

THE DEVELOPMENT OF AN INTERACTIVE, ANALYTICAL PLATFORM FOR STUDENTS TO EVALUATE ACADEMIC PERFORMANCE

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in Computer Science and Engineering

By

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**INSTITUTE OF SCIENCE AND TECHNOLOGY
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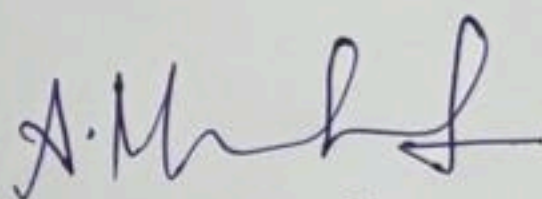
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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **SHARON RAJAH M(40111188), SHAIKH ASIF BASHIR (40111173)** who carried out the Project entitled "THE DEVELOPMENT OF AN INTERACTIVE, ANALYTICAL PLATFORM FOR STUDENTS TO EVALUATE ACADEMIC PERFORMANCE" under my supervision from November 2023 to April 2024.

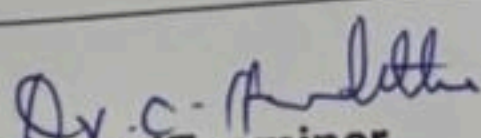


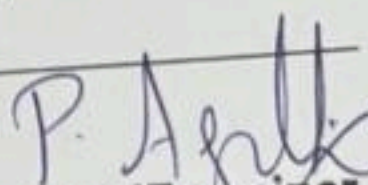
Internal Guide

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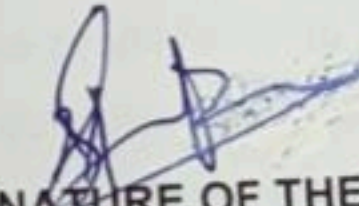

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DECLARATION

I, SHARON RAJAH M(40111188) hereby declare that the Project Report entitled "THE DEVELOPMENT OF AN INTERACTIVE, ANALYTICAL PLATFORM FOR STUDENTS TO EVALUATE ACADEMIC PERFORMANCE" done by me under the guidance of Dr. A.Mohanapriya, M.E., Ph.D., is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in **Computer Science and Engineering**.

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ABSTRACT

The development of an Interactive, Analytical Platform for Students to Evaluate Academic Performance represents a pivotal advancement in the realm of educational technology. This innovative platform aims to provide students with a comprehensive tool to assess their academic progress, identify areas of strength and weakness, and make informed decisions to enhance their overall performance.

The platform employs an interactive interface, allowing students to input their academic data and receive personalized analytics and insights. By utilizing sophisticated algorithms and data visualization techniques, the platform generates visual representations of students' performance across various subjects, exams, and assignments, enabling them to easily recognize patterns and trends.

Additionally, the platform offers students the opportunity to set personal goals, track their progress, and receive automated feedback and recommendations on study strategies and resources. Moreover, the analytical platform incorporates social features, enabling students to compare their performance with their peers and engage in collaborative learning experiences.

This fosters a sense of healthy competition, motivation, and peer support. The platform's user-friendliness and accessibility on multiple devices make it a practical tool that can be integrated seamlessly into students' daily routines. Overall, the development of this Interactive, Analytical Platform holds immense potential in supporting students on their educational journey, empowering them to take ownership of their academic performance, and ultimately fostering a culture of continuous improvement.

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LIST OF ABBREVIATIONS

ABBREVIATION	EXPANSION
LMS	Learning Management Systems
SIS	Student Information Systems
WCAG	Web Content Accessibility Guidelines
IAPSEAP	Interactive, Analytical Platform For Students To Evaluate Academic Performance

CHAPTER 1

INTRODUCTION

1.1 Background And Significance:

Discuss the importance of evaluating academic performance as a tool for student improvement and overall educational development. Evaluating academic performance is crucial in fostering student improvement and overall educational development. It serves as a powerful tool to assess students' progress, identify areas of strengths and weaknesses, and implement targeted interventions to support their learning journeys. By providing students with the opportunity to evaluate their own academic performance through an interactive, analytical platform, we can empower them to take ownership of their education and cultivate a growth mindset.

