International Journal of Research Publication and Reviews

Predictive Modeling and Analytic of Student's Grade.

Prof.Poonam Pawar[1], Riya Pramod Pawar[2], Ruhee Pramod Pawar[3], Mohd Rizwan Shaikh[4], Pranjali Satardekar[5] *

Vidyalankar Polytechni, Wadala (East), Mumbai-400037,India

ABSTRACT :

Student performance prediction plays a role, in evaluating students' progress. As the saying goes "prevention is better than cure." Our research aims to determine students' statusand forecast their outcomes. These results can guide teachers in preventing results and helping students thrive. By identifying the factors that influence exam performance we can advise students on which courses they should take in a semester taking on the roleof an advisor or teacher. Every year many students struggle due toa lack of guidance and supervision. It's practically impossible fora teacher to individually monitor each student. However, if there was a system that could assist teachers in identifying which students require support it would greatly benefit both teachers andstudents. The ultimate goal is to use intelligence to help students avoid predicted outcomes. If a student could be aware of their performance and receive notifications on how to improve their examination scores it would be incredibly beneficial. This study aims to provide assistance, to both students and teachers with an accuracy rate of 94.88%.

Keywords: Student Marks Prediction, Machine LearningAlgorithm, Academic Result.

1. Introduction :

Students play a role, in both institutions and the country as awhole. In a classroom its challenging for teachers to closely monitor every student making it difficult to provide attentionto all. Within a classroom you'll find an array of extroverted students. As we began offering tutoring services to students we realized the importance of tracking each students progress.It's vital for teachers to identify when a student is falling behind before it becomes an issue. That's why we embarked on research exploring how Artificial Intelligence and a student's past academic performance can help us predict theirsituation. The academic data of students serves as the cornerstone of this research as it provides insights, into theirstudy habits, preferred subjects and areas they may struggle with. Additionally conducting an IQ test and considering factors can further contribute to our understanding. By comprehending how time students devote to studying versuspursuing hobbies or other activities we can determine the typeof motivation they require from their teacher.

Teachers play a role, as mentors and guides for students. It is our belief that teachers should be aware of their students potential for success in fields or courses. By having access to a student's performance data teachers can offer assistance. Take proactive measures to enhance the students' progress even before the semester concludes. Similarly if students themselves have insights, into their predicted outcomes they can also take actions to improve their development. This research extends beyond achievements—it encompasses overall growth and improvement.

If a student attends classes regularly and performs well in class tests and mid-terms it is likely that they will also do wellin the examination. However what if a student does well in the mid-term. Has attendance or performance, in class tests?.What if someone has excellent presentation skills but struggles, during the examination? It's important to rememberthat nobody is perfect including students. Nevertheless we believe that we can strive for perfection to the best of our abilities. Therefore this research aims to predict exam performance based on students past event reports. In MachineLearning, K-Nearest Neighbors, SVM, Decision Tree Classifier, Random Forest Classifier algorithm can be appliedto predict the future result from some existing attributes of students.

2. Literature Review :

In our project, focused on modeling and analyzing student grades, we aim to predict the marks of a student. [1]H.M RafiHassan mentioned in his research that certain fundamental variables, such as attendance, assignment scores, andpresentation marks, were not taken into consideration.

[2] According to Brijesh Kumar Bhardwaj and Saurabh Pal,the profession of parents, living environment, andphysiological factors also play a role in student performance. However, collecting data on these aspects canbe challenging, especially when it comes to obtainingcertified specialists.

A study conducted by Pandey and Pal [3] focused on studentperformance as well. They utilized Bayes Classification techniques along with information about language proficiency, category, and background qualifications among 600 students from colleges to predict the performance of students.

In their research [4], Han, J., and Kamber, M., summarize the relationships to analyze them from different perspectives.They examine the impact of language proficiency and background qualifications using Bayes Classification on 600students from colleges. This study helped determine whethernew incoming students would perform well or not.

