether a person for such classes like age, salary and gender, the classification of data helps in easy analysis of the document.

3) Opinion Mining

The opinion mining and the sentimental analysis to helps in predict the user interests such as the good or bad on the basis of response of users for the game and the collects information from final decision the accuracy and error being analysed. The

interface design of the software development conducts the heuristic evaluation which perform the usability. The interaction is the most impact on interpersonal sentiment influences.

4) Naive Bayes multi-label classification algorithm

The social media sites are mainly unstructured and un-instrumented to perform analysis, so it is big challenge. Each tweet feeds are detecting student problems, which are mainly heavy study related problems, lack in the participation etc. which is performed by classification algorithm of Naive Bayes and analyse word frequency counts using tweets.

5) Analysing of behavioural patterns

The online education helps in the analytics of learning is performed by the clustering. The pattern of learning behaviour of individual online students are analysed and identify the factors. These are affects the process of learning and the identified using algorithm of scalable.

B. System architecture

The analysis of social media for problems of learning and experiences. The clustering algorithm is used to get the results, which are useful for understand the experiences of learning. Perform the learning system by the qualitative analysis using algorithm of clustering along with analysis of sentiments. The neutral, negative or positive mood of emotion are classification of the opinions that are considered as the main task for the sentimental analysis. The searching of information is performed such as student problems, studies, campus engagement, class-related work etc. Student's tweets are analysed to learning experiences are understands by following clustering. A model to classify tweets reflecting problems of students by forming clusters. Clusters are developed in observations, which same cluster tend to be similar and different tend to be dissimilar.
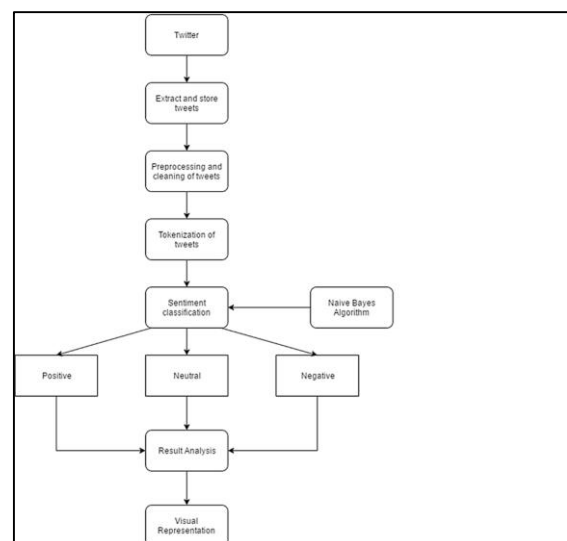

Fig. 1. System architecture of student behaviour analysis system

C. Implementation using technical steps

The analysis of different status of social media and posting

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-7, July-2020
journals.resaim.com/ijresm | ISSN (Online): 2581-5792
85

other feeds by the social media, there is helps in opinion mining and understand the interestingness, then it is helps for promoting the analysis.

1) CCreating Twitter Application

There are millions of emotions, the Application Programming Interface is used for collects all the tweets on the twitter. The twitter4j is used for the collect all real tweets and it should be placed in the class path. To create Twitter application, then user has login to the twitter account and visiting. After creation, the secret tokens are generated, which is used to collection of tweets. Then return Consumer Key and Secret, which acts as credentials and update the settings.

2) Data Collection

To collect the social media data with help of secret tokens, and the list of keywords used to save in the database. From given query, the all keywords are retrieves from database. The selected data mainly contains information about education. The tweet extraction with the source Id and time zone and the keywords such as student's, college, professor, branch, staff, etc. The Data Collection, which performs the method such as follows.

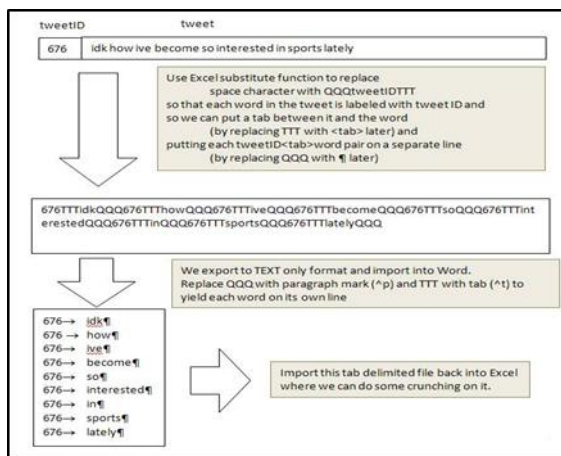Fig. 2. Tweet Extraction with source Id and Time zone

Fig. 3. Data Collection

3) Data Pre-processing

The tweets are saved in text file, there are different pre-processing steps are used to filter the data. The qualitative analysis follows clustering algorithm with the sentiment analysis. The opinions are differentiating to the neutral,

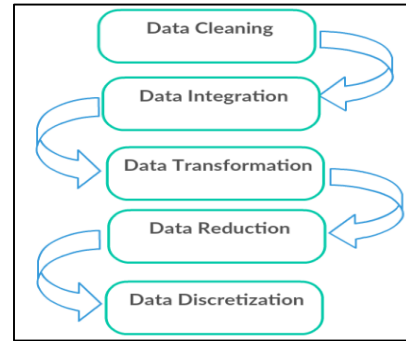negative or positive are considered as sentimental analysis.