First and foremost, self-evaluation encourages students to reflect on their learning experiences and gain a deeper understanding of their academic abilities. Through this process, students can critically analyze their strengths, weaknesses, and areas in need of improvement. By actively engaging in self-assessment, students become more aware of their learning styles, preferences, and areas where they may need additional support or resources. This self-awareness allows students to make informed decisions about their learning strategies and seek the necessary assistance to enhance their academic performance.

Moreover, an interactive, analytical platform for self-evaluation can provide students with real-time feedback and progress tracking. This feature would enable students to monitor their growth and track their academic achievements over time. By visualizing their progress and observing their performance trends, students can identify patterns and make data-driven adjustments to their study habits or approaches. This platform can also offer personalized recommendations, such as suggesting specific resources or study techniques based on the analysis of their academic performance data. By utilizing these personalized insights, students can optimize their learning experiences and improve their academic outcomes.

Furthermore, fostering a culture of self-evaluation and continuous improvement can contribute to students' overall educational development. By encouraging students to reflect on their academic performance, we create an environment that values self-reflection, self-discipline, and self-improvement. These qualities are not only valuable in the context of education but are also transferable skills that can be applied in various aspects of students' lives, both personally and professionally. The ability to self-evaluate effectively fosters a growth mindset, which is essential for lifelong learning and success.

In conclusion, the development of an interactive, analytical platform for students to evaluate their academic performance holds significant importance in fostering student improvement and overall educational development. Through self-evaluation, students gain a deeper understanding of their learning abilities, track their progress, and make data-driven adjustments to their study habits. Moreover, fostering a culture of self-reflection and continuous improvement nurtures valuable skills and attitudes that extend beyond the academic setting. By providing students with the tools to evaluate their academic performance, we empower them to become active participants in their education, taking charge of their learning journeys, and working towards their full potential.

1.2 Current Methods Of Evaluating Academic Performance:

Current methods of evaluating academic performance in educational institutions often face various challenges and limitations that hinder their effectiveness. One of the major shortcomings of traditional evaluation methods is their heavy reliance on subjective assessments. Subjective evaluations, such as teacher assessments and written examinations, are influenced by personal bias and individual perspectives, which can lead to inconsistent and unfair evaluation of students. This subjective nature of assessment can undermine the accuracy and reliability of the evaluation process, making it difficult to obtain an objective measure of students' academic abilities and progress.

Moreover, traditional methods of evaluation also suffer from the limited availability of comprehensive data. Educational institutions typically rely on periodic examinations and assignments to assess students' performance, which only provide a snapshot of their abilities

at a particular moment in time. This narrow focus on specific assessments fails to capture the holistic progress of students over a longer period. It fails to consider additional factors like participation in extracurricular activities, interpersonal skills, and critical thinking abilities, which are equally important indicators of a student's overall academic growth.

To address these challenges and limitations, the development of an interactive, analytical platform for students to evaluate academic performance can be a valuable solution. This platform would leverage technology to provide a comprehensive and objective assessment of students' progress. By incorporating various assessment methods like quizzes, projects, and real-time feedback from teachers, this platform would reduce the dependence on subjective evaluations and provide a more accurate measure of students' abilities. Additionally, the platform could incorporate data from multiple sources, including student records, grades, and feedback from peers, to create a holistic view of their academic performance.

Furthermore, an interactive platform would offer students an opportunity for self-reflection and self-assessment. With features like personalized learning plans, goal-setting tools, and progress tracking, students would be empowered to take ownership of their learning journey and explore areas of improvement. By providing actionable insights and personalized recommendations, the platform would enable students to identify their strengths and weaknesses, and actively work towards enhancing their academic performance.

In conclusion, the traditional methods of evaluating academic performance face significant challenges and limitations. The development of an interactive, analytical platform can overcome these shortcomings by reducing reliance on subjective assessments, and providing a comprehensive evaluation of students' abilities. By empowering students to take an active role in assessing their progress, such a platform has the potential to revolutionize the way we evaluate academic performance and promote holistic growth among students.

This narrow focus on specific assessments fails to capture the holistic progress of students over a longer period. It fails to consider additional factors like participation in extracurricular activities, interpersonal skills, and critical thinking abilities, which are equally important indicators of a student's overall academic growth.

1.3 Current Challenges And Limitations:

Highlight the shortcomings of traditional methods of evaluating academic performance, such as reliance on subjective assessments and limited availability of comprehensive data.