3. Calculation :

Calculate the total marks obtained in eachcomponent:

- CT1: 10 marks
- CT2: 10 marks
- Viva1: 5 marks
- Viva2: 5 marks
- Questionnaire: 15 marks

Total marks obtained = 10 (CT1) + 10 (CT2) + 5 (Viva1)

+ 5 (Viva2) + 15 (Questionnaire) = 45 marks

Calculate the proportion of marks obtained out of thetotal:

- Proportion of CT1 marks = (10 / 90) * 100 ≈11.11%

- Proportion of CT2 marks = (10 / 90) * 100 ≈11.11%

- Proportion of Viva1 marks = (5 / 90) * 100 ≈5.56%
- Proportion of Viva2 marks = (5 / 90) * 100 ≈5.56%
- Proportion of Questionnaire marks = (15 / 90) * 100 ≈ 16.67%

Apply the proportions to the total desired marks (70in this case):

- Predicted CT1 marks = (11.11% of 70) ≈7.78
- Predicted CT2 marks = (11.11% of 70) ≈7.78
- Predicted Viva1 marks = (5.56% of 70) ≈3.89
- Predicted Viva2 marks = (5.56% of 70) ≈3.89
- Predicted Questionnaire marks = (16.67% of 70) ≈ 11.67

Sum up the predicted marks for the final prediction:

- Predicted total marks ≈7.78 + 7.78 + 3.89 + 3.89 +

11.67 ≈35.01

So, based on this calculation, the predicted marks out of70 for the given person would be approximately **35**.01.
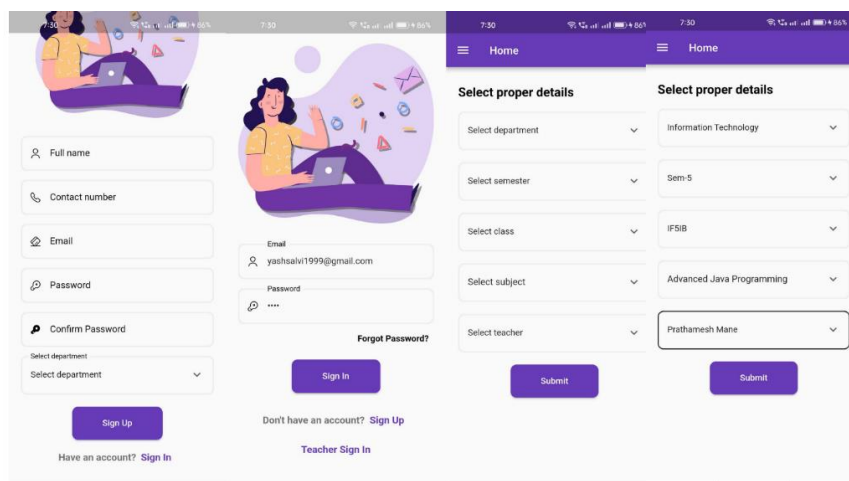
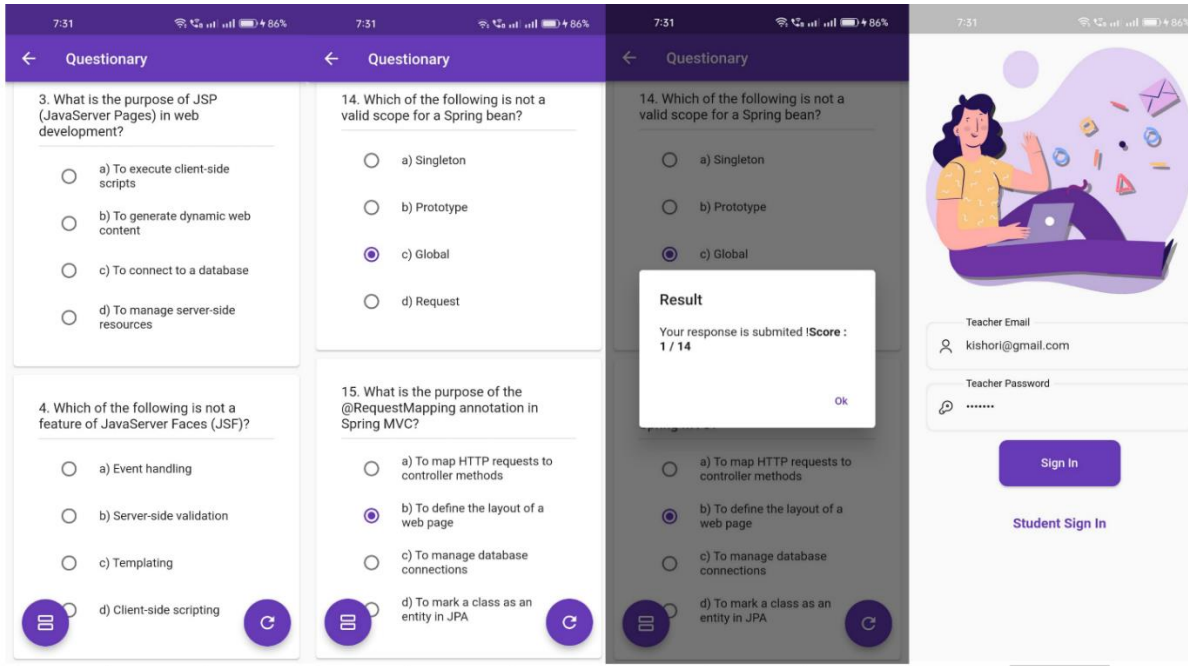## 4. Application Interface

