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Performance and Feedback Analyzer

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Abstract: ***We examine opinion mining using supervised learning techniques to discover the sentiment of student inputs supported by labeled teaching and learning decisions. The exams conducted included undergraduate input data collected from VR Siddhartha Engineering College, his Mixed Apparatus of AI, and the General Language Preparation System on a custom database collected using forms. In addition, in order to describe step-by-step techniques for obtaining opinions on or from scientific statements using open-source Python tools, this work demonstrates the overall performance of supporting arguments. We provide additional comparisons and extract alternatives. exams, apprenticeships, etc., are compared to find higher overall performance, and several scoring criteria have been developed for different techniques.***
Keywords: Data Science, Opinion mining, Sentiment analysis, Supervised learning, Natural Language Processing, SVM.

I. INTRODUCTION

The existence of an enormous amount of ordered records pretty much like grades, conscription information, and development quotes likewise as unstructured in order like scholarly opinions articulated via surveys, it will become a time and useful source overwhelming to précis the facts by hand to gain information lead conclusions and alternatives. This paper focuses on using the Opinion Mining and sentiment analysis technique for classifying the student's feedback obtained during the module evaluation survey that is conducted every semester to know the feedback of students with respect to various features of teaching and learning such as modules, teaching, assessments, etc.

In colleges to know the ongoing efficiency and to know the level of student satisfaction, in a year, three surveys are conducted viz. Student Satisfaction Survey, Module Evaluation Survey, and Blitz Survey through which students give their opinion about various factors related to teaching and learning at the institution. The module evaluation survey and student satisfaction survey are conducted electronically whereas the Blitz survey is implemented manually. In all these three cases, the data analysis is done manually which causes substantial delays in making appropriate decisions for improvement based on student concerns which result in less student satisfaction and less intake. To avoid this circumstance and to increase the revenue of the college, the proposed research is undertaken.

II. LITERATURE REVIEW

1) *Opinion Mining:* Opinion mining, or sentiment analysis, is a field in Natural Language Processing (NLP). It extracts human beings' thoughts, including assessments, attitudes, and emotions in the direction of individuals, topics, and events. The project is technically an impediment but very beneficial. with the explosive increase of digital systems in cyberspace, together with blogs and social networks, people and agencies are increasingly utilizing public opinion for their choice-making. In recent years, research on mining people's opinions from texts in cyberspace using opinion mining has been actively conducted. researchers have implemented numerous opinion-mining techniques, consisting of system studying and lexical-based tactics, to analyze and classify humans' evaluations based on texts and talk about existing gaps. hence, it creates a possibility for distinctive researchers to analyze and advise stepped-forward strategies and new place applications to fill the space. The NB classifier is the most commonly used text mining classifier that uses Bayes' theorem to compute the probability that a given label belongs to a given feature, *p(l/f)* using the below formula ***P(l/f) = (P(l)*P(f/l))/P(f)(1)***. where P(l) is the probability of a tag occurring in the data set and P(f/l) is the probability that a particular feature belongs to a particular tag. P(f) is the occurrence of a particular feature in the dataset. The final results of OM heavily depend on the preprocessing or preparation of the data before classification, the representation of the text suitable for classification, and the classifier used. The main tasks involved in data preprocessing are tokenizing – separating the sentences into words, removal of stop words prepositions, pronouns, etc. that do not give any additional meaning to the documents, Stemming – Convert words in various grammatical forms into root words and generate n-grams.

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2) *Data Mining:* There are large amounts of databases available with the increase in Information Technology. Data is present in huge amounts which comprise various fields. For the purpose of future decision makings, the data needs to be stored and manipulated. For this, various databases have been developed and research has been carried out for their management. The process of extraction of useful information and patterns from large amounts of stored data is known as data mining. Data mining is a method of examining large existing databases to generate new information. It is a process of processing large volumes of data (usually data stored in a database). used to locate relationships between styles and information. Various types of data are being analyzed with the help of certain data mining tools.

III. METHODOLOGY

The data is collected from the students in the form of feedback from the college or the feedback form sent to students using third-party apps such as google forms, Zoho forms, Microsoft forms, etc. The feedback consists of textual reviews. Data Pre-processing is done as the next step for the same. After that, opinion classification is performed on the dataset and the results are obtained.