The primary goal of developing an interactive, analytical platform for students to evaluate their academic performance is to provide insightful metrics that enable students to gain a comprehensive understanding of their strengths, weaknesses, and progress. This platform aims to go beyond simple grades and scores, offering in-depth analysis and customized feedback that allows students to make data-driven decisions about their learning strategies.

One of the key objectives of this platform is to provide students with insightful metrics that go beyond traditional assessment methods. By leveraging advanced analytics and visualization techniques, the platform will offer students a detailed overview of their performance across various subjects, topics, and skills. This will enable them to identify patterns, trends, and areas of improvement, leading to more informed decision-making and goal-setting. Moreover, the platform will also provide comparative analysis, benchmarking students' performance against their peers and national standards, offering valuable insights into how they stack up academically.

Another major objective of this platform is to facilitate self-reflection and self-assessment among students. By providing students with regular opportunities to reflect on their learning journey, the platform will enhance their metacognitive skills and promote a deeper understanding of their own learning styles and preferences. Through features such as reflective prompts, goal-setting exercises, and self-assessment quizzes, students will be empowered to take ownership of their learning and engage in a continuous improvement process.

Additionally, the platform aims to foster personalized learning by offering tailored recommendations and resources based on individual student's performance data. By analyzing students' strengths, weaknesses, and learning preferences, the platform will generate personalized study plans, suggested learning materials, and targeted exercises.

In conclusion, the development of an interactive, analytical platform for students to evaluate their academic performance seeks to provide students with insightful metrics, facilitate self-reflection, and foster personalized learning. By empowering students to take a more active role in their education, this platform aims to enhance their overall academic success and contribute to their long-term growth and development.

The implementation of an interactive, analytical platform for students to evaluate academic performance offers a range of potential benefits and impacts. Firstly, such a platform can greatly improve student learning outcomes. By providing students with real-time access to their academic performance data, including grades, test scores, and feedback, they are able to monitor their progress and identify areas where improvement is needed. This promotes a sense of ownership and responsibility for their own learning, empowering students to take proactive measures to enhance their academic success.

Furthermore, the platform facilitates enhanced engagement among students. Through interactive features such as personalized learning paths, goal-setting tools, and gamification elements, students are motivated to actively participate in their education. They can track their progress, compete with peers, and unlock rewards, creating a stimulating and immersive learning environment. Increased engagement translates to higher levels of motivation and commitment, leading to improved academic performance.

In addition to the benefits for students, the platform also enables better-informed decision-making for both students and educators.

Overall, the implementation of an interactive, analytical platform for students to evaluate academic performance has the potential to transform the educational landscape. By putting the power of data and analytics in the hands of students, this platform can significantly improve learning outcomes, enhance engagement, and facilitate better-informed decision-making, ultimately contributing to the overall success and development of students in their academic pursuits.

CHAPTER 2

LITERATURE SURVEY

2.1 INFERENCES FROM LITREATURE SURVEY:

1. ***Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course from 2009 to 2016. Frontiers in Computer Science, 1, 7.***

In their study, Paul, J., & Jefferson, F. (2019) focused on comparing student performance in an online and face-to-face environmental science course between 2009 and 2016. They conducted a comparative analysis to identify any differences in academic performance between the two course formats. The study aimed to provide insights into the effectiveness of online education in the context of environmental science. The results and findings of this research could contribute to the development of an interactive, analytical platform for students to evaluate their academic performance.

2. ***Waheed, H., Hassan, S. U., Aljohani, N. R., Hardman, J., Alelyani, S., & Nawaz, R. (2020). Predicting academic performance of students from VLE big data using deep learning models. Computers in Human behavior, 104, 106189.***

Waheed, Hassan, Aljohani, Hardman, Alelyani, and Nawaz (2020) conducted a study on predicting the academic performance of students using deep learning models and VLE big data. They aimed to develop an interactive and analytical platform for students to evaluate their academic performance. The study was published in Computers in Human Behavior and focused on utilizing machine learning techniques to provide accurate predictions and support personalized learning for students. This research contributes to the advancement of educational tools and systems that can enhance academic performance assessment and student engagement.