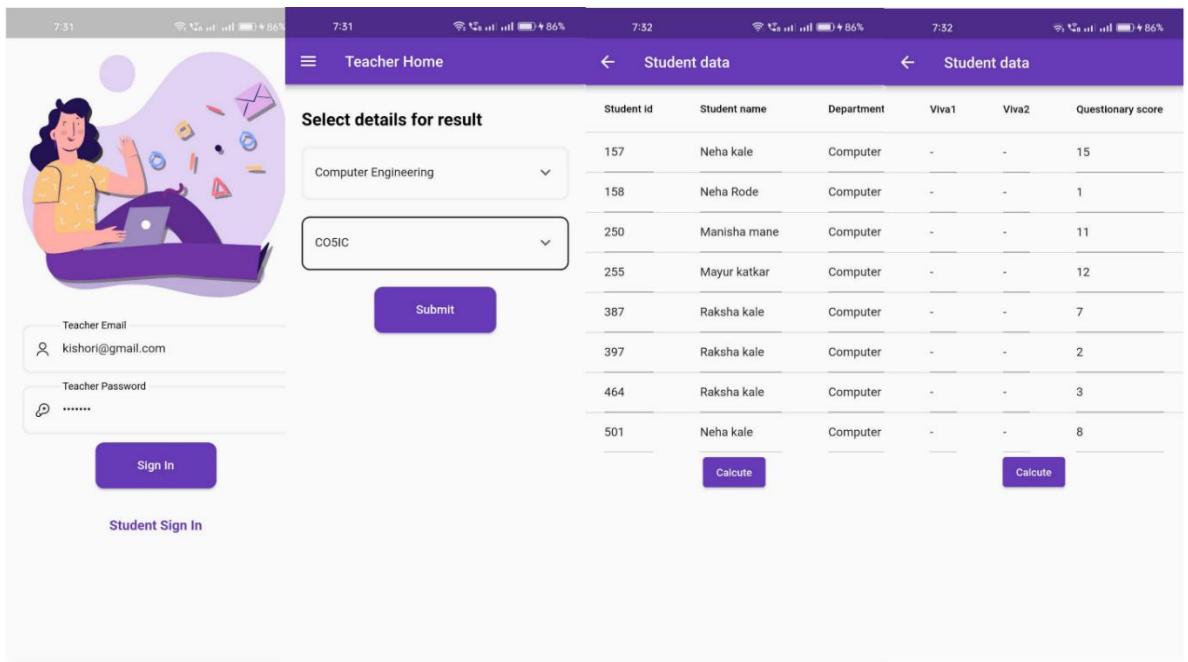**Fig 1 Student Sign in**

Fig 2 Questionary

Fig 3 Teacher's Interface

Explanation of application

   Fig1: -In the scenario illustrated a student is depicted setting up their account within our software platform. Once the account creation process is complete, they are required to log in using their email and password. Subsequently they need to choose their class and department.
   Fig2: -Moving on to the scenario once a student successfully establishes their account a series of questionnaires tailored to their chosen subjects will be presented. The outcomes of these questionnaires will be forwarded to the designated teacher.

Fig3: -In the scenario teachers are unable to register accounts themselves; they can only access the login section. Their login details will already be stored in the database. Upon logging in teachers must designate their department and class. Subsequently all student data becomes visible, to them; following which they need to input data (Unit 1 Unit 2 Viva 1 Viva 2). After data entry is completed, by clicking on the "Calculate" button teachers can estimate students' scores out of 70 Marks.

REFERENCES :

1. https://doi.org/10.1109/ICCCNT45670.2019.8944629
2. https://link.springer.com/article/10.1007/s10639-022-11299-8
3. https://www.researchgate.net/publication/363392413_Predictive_modelling_and_analytics_of_students'_grades_using_machine_learning_algorithms
4. https://typeset.io/papers/predictive-modelling-and-analytics-of-students-grades-using-1a5zpkpq