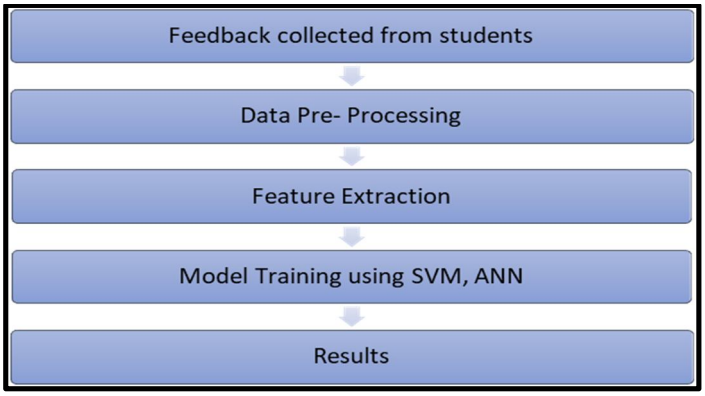

Fig1. Workflow

1) *Module Evaluation Survey and Data Collection:* The data is collected from the customers by using webpage forms, or some other way that can easily reach the customer's place. The collected data consists of textual statements, and some other impurities like extra symbols, and unwanted spaces. In addition to demographic and evaluation questions, the survey included open-ended questions, allowing respondents to provide detailed comments on various aspects of their instruction and learning at the institution from which the data set for experimentation was primarily extracted. The Survey Monkey tool automatically generated the data in the form of an MS Excel spreadsheet and the flash survey results were manually summarized in an MS Excel file.
2) *Data Pre-Processing:* Pre-processing is the progression of concentrated effort to the data from redundant elements. it increases the accuracy of the consequences by means of reducing mistakes inside the statistics. Pre-processing of data is one of the most important tasks that must be done before the dataset be able to be used for machine learning. The real-world statistics are incomplete and incompatible. So, it is necessary to be cleaned. Not by means of pre-processing, such as enchantment corrections, may lead the system to disregard important words. Preprocessing and concentrating the effort of data is one of the most important tasks that must be done before the dataset be able to be used for machine learning. The real-world statistics are strident, incomplete, and incompatible. So, it is necessary to be cleaned. It must be done before the dataset is able to be used for machine learning. The real-world statistics are improper and incompatible. So, it is necessary to be cleaned.

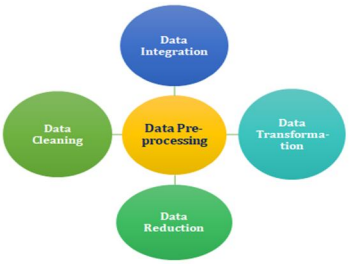

Fig2. Data Pre-Processing

3) *Entity and Feature Extraction:* Feature Extraction aims to reduce the number of features in a dataset by creating new features from the existing ones In order to understand the polarity of opinion with respect to various features, the terms Module, Teacher, Exam, and Resources were chosen. These words and their synonyms have been applied to Rapid Miner's SelectAttributes and FilterRows operators for a functional understanding of polarity.

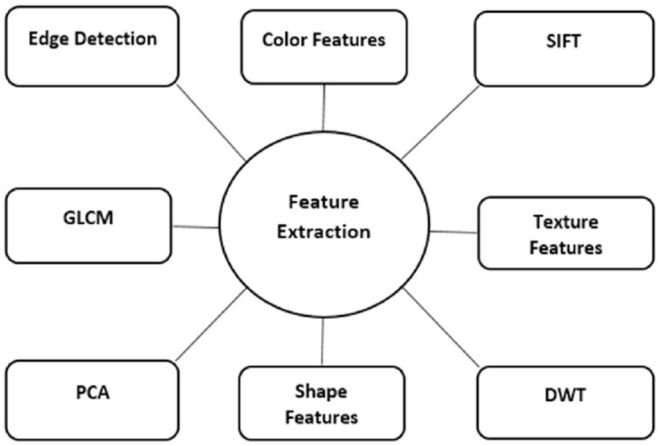

Fig3. Feature Extraction Techniques

4) *Model Training:* Function extraction is the name for techniques that choose and /or integrate variables into functions. it successfully reduces the number of statistics to process whilst as it should be and completely describes the original dataset. The supervised learning algorithms that were used are SVM, NB, K-NN, and ANN. The Validation operator from Rapid Miner which allows simultaneously train and test the classifiers was employed. In particular, the facility of cross-validation was exploited for the input dataset by setting the value to 10. This meant that the data set was divided into 10 groups of which the first 9 groups were used as training and one group was used for testing. In the second run, a different combination of 9 sets became the training data and a new set became the testing data. The process was continued until all the permutations were finished.

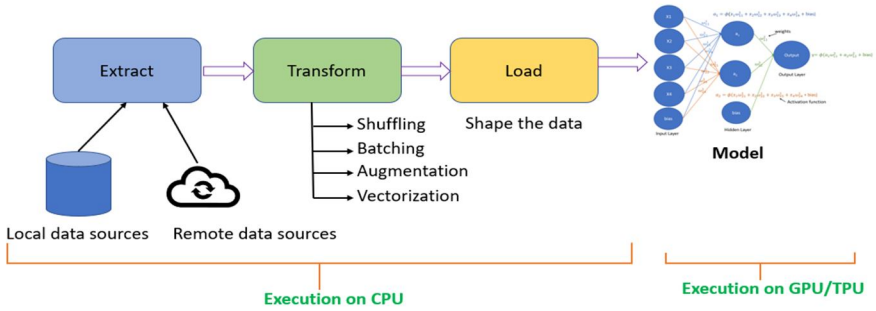

Fig4. ETL Model Training

5) *Result Evaluation:* To compare the performance of the four algorithms employed, Accuracy, Precision, and Recall values were calculated for each of the classifier algorithms by using the Performance Operator of Rapid Miner. Training, Testing, and Performance evaluation process will be undertaken.