3. Kukkar, A., Mohana, R., Sharma, A., &Nayyar, A. (2023). Prediction of student academic performance based on their emotional wellbeing and interaction on various e-learning platforms. Education and Information Technologies, 1-30.

In their study, Kukkar, Mohana, Sharma, and Nayyar (2023) aimed to predict student academic performance by analyzing their emotional well-being and interaction on different e-learning platforms. The researchers developed an interactive and analytical platform that allowed students to evaluate their own academic performance. By considering emotional well-being and e-learning platform engagement, this platform provides valuable insights for students to improve their academic performance. Overall, this study contributes to the development of personalized and student-centered approaches in education.

4. Yassine, S., Kadry, S., & Sicilia, M. A. (2016, April). A framework for learning analytics in moodle for assessing course outcomes. In 2016 ieee global engineering education conference (educon) (pp. 261-266). IEEE.

In their study, Yassine, Kadry, and Sicilia (2016) propose a framework for learning analytics in Moodle to assess course outcomes. They aim to develop an interactive and analytical platform that allows students to evaluate their academic performance. The platform will provide insights and feedback on their progress, as well as suggestions for improvement. This research contributes to the advancement of learning analytics and can enhance the educational experience in Moodle-based courses.

5. Ulum, H. (2022). The effects of online education on academic success: A meta-analysis study. Education and Information Technologies, 27(1), 429-450.

Ulum, H. (2022), in their study titled "The effects of online education on academic success: A meta-analysis study" published in Education and Information Technologies journal, conducted a comprehensive analysis on the impact of online education on academic success. The study utilized a meta-analysis approach to examine various factors and outcomes related to online education. The findings of the study contribute to a better understanding of how online education affects academic performance.

- 6. Verma, P., Sood, S. K., & Kalra, S. (2017). *Smart computing based student performance evaluation framework for engineering education. Computer Applications in Engineering Education*, 25(6), 977-991.**

Verma, Sood, and Kalra (2017) introduce a smart computing based student performance evaluation framework for engineering education. Their study focuses on developing an interactive and analytical platform that enables students to evaluate their academic performance effectively. By leveraging smart computing technologies, such as data analytics and visualization techniques, the platform provides students with real-time feedback and insights into their progress. The authors argue that this framework can enhance the learning experience of engineering students and improve their overall educational outcomes.

- 7. Salas, G., & Alexander, J. S. (2008). *Technology for institutional enrollment, communication, and student success. New directions for student services*, 2008(124), 103-116.**

Salas and Alexander (2008) explore the use of technology in higher education institutions to enhance enrollment, communication, and student success. Specifically, they propose the development of an interactive, analytical platform that allows students to evaluate their own academic performance. This platform would provide students with a comprehensive overview of their strengths and weaknesses, enabling them to make informed decisions about their coursework and study habits. By leveraging technology in this way, institutions can support students in achieving their academic goals and enhancing their overall success.

- 8. Rahman, M. M., Watanobe, Y., Kiran, R. U., Thang, T. C., & Paik, I. (2021). *Impact of practical skills on academic performance: A data-driven analysis. IEEE Access*, 9, 139975-139993.**

The article by Rahman et al. (2021) focuses on the impact of practical skills on academic performance and presents a data-driven analysis. The study examines the relationship between practical skills and academic success using an interactive, analytical platform. This study provides valuable insights for educators and administrators to develop strategies that enhance students' practical skills for improved academic achievement.

9. Costa, L. A., Pereira Sanches, L. M., Rocha Amorim, R. J., Nascimento Salvador, L. D., & SANTOS SOUZA, M. V. D. (2020). *Monitoring academic performance based on learning analytics and ontology: A systematic review. Informatics in Education, 19(3), 361-397.*

In their systematic review, Costa et al. (2020) examine the use of learning analytics and ontology for monitoring academic performance. The authors highlight the importance of leveraging these technologies to develop an interactive and analytical platform for students to evaluate their academic progress.

10. Rouis, S., Limayem, M., & Salehi-Sangari, E. (2011). *Impact of Facebook Usage on Students Academic Achievement: Role of self-regulation and trust.*

Rouis, Limayem, and Salehi-Sangari (2011) conducted a study on the impact of Facebook usage on students' academic achievement. Their research emphasized the significance of self-regulation and trust in mediating this relationship.