Fig. 4. Data Pre-processing Steps

The searching information is performed on the keywords, for example student problems, studies, class work etc. Here removes the all @ symbol, URL, punctuations, emotion icons and stop words etc.
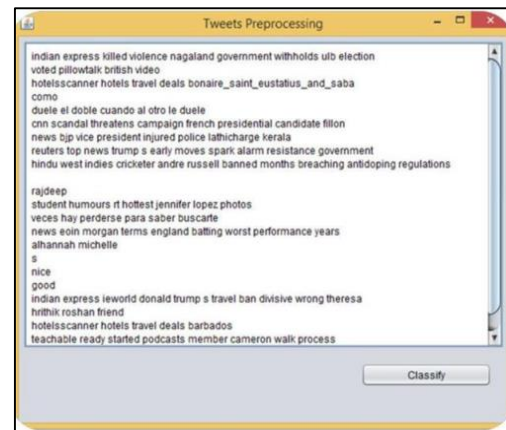

Fig. 5. Data Pre-Processing

4) Sentimental Analysis

The social media data is classified as positive, negative and neutral are expressed by users. Which helps in predicting the all activities and their micro-blogs. These microblogs become the personal for the user from working and share personal feelings. So the algorithm of Naive Bayes multi-label classification is used for classification and then each mutual exclusive sentences.

Fig. 6. Sentiment analysis

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-7, July-2020
journals.resaim.com/ijresm | ISSN (Online): 2581-5792

86

The GUI of the analysis of sentiments in the tweet data set is uploaded. The uploading of the dataset is done by clicking the upload button and which is browsed and uploaded.

5) Naive Bayes multi label classification algorithm

The network of Bayesian can denoted as naive Bayesian classification, which network consists only one parent and various child. Naive Bayes classifier is very effective to other classifiers and the Naïve Bayes classifier involves multi-label and the following steps.

Step 1: The one tweet could belongs to more than one and so a multi-label classification algorithm called Naive Bayes multi-label classification algorithm.

Step 2: The total number of words represented as words in the training document collection in training data set.

Step 3: The probability of this word in categories other than be calculated.

Step 4: For a document in the testing set, there are some words and subset. The purpose is to classify this document into category one to its complement.

Step 5: Assume independence among each word in this document and which follows a multinomial distribution.

Step 6: According to Bayes Theorem, the probability that belongs to category of other document.

Step 7: To get the document under the probability of threshold and repeat this procedure for each category.

6) Sentiment Variation Tracking

The variation of the sentiment is done for the basis of polarity. The variation of the sentimental depends on particular topic. The polarities like positive, negative and neutral is predicted. The graph was plotted for the sentiment variation for the predicted output.
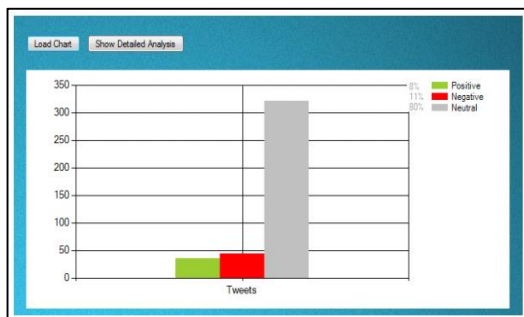

Fig. 7. Sentiment Variation Tracking

7) Label-based evaluation measures

The system is display the tweets and the differentiates the true positive and negative, false positive and negative. The rate of false positive is the proportion of the cases of negatives that are differentiates as positive, the rate of true negative is the proportion of cases of negatives that are correctly. The F1 measure represents the relationship between different data sets. Accuracy of the classification algorithm can be computed, which is proportional to the total number of predictions which is correct.

The precision of the classification algorithm can be computed, which is proportional to the predicted positive case which is correct. Recall of the classification algorithm can be computed, which is proportion of positive that are corrects and identified which is similar to True Positive.

8) Word count frequency

Each word is how many times appeared and counts, that return most commonly words and represents the number of times they are used.
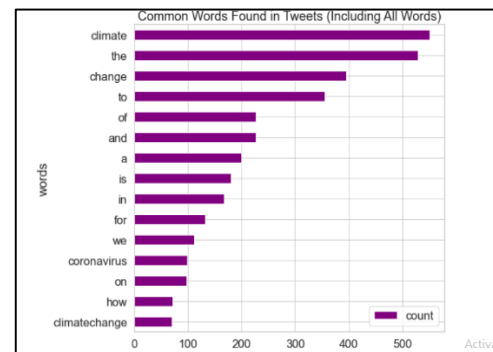

Fig. 8. Word count frequency

5. Future Work

The experiences of learning and predicts the pressure with the social media in mining techniques are follows some future and enhancements are the minimum spanning tree for classification of the tweets to the problem of the students. Next, the prediction of the pressure for each student is measured from student's problem. The Latent Dirichlet Allocation checks the most relevant words and most important tweets will be done and the measure of fuzzy similarity that will be done in each topic and its count based on the analysis of performance is measured from the clustering and the classifications.