IV. CONCLUSION

Opinion-based mining becomes accustomed removes the remarked normal alternatives and evaluation words from the contribution dataset. A Student Feedback Mining System is working to inquire about points and their slants as of understudy-produced criticism. This strategy will be useful to improve student knowledge and the educator's process for conveyance. Automating the student's feedback may give several advantages together with saving price, time, and creating economical report generation, etc. the utilization of opining mining will facilitate in summarizing the feedback report effectively and evaluating school performance in the type of a summarized read might be helpful for the establishments.

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In the future assessment, we resolve in broad absolute conclusion mining of student feedback gathered from web-based forms. Similarly, key features of teaching and learning at College are extracted from the student's feedback and classified as positive and negative based on their polarity to analyze the feature that needs improvement. Improving the accuracy is also the futuristic scope of the project. We are also planning to improve the performance of the opinion mining process by using a map-reduce framework by which program-wise, and year-wise analysis can be run parallel.

V. ACKNOWLEDGEMENT

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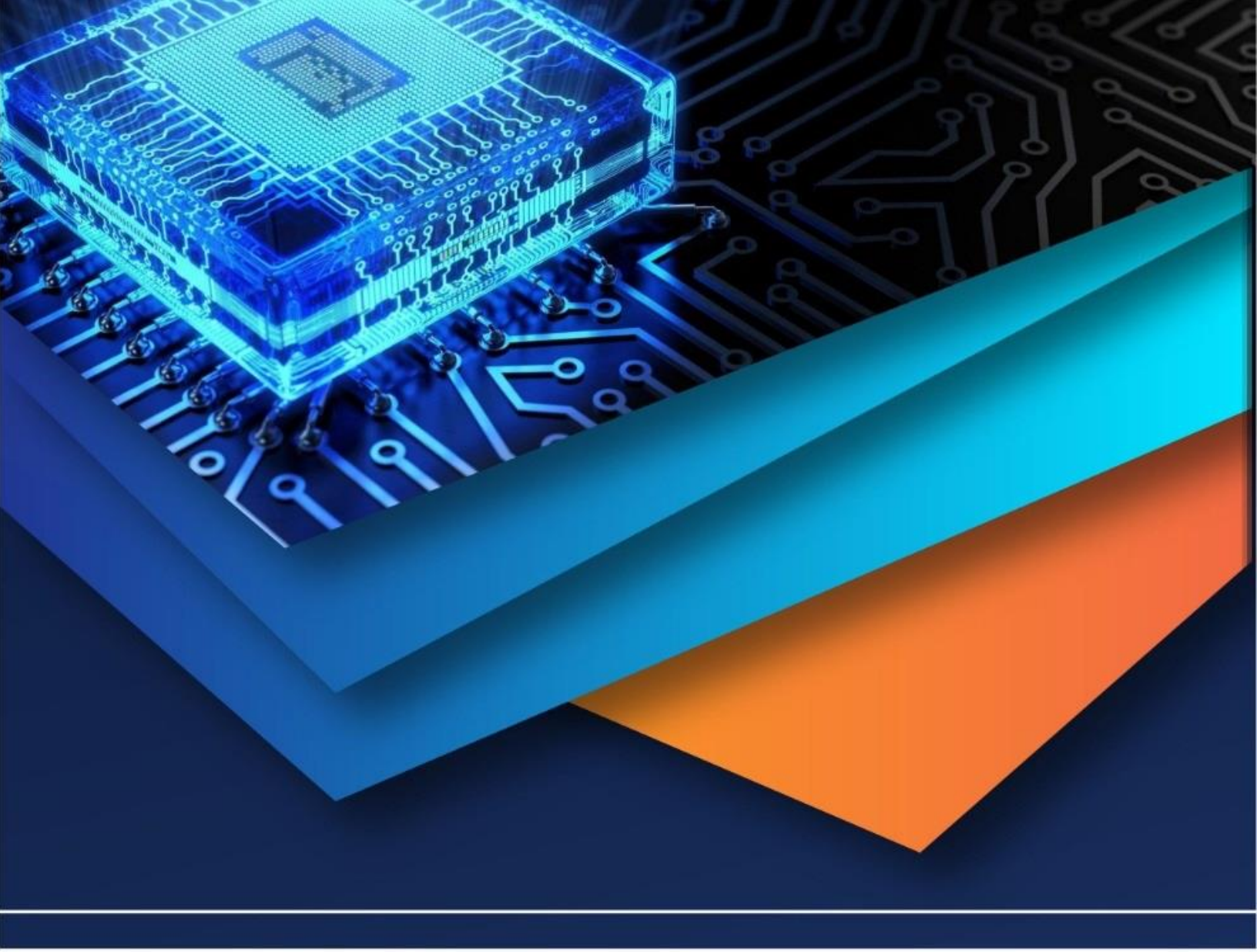

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