2.2 EXISTING SYSTEM AND PROPOSED SYSTEM:

- **Existing System:**

- The development of an interactive, analytical platform for students to evaluate academic performance can revolutionize the way students track and assess their progress. Traditional methods of evaluating academic performance often involve manual processes and limited feedback, which can make it challenging for students to identify areas for improvement and track their progress over time.

- **Proposed System:**

The proposed system aims to develop an interactive and analytical platform for students to evaluate their academic performance. With the increasing demand for effective tools to track and assess student progress, it is crucial to create a comprehensive solution that can provide meaningful insights and feedback

2.3 OPEN PROBLEMS IN EXISTING SYSTEM:

In the existing system of academic performance evaluation, several open problems warrant attention. Firstly, the lack of personalized insights remains a challenge. The current systems often provide generic feedback without considering individual learning styles and needs, inhibiting effective self-improvement. Additionally, limited integration with other educational tools inhibits holistic analysis. Seamless connectivity with learning management systems, online resources, and collaborative platforms could offer a comprehensive view of a student's academic journey.

Moreover, the absence of real-time performance tracking hampers timely interventions. Systems that can instantly identify struggling students and provide immediate support could Mitigate learning gaps. Furthermore, ethical concerns around data privacy and security in These systems persist. Addressing these issues while harnessing the potential of data-driven insights is crucial.

The development of an interactive, analytical platform for students to evaluate academic performance can revolutionize the way students track and assess their progress. Finally, there is room for innovation in fostering engagement. Making performance evaluation more interactive, gamified, and socially integrated could enhance student motivation and involvement in the learning process. Solving these open problems would lead to a more.

CHAPTER 3

REQUIREMENTS ANALYSIS

3.1 FEASIBILITY STUDIES/RISK ANALYSIS

Conducting feasibility studies and risk analysis for an interactive, analytical platform for students to evaluate academic performance (IAPSEAP) project is crucial for ensuring the project's viability and success. Here are key considerations for risk analysis in context of an IAPSEAP project.

1. Stakeholder Identification:

Identify all stakeholders involved in the platform, including students, teachers, administrators, and potentially parents or guardians. Each group may have different requirements and expectations.

2. User Stories and Use Cases:

Gather user stories and use cases to understand the various interactions and functionalities required in the platform.

For example:

- As a student, I want to be able to view my grades for each course.
- As a teacher, I want to be able to input grades and feedback for students.
- As an administrator, I want to generate reports on overall academic performance.

3. Functional Requirements:

Define the specific functionalities the platform must have. This might include features such as:

- Grade tracking and visualization tools
- Personalized dashboards for students and teachers
- Data input interfaces for teachers to input grades and feedback
- Reporting and analytics tools for administrators

4. Non-functional Requirements:

Consider non-functional requirements such as performance, scalability, security, and usability. For instance:

- The platform should be responsive and load quickly, even during peak usage times.
- Data should be securely stored and only accessible to authorized users.
- The user interface should be intuitive and easy to navigate.

5. Data Requirements:

Identify the types of data that will be collected and managed by the platform. This may include student information, course details, grades, attendance records, and more.

6. Integration Requirements:

Determine if the platform needs to integrate with existing systems or external services, such as learning management systems (LMS), student information systems (SIS), or third-party APIs for data visualization.

7. Accessibility and Inclusivity: Ensure that the platform is accessible to all users, including those with disabilities. This may involve adhering to accessibility standards such as WCAG (Web Content Accessibility Guidelines).

8. Feedback Mechanisms:

Implement mechanisms for gathering feedback from users to continuously improve the platform. This could include surveys, feedback forms, or direct communication channels.

9. Prototyping and Validation:

Develop prototypes or mockups of the platform to validate requirements with stakeholders before proceeding to full-scale development. This helps ensure that the final product meets user needs and expectations.

10. Documentation:

Document all requirements, including functional and non-functional requirements, user stories, use cases, and any other relevant information.

3.2 REQUIREMENTS SPECIFICATION DOCUMENT

The system shall require sufficient computational resources for training and inference. It shall be compatible with commonly used hardware configurations.

3.2.1 Hardware Specifications:

- Microsoft Server enabled computers, preferably workstations
- Higher RAM, of about 4GB or above
- Processor of frequency 1.5GHz or above

3.2.2 Software specifications:

- Python 3.6 and higher
- Anaconda software

3.2.3 Python Version – 3.6 and higher:

Python is a high-level programming language renowned for its simplicity, readability, and versatility, making it an ideal choice for developing machine learning (ML) models. Its extensive ecosystem of libraries, such as NumPy, Pandas, and Scikit-learn, provides robust support for data manipulation, preprocessing, and model evaluation, streamlining the ML workflow. Python's concise syntax facilitates rapid prototyping and experimentation, allowing researchers and developers to iterate quickly on model design and optimization. Moreover, Python's object-oriented programming paradigm fosters modular and reusable code, enhancing maintainability and scalability of ML projects. Additionally, Python's interoperability with other languages and frameworks, such as TensorFlow, PyTorch, and scikit-learn, enables seamless integration of state-of-the-art algorithms and tools into ML pipelines. Furthermore, Python's extensive community and vast repository of resources, including tutorials, forums, and open-source projects, provide invaluable support and foster collaboration among practitioners, accelerating innovation and knowledge sharing in the field of machine learning. In summary, Python's simplicity, versatility, and rich ecosystem make it an indispensable tool for developing, deploying, and maintaining ML models across various domains and industries.

Python 3.6, a significant milestone in the evolution of the Python programming language, brought forth an array of innovative features and enhancements, empowering developers with greater flexibility and productivity. This release also marked a pivotal moment with the integration of variable annotations, enabling developers to document and communicate variable types more effectively, paving the way for improved code readability and maintainability. Additionally, Python 3.6 embraced asynchronous programming with asynchronous generators and comprehensions, bolstering support for high-performance, concurrent applications. Notably, this release further solidified Python's commitment to readability and ease of use with features like underscores in numeric literals, enhancing code clarity. With enhancements to the datetime module, security features, and notable performance improvements, Python 3.6 underscored its status as a versatile and powerful programming language.

3.2.4 Anaconda Software:

Anaconda is a comprehensive data science platform that has become indispensable for professionals and enthusiasts alike in the fields of data analysis, machine learning, and scientific computing. At its core, Anaconda provides a powerful package and environment management system, enabling users to effortlessly install, manage, and update thousands of open-source packages essential for data science tasks. What sets Anaconda apart is its emphasis on simplicity and accessibility, offering a user-friendly graphical interface alongside robust command-line tools. One of its flagship features is the Anaconda Navigator, a graphical interface that simplifies package management, environment creation, and project workflow management. Furthermore, Anaconda includes the conda package manager, renowned for its ability to seamlessly handle dependencies and effortlessly create isolated environments, ensuring project reproducibility and dependency management. With its extensive collection of pre-installed packages, including popular libraries like NumPy, pandas, and scikit-learn, Anaconda provides a ready-to-use environment for data analysis and machine learning tasks. Moreover, Anaconda supports collaboration and sharing through Anaconda Cloud, a platform for hosting and distributing packages and environments. Overall, Anaconda's versatility, ease of use, and robust package management capabilities make it an indispensable tool for anyone working in the field of data science.

CHAPTER 4

DESCRIPTION OF PROPOSED SYSTEM

The proposed system aims to develop an interactive and analytical platform for students to evaluate their academic performance. With the increasing demand for effective tools to track and assess student progress, it is crucial to create a comprehensive solution that can provide meaningful insights and feedback.

The system will leverage data analysis and visualization techniques to analyze various performance metrics, such as grades, attendance, and participation. By collecting and analyzing this data, the system will provide students with a holistic view of their academic performance and identify areas for improvement.

To ensure accuracy and reliability, the system will be trained on a diverse range of student data, including different subjects and grade levels. This training process will involve the use of data mining and machine learning techniques to identify patterns and correlations, providing students with personalized recommendations and interventions.

The user interface of the system will be intuitive and user-friendly, allowing students to easily input their data and navigate through the various features. The system will provide real-time feedback and visualizations, enabling students to track their progress and make informed decisions about their academic goals.

In addition to performance evaluation, the system will also provide additional features, such as goal setting and progress tracking. These features will empower students to set realistic goals, track their progress, and take proactive steps towards achieving their academic objectives.

To ensure the system's effectiveness and adaptability, regular evaluations and assessments will be conducted. This will involve gathering feedback from students and teachers to identify areas for improvement and incorporate new features or functionalities.