6. Conclusion

The real-time application focuses on the analysis of sentimental and behavioural, that follows tweets are classified and summarising on the twitter. Here, sentiment classifiers are dependent on user behaviour and Naive Bayes classification algorithm, which is used to classification of different emotions of the student's. The analysing and classifying student data is implemented. The developed is classifying tweets into a different, that is depends on the student emotions. The learning is not only involves the negative impacts for education fields about also involves the positive. Like, cultural activities and other extra work and experience not only stressful life in this environment, where it also enjoy the fun activities.

References

[1] X. Lei, X. Qian, and G. Zhao, "Rating prediction based on social sentiment from textual reviews," IEEE Transactions on Multimedia, vol. 18, no. 9, pp. 1910–1921, 2016.
[2] X. Chen, M. Vorvoreanu, and K. Madhavan, "Mining social media data for understanding students' learning experiences," IEEE Transactions on Learning Technologies, vol. 7, no. 3, pp. 246–259, 2014.

87

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-7, July-2020
journals.resaim.com/ijresm | ISSN (Online): 2581-5792

[3] G. Garje, A. Inamdar, and H. Mahajan, "Stress detection and sentiment prediction: A survey," Internation Journal of Engineering Applied Science and Technology, no. 2.

[4] X. Wang, C. Zhang, Y. Ji, L. Sun, L. Wu, and Z. Bao, "A depression detection model based on sentiment analysis in micro-blog social network," in Pacific-Asia Conference on Knowledge Discovery and Data Mining. Springer, 2013, pp. 201–213.

[5] B. Chen, X. Chen, and W. Xing, "Twitter archaeology of learning analytics and knowledge conferences," in Proceedings of the Fifth International Conference on Learning Analytics and Knowledge. ACM, 2013, pp. 340–349.

[6] I. Kawachi and L. F. Berkman, "Social ties and mental health," Journal of Urban health, vol. 78, no. 3, pp. 458–467, 2013.

[7] N. A. Diakopoulos and D. A. Shamma, "Characterizing debate performance via aggregated twitter sentiment," in Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. ACM, 2013, pp. 1195–1198.

[8] G. Barbier and H. Liu, "Data mining in social media," in Social network data analytics. Springer, 2013, pp. 327–352.

[9] M. De Choudhury, S. Counts, and E. Horvitz, "Social media as a measurement tool of depression in populations," in Proceedings of the 5th Annual ACM Web Science Conference.ACM, 2013, pp. 47–56.

[10] B. Batrinca and P. C. Treleaven, "Social media analytics: a survey of techniques, tools and platforms," Ai & Society, vol. 30, no. 1, pp. 89–116, 2012.

[11] Q. Li, Y. Xue, J. Jia, and L. Feng, "Helping teenagers relieve psychological pressures: A micro-blog based system." in EDBT. Citeseer, 2012, pp. 660–663.

[12] G. Siemens and R. S. d Baker, "Learning analytics and educational data mining: towards communication and collaboration," in Proceedings of the 2nd international conference on learning analytics and knowledge. ACM, 2012, pp. 252–254.

[13] S. Tan, Y. Li, H. Sun, Z. Guan, X. Yan, J. Bu, C. Chen, and X. He, "Interpreting the public sentiment variations on twitter," IEEE transactions on knowledge and data engineering, vol. 26, no. 5, pp. 1158–1170, 2012.

[14] J. N. Rosenquist, J. H. Fowler, and N. A. Christakis, "Social network determinants of depression," Molecular psychiatry, vol. 16, no. 3, p. 273, 2011.

[15] A. G. Billings and R. H. Moos, "Coping, stress, and social resources among adults with unipolar depression." Journal of personality and social psychology, vol. 46, no. 4, p. 877, 2011.

[16] A. D. Kramer, "An unobtrusive behavioral model of gross national happiness," in Proceedings of the SIGCHI conference on human factors in computing systems. ACM, 2010, pp. 287–290.

[17] S. Asur and B. A. Huberman, "Predicting the future with social media," in Proceedings of the 2010 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology-Volume 01. IEEE Computer Society, 2010, pp. 492–499.

[18] J. Bollen, H. Mao, and X. Zeng, "Twitter mood predicts the stock market," Journal of computational science, vol. 2, no. 1, pp. 1–8, 2010.

[19] B. Sriram, D. Fuhry, E. Demir, H. Ferhatosmanoglu, and M. Demirbas, "Short text classification in twitter to improve information filtering," in Proceedings of the 33rd international ACM SIGIR conference on Research and development in information retrieval. ACM, 2010, pp. 841–842.

[20] S. Tan and J. Zhang, "An empirical study of sentiment analysis for chinese documents," Expert Systems with applications, vol. 34, no. 4, pp. 2622–2629, 2008.