



# Machine Learning Based Student Performance Prediction using Feedback Method

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## Abstract

It looks into opinion mining using supervised learning approaches to uncover the sentiment behind the student feedback that supports and characterizes teaching and learning decisions. The research team used a combination of AI and human language processing tools on student input data gathered from module investigation overview results at VR Siddhartha Engineering College in Vijayawada. The work also offers a comparative overall performance look at remarks supported, extracted alternatives like examination, teaching, and so on. This is done in order to provide a grade-by-grade explanation of the method of success of opinion mining on or after student comments using the open-source tool Python. Comparing the results to seeking for superior overall performance with regard to many evaluation criteria specified for the Any institution among humanity is managing a vast amount of information. Volume, velocity, and selection—the three Vs—are frequently used to describe this "Big Data" The three dimensions are typically more important to examine as a whole than any one of them alone. Due to the abundance of structured records—such as grades, conscription data, and development quotes—as well as unstructured records—such as student opinions expressed in

surveys—it would take too much time and effort to manually summarize the facts in order to draw conclusions and make decisions.

**KEYWORDS:** Performance Analysis, Support Vector Machines, Predictive analytics, Machine Learning (ML).

## 1. INTRODUCTION

### 1.1 Introduction

Wassan contends that educational institutions fall under the same general category. It takes a lot of time and resources to manually summarize the data in order to reach data-driven conclusions and decisions due to the abundance of structured data, such as grades, enrollment information, progression rates, and unstructured data, such as student opinions expressed through surveys, web blogs, Twitter, and Facebook. In order to improve teaching and learning, the area of learning analytics (LA) measures, analyzes, reports, and forecasts data about learners. Structured data, such as grades, attendance statistics, login frequency, and site engagement with regard to a learning management system (LMS), are the types of data that are typically studied. However, On the other hand, in order to effectively raise an institution's performance and

develop plans to improve the teaching and learning environment, it is essential to comprehend the patterns shown by data such as student feedback. Surveys play a significant role among the various methods for gathering student input, and the majority of educational institutions conduct them in a variety of ways. Three surveys—Student Satisfaction Survey, Module Evaluation Survey, and Blitz Survey—are conducted annually at Middle East College (MEC) to gauge the degree of student satisfaction. In these surveys, students express their opinions on a range of topics pertaining to teaching and learning at the college. While the Blitz survey is deployed, the module assessment survey and the student satisfaction survey are also conducted electronically.

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## 2. Literature Survey

- [1] V. Dhanalakshmi ; Dhivya Bino “Opinion mining from student feedback data using supervised learning algorithms”, 2016 3<sup>rd</sup> MEC International Conference on Big Data and Smart City (ICBDSC):, This study investigates the use of supervised learning algorithms in opinion mining to determine the polarity of student input based on pre-defined teaching and learning parameters. A combination of machine learning and natural language processing techniques are being used in the project to analyze

student feedback data that was acquired from Middle East College in Oman's module evaluation survey results. This paper presents a comparative performance study of the algorithms like SVM, Naive Bayes, K Nearest Neighbor, and Neural Network classifier in addition to outlining the process of implementing opinion mining from student comments using the open source data analytics tool Rapid Miner. The survey's extracted data set is put through data preparation before being used to develop the binomial classification methods. Based on extracted features like examination, instruction, etc., the trained models may also predict the polarity of student comments. To determine which algorithm performs better overall given various evaluation criteria, the results are compared.

[2] Sarpreet Kaur<sup>1</sup> , Rasleen Deol,” Students Feedback for Mining Their Opinions Using Supervised Learning Algorithm” International Journal of Engineering Science and Computing, June 2017: This study investigates the use of supervised learning algorithms in opinion mining to determine the polarity of student input based on pre-defined teaching and learning parameters. A combination of machine learning and natural language processing techniques are being used in the project to analyze student feedback data that was acquired from Middle East College in Oman's module evaluation survey results. This paper presents a comparative performance study of the algorithms like SVM, Naive Bayes, K Nearest Neighbor, and Neural Network classifier in addition to outlining the process of implementing opinion mining from student comments using the open-source data analytics tool Rapid Miner. The survey's extracted data set is put through data preparation before being used to develop the binomial classification methods. Based on extracted features like examination, instruction, etc., the trained models may also predict the polarity of student comments. To determine which algorithm performs better overall given various evaluation criteria, the results are compared.

## 3. OVERVIEW OF THE SYSTEM

### 3.1 Existing System

Performance in an existing system can be examined using a variety of techniques. This imposes numerous restrictions on the specifics and operations of students. Most of the solutions are manual. Such a system takes time and requires expert workers.

### 3.1.1 Disadvantages of Existing System

- Less feature compatibility
- Low accuracy.

### 3.2 Proposed System

For the purpose of predicting teacher performance in the proposed system, we employ supervised machine learning methods such as Naive Bayes, K Nearest Neighbors Classifier, and Support Vector Machines.

### 3.3 Methodology

#### System:

#### Takes Dataset

The system allows users to upload the Dataset.

#### Store Dataset:

The System stores the dataset given by the user.

#### Model selection:

The system takes the data from the user and fed that data to the selected model.

#### Model Predictions:

The system takes the data given by the user and predict the output based on the given data.

#### User:

#### Registration:

If the user is new he/she will provide the details for the registration.

#### Login:

User can provide valid details for the login.

#### Load Dataset:

The user can load the dataset he/she want to work on.

#### View Dataset:

The User can view the dataset by clicking the view dataset module.

#### Select model:

User can select the model provided by the system for accuracy.

#### Predictions:

User can enter random values for prediction.

#### Feedback:

User can enter the feedback when the teachers performance is not satisfactory.

#### Admin

#### Login:

Admin can enter the valid details for the login.

#### View Users:

Admin can see the users who used the application.

#### View Remarks:

Admin can see the remarks entered by the students.

#### View Feedback:

Admin can see the feedback given by the student.

## 4 Architecture

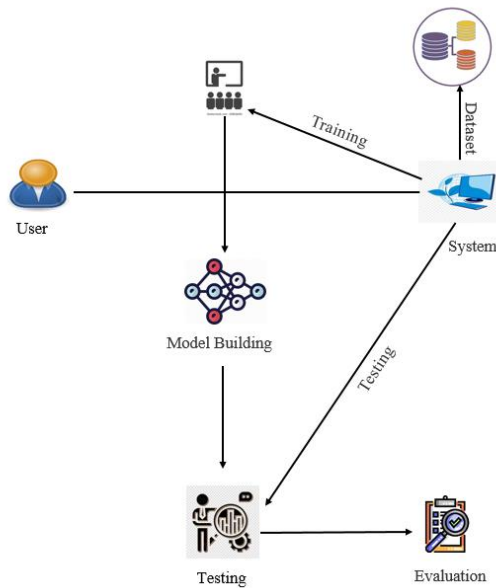


Fig 1: Frame work of proposed method

Above architecture diagram shows three stages of data flow form one module to another module. Data collection, preprocessing, and algorithm training.

## 5 RESULTS SCREEN SHOTS

**Home Page:**

**Upload image:**

**Choose options:**

**Predict Result:**

## 7. CONCLUSION

✓ We have successfully developed an ML model to determine whether the teacher performance is good, poor, or fair in this application. This was created in a user-friendly setting utilizing Python programming and Flask. We found that the Nave Bayes Classifier outperforms the K Nearest Neighbors Classifier and the Support Vector Classifier in terms of accuracy.

## Future Enhancement

✓ By adding new hyperparameters and constraints, this system can be expanded to increase the models' accuracy. Additionally, grouping them using clustering might be helpful.

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