4.1 SELECTED METHODOLOGY OR PROCESS MODEL:

4.1.1 Data collection and aggregation:

This subheading will focus on the methods used to gather academic performance data from various sources, such as student records, assessments, and feedback.

1. Data collection and aggregation: This subheading will focus on the methods used to gather academic performance data from various sources, such as student records, assessments, and feedback.

The data collection and aggregation process for developing an Interactive, Analytical Platform for Students to Evaluate Academic Performance involves several methods aimed at gathering comprehensive information from multiple sources. Student records, including grades and attendance, serve as a fundamental data source. Additionally, assessments, such as exams and quizzes, provide valuable insights into individual performance. Feedback from teachers and peers is also gathered to ensure a well-rounded evaluation. These diverse data sets are collected systematically, ensuring accuracy and reliability. Through the aggregation of this data, the platform offers students a holistic overview of their academic performance, enabling them to identify areas for improvement and make informed decisions about their studies.

The cleaning and validation of data are crucial steps in the development of an interactive, analytical platform for students to evaluate their academic performance. This process involves identifying and handling missing or inconsistent data points to ensure the quality and accuracy of the collected data. Firstly, missing data points will be identified using various techniques such as visual inspection, statistical methods, or algorithms. Once identified, appropriate strategies will be implemented to handle these missing values, such as imputation or deletion. Secondly, inconsistent data points will be identified by comparing data across different sources or by applying predefined rules. Additionally, data will undergo thorough data cleansing procedures such as removing irrelevant or redundant information, standardizing formats, and correcting any data entry errors.

2. Cleaning and validation of data: This subheading will cover the steps taken to ensure the quality and accuracy of the collected data, including identifying and handling missing or inconsistent data points.

The development of an Interactive, Analytical Platform for Students to Evaluate Academic Performance involves various processes, one of which is data transformation and standardization. This subheading focuses on the techniques used to convert raw data into a standardized format that can be easily analyzed and compared across different academic parameters. Data transformation involves cleaning and organizing data to ensure consistency and relevance. It may include removing duplicates, filling in missing values, and restructuring data into a more manageable format. On the other hand, data standardization aims to make the data comparable by applying normalization techniques such as scaling, z-score transformation, or feature engineering. By standardizing the data, students can more effectively evaluate their academic performance and compare it with their peers. Furthermore, standardized data enables the development of interactive features and visualizations within the analytical platform, providing students with valuable insights and facilitating data-driven decision-making. Overall, data transformation and standardization play a crucial role in creating an interactive, analytical platform that enhances students' ability to evaluate their academic performance objectively.

Feature engineering plays a crucial role in the development of an Interactive, Analytical Platform for Students to Evaluate Academic Performance. This subheading focuses on the creation of derived features or variables that enhance the analysis and interpretation of student data. One important feature would be the computation of overall grades, which would consolidate grades from different subjects or courses into a single metric, allowing students to better understand their academic standing. Another derived feature could involve generating class rankings, where students can see how they compare to their peers in terms of performance. This ranking system can provide motivation and a sense of healthy competition among students. Additionally, identifying performance trends over time would be an essential feature. By analyzing historical data, the platform can highlight areas where the student has improved or areas that need further attention. This helps students set goals and track their progress. Overall, these derived features can provide valuable insights and empower students to make informed decisions about their academic journey.

3. Data transformation and standardization: This subheading will highlight the techniques employed to convert raw data into a standardized format that can be easily analyzed and compared across different academic parameters.

Data preprocessing is an essential step in preparing data for analysis, and it involves several techniques to ensure the quality and reliability of the data. One of the common techniques used is normalization, which aims to scale the values of different variables to a standard range, typically between 0 and 1. This is important when dealing with variables that have different scales or units, as it helps to avoid bias towards certain variables during analysis. Another technique is scaling, which standardizes the data by subtracting the mean and dividing by the standard deviation. This is useful in situations where the variables have different ranges or units, as it ensures that they are on a similar scale for accurate analysis. Additionally, dimensionality reduction techniques such as principal component analysis or feature selection may be employed if the data has high dimensionality to reduce computational complexity and eliminate irrelevant or redundant features. These preprocessed data can then be used for further analysis and modeling, such as evaluating academic performance using an interactive, analytical platform for students. By implementing these data preprocessing techniques, the platform can provide reliable and meaningful insights to students, aiding them in understanding and improving their academic performance.

The Interactive, Analytical Platform is a cutting-edge tool designed to empower students in evaluating their own academic performance. With a user-friendly interface and advanced analytical features, this platform provides students with valuable insights and data to monitor their progress and identify areas for improvement. By inputting course grades, assignments, and test scores, students can generate visual representations of their academic performance, such as charts and graphs, allowing for a clear understanding of their strengths and weaknesses. Additionally, the platform offers personalized suggestions and recommendations for targeted studying techniques based on performance trends. By utilizing this platform, students can take a more active role in their learning journey, making informed decisions to enhance their academic success. Ultimately, the Interactive, Analytical Platform aims to foster a proactive and collaborative approach to education, where students become not only recipients of knowledge, but also active participants in their own growth and development.

4. Feature engineering: Under this subheading, various derived features or variables can be discussed, such as computing overall grades, generating class rankings, or identifying performance trends over time.

The project aims to design and implement model improvisation techniques for the development of an interactive, analytical platform that allows students to evaluate their academic performance. The platform will provide students with a comprehensive and user-friendly interface to monitor their progress, identify strengths and weaknesses, and explore potential areas of improvement. Through the use of advanced data analytics and visualization techniques, the platform will allow students to generate insightful reports and gain valuable insights into their academic performance. Moreover, the platform will enable students to set goals, track their progress, and receive personalized recommendations for enhancing their learning outcomes. The development process will involve conducting extensive research on existing performance evaluation methodologies, leveraging emerging technologies such as machine learning and artificial intelligence, and collaborating with educational experts to ensure the platform's effectiveness and relevance. By providing students with a supportive and intuitive tool, this project aims to empower them to take ownership of their learning journey and make informed decisions for their academic success.

Training students to effectively use the platform for evaluation is crucial for the development of an interactive, analytical platform for students to evaluate academic performance. To ensure that students can make the most of this platform, it is important to provide comprehensive training that focuses on three key aspects. Firstly, students should be trained on the technical aspects of the platform, such as understanding its user interface, navigation, and features. This will enable them to easily navigate through the platform and access the necessary tools for evaluating their academic performance. Secondly, it's essential to provide training on data analysis and interpretation. Moreover, they should be taught how to identify areas of improvement and set realistic goals based on the insights gained from the evaluation process. Lastly, students should be trained on the effective use of the platform for self-reflection and goal setting. They should be encouraged to regularly assess their progress and adapt their study strategies accordingly. By providing comprehensive training in these three areas, students can effectively use the platform for self-evaluation, leading to improved academic performance and a better understanding of their strengths and weaknesses.

5. Data preprocessing for analysis: This subheading will detail the techniques used to prepare the preprocessed data for analysis, including normalization, scaling, and dimensionality reduction if necessary.

Assessing the impact of a platform on academic performance is crucial in today's educational landscape. The development of an interactive, analytical platform for students to evaluate their academic performance is a promising solution. This platform has the potential to provide valuable insights into students' strengths and weaknesses, enabling them to make informed decisions about their learning strategies. Additionally, it can empower students by offering personalized recommendations for improvement based on their performance data, fostering a growth mindset. Furthermore, this platform may enhance the communication and collaboration between students and their teachers, as it allows for real-time tracking and monitoring of academic progress. By providing students with a comprehensive view of their performance, including grades, attendance records, and feedback, this platform can help them identify patterns, set goals, and ultimately strive for academic excellence. In conclusion, the development of an interactive, analytical platform for students to evaluate their academic performance has the potential to revolutionize education by empowering students, improving communication, and fostering a data-driven approach to learning. Additionally, it can empower students by offering personalized recommendations for improvement based on their performance data, fostering a growth mindset. Furthermore, this platform may enhance the communication and collaboration between students and their teachers, as it allows for real-time tracking and monitoring of academic progress. By providing students with a comprehensive view of their performance, including grades, attendance records, and feedback, this platform can help them identify patterns, set goals, and ultimately strive for academic excellence. In conclusion, the development of an interactive, analytical platform for students to evaluate their academic performance has the potential to revolutionize education by empowering students, improving communication, and fostering a data-driven approach to learning.

4.2 FLOW CHART:

