Student Analysis and Prediction of performance using Machine learning

M. S. B. GAYATRI, Y. ROHILA REDDY
B-Tech, CSE, Sridevi Women's Engineering College, Hyderabad
Under the guidance of Mrs. M. Mounika (Assistant Professor)

Abstract **- The main aim of analyzing student performance is to find users opinions, identity the sentiments they express, and classify their polarity into positive, negative, and neutral categories because sentiments and opinions expressed by students and teachers are a valuable source of information not only for analyzing students' behavior towards a course, topic, or teachers and student's performance but also for reforming policies and institutions for their improvement. For this we are Trying out Machine learning techniques using sentiment analysis and graphical analysis and performing student and teacher performance analysis using the feedbacks given by them. Education data mining is very vast field. Our proposed system will mainly focus on student performance, student retention, Teaching effectiveness and student progression. So, our proposed system will analyze the feedback comments, to find the student view on professors base and also teachers comments on students' performance on various parameter. By considering additional data like attendance, unit and semester grades and academic history will also help us to find extract reason behind the student's comment. The use of additional data will also help us to find students at risk and prediction of end semester result.**

1.INTRODUCTION

The academic performance of student is usually stored in various formats like files, documents, records etc. Every time accessing these details would be more time consuming and also some may not be analyzed properly Hence there is a need to develop an automated tool for student performance analysis that would analyze student performance and will guide them by displaying the areas where they need improvement, in order to contribute to a student's overall growth by generating a score card for the same. The previous system doesn't give the guidance to student based on the overall performance. The proposed system presents the analysis of student performance on the basis of academic performance, extra-curricular activities, strengths, weakness and hobbies. Academic feedback is essential in secondary schools to keep a rapport between students, teachers, and parents and guardians. There are three main factors that contribute towards a student's progress: attitude, attendance and aptitude. Monitoring their progress is key to a student's development in school and allows both teachers and parents or guardians to support them to a greater extent. Annual reports are sent to a student's home to summarise their performance over the academic year, following set criterion from the government. One aspect of a student's report is the teacher's written comment, providing more details on a student's attitude towards their learning. However, families whose primary language is not English may struggle to interpret this information. This work proposes a system called SENSE (Student performance analysis using sentiment analysis) for improving the information conveyed in secondary school reports through means of natural language processing.

2. PROBLEM STATEMENT

In this Student analysis and prediction of performance using machine learning, we are going to provide an interface were students can give feedback to teachers on their teaching effectiveness and students will be given feedback by teachers based on their overall performance so that we can reform policies and institutions for their improvement.

3.PROPOSED SYSTEM

Student's feedback is important because it can help the lecturers understand the student's learning behaviour. Sometimes students do not understand what the

lecturer is trying to explain, thus by providing feedback students can indicate this to the lecturer. Student's feedback can also help in understanding different issues that students have including the students not understanding the lecture. Feedback needs to be taken in order to make improvements in teaching. If the students do not participate in giving feedback, then there is no way in. So, our proposed System uses educational data mining to improve graduate students' performance and overcome the problem from student's comments by using sentiment analysis and graphical analysis.

4.SYSTEM DESIGN

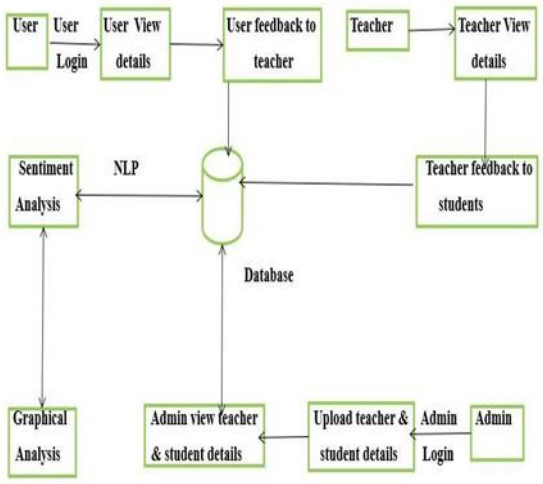

Fig 1. System design for Student Analysis and Prediction of performance using Machine Learning.

The above figure is the architecture of the student analysis and prediction of performance using machine learning which represents the functions of Admin, user and teacher.

In this project, we have mainly three persons admin, teacher and the user. Admin is the one who manages and maintains all the data in the website. Admin is the person who validates whether the users or teachers are valid users or not. If new teacher or student joins the institute then admin only uploads their details so that they can give feedback. Teacher login and give feedback to students and in the same way students give feedback to teachers based on their teaching effectiveness. Admin then performs sentiment analysis in order to view the feedback given by them.

5. SYSTEM COMPONENTS

There are three system components or modules in this project. The three system modules are,

1.Admin

2.User

3.Teacher

1. ADMIN

Firstly, the admin has to login with his/her credentials. After login, the admin uploads the details of students and teachers. Admin then view the uploaded details of student and teacher. Then sentiment analysis is performed based on the feedback given. Admin then performs graphical analysis over a period of time.

2. USER

User in this case is student who login with his/her credentials. After login the user view the details and give feedback to the teacher based on their teaching effectiveness and then performs graphical analysis.

3. TEACHER

Teacher login with his/her credentials. After login the teacher view the details and give feedback to the student based on their overall performance and then performs graphical analysis.

6. RESULTS AND DISCUSSIONS

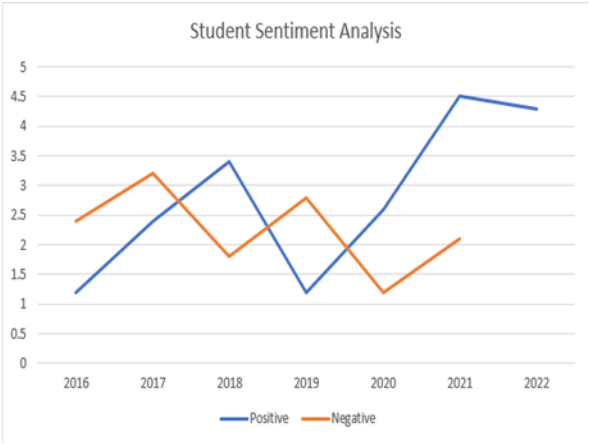

Fig 2. Student Performance over a period

The x-axis of the graph contains the student performance in each academic year and the y-axis of the graph contains the number of improvements in students' performance. Here positive shows the number of positive feedbacks given to them and negative shows the number of negative feedbacks given to them over a period of time.

In the above graph the positive feedbacks given to the students increased over a period of time and also decreased over a period of time but finally positive feedbacks increased and reached 4.5 till the current year.

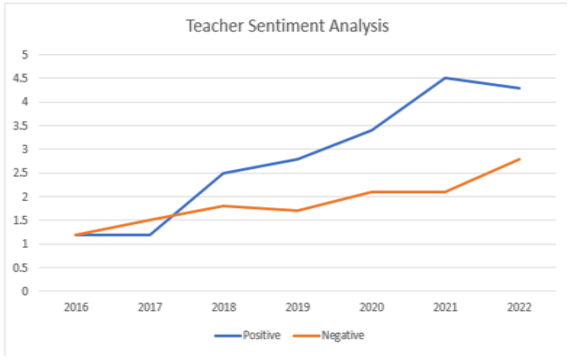

Fig 3. Teacher Performance over a period.

The x-axis of the graph contains the teacher performance in each academic year and the y-axis of the graph contains the number of improvements in teachers' performance. Here positive shows the number of positive feedbacks given to them and negative shows the number of negative feedbacks given to them over a period of time. Here feedbacks are given to them based on their teaching effectiveness.

In the above graph the positive feedbacks given to the teacher increased over a period of time and stayed constantly and reached 4.5 till the current year. Negative feedbacks were low remained constantly till the current year.

7. CONCLUSION

It is notices based on the given literature that there is a need to develop the proposed system because teachers' evaluation is tedious work for the administrator to identify and validate the concerns of the students to their teachers.

So, our system will produce better aspect or topics from feedback as we are not just using frequency counter given in existing system. And our historical data will also help us to find extract reason behind the student's comment.

8.FUTURE ENHANCEMENT

The Scope for Future Enhancement in the Project "Student Analysis and Predict of Performance using machine learning" is to include features to add internal marks, external marks and attendance. We can also add features for viewing comments.

REFERENCE

[1] Plutchik, R. The Nature of Emotions. Am. Sci. 2001, 89, 344–350. [CrossRef]

[2] Cambria, E.; Schuller, B.; Xia, Y.; Havasi, C. New Avenues in Opinion Mining and Sentiment Analysis. IEEE Intell. Syst. 2013, 28, 15–21. [CrossRef]

[3] Feldman, R. Techniques and Applications for Sentiment Analysis. Commun. ACM 2013, 56, 82–89. [CrossRef]

[4] Yang, L.; Li, Y.; Wang, J.; Sherratt, R.S. Sentiment analysis for E-commerce product reviews in Chinese based on sentiment lexicon and deep learning. IEEE Access 2020, 8, 23522–23530. [CrossRef]

[5] Carosia, A.; Coelho, G.P.; Silva, A. Analyzing the Brazilian financial market through Portuguese sentiment analysis in social media. Appl. Artif. Intell. 2020, 34, 1–19. [CrossRef]

[6] Capuano, N.; Greco, L.; Ritrovato, P.; Vento, M. Sentiment analysis for customer relationship management: An incremental learning approach. Appl. Intell. 2020, 50, 1– 14. [CrossRef]

[7] Sharma, S.K.; Daga, M.; Gemini, B. Twitter Sentiment Analysis for Brand Reputation of Smart Phone Companies in India. In Proceedings of ICETIT 2019; Springer: Berlin/Heidelberg, Germany, 2020; pp. 841–852.

[8] Imran, A.S.; Daudpota, S.M.; Kastrati, Z.; Batra, R. Cross-cultural polarity and emotion detection using sentiment analysis and deep learning on COVID-19 related tweets. IEEE Access 2020, 8, 181074–181090. [CrossRef]

[9] Chauhan, P.; Sharma, N.; Sikka, G. The emergence of social media data and sentiment analysis in election prediction. J. Ambient. Intell. Humaniz. Comput. 2020, 11, 1–27. [CrossRef].

[10] Wen, M.; Yang, D.; Rosé, C.P. Sentiment Analysis in MOOC Discussion Forums: What does it tell us? In Proceedings of the 7th International Conference on Educational Data Mining, EDM 2014, London, UK, 4–7 July 2014; pp. 130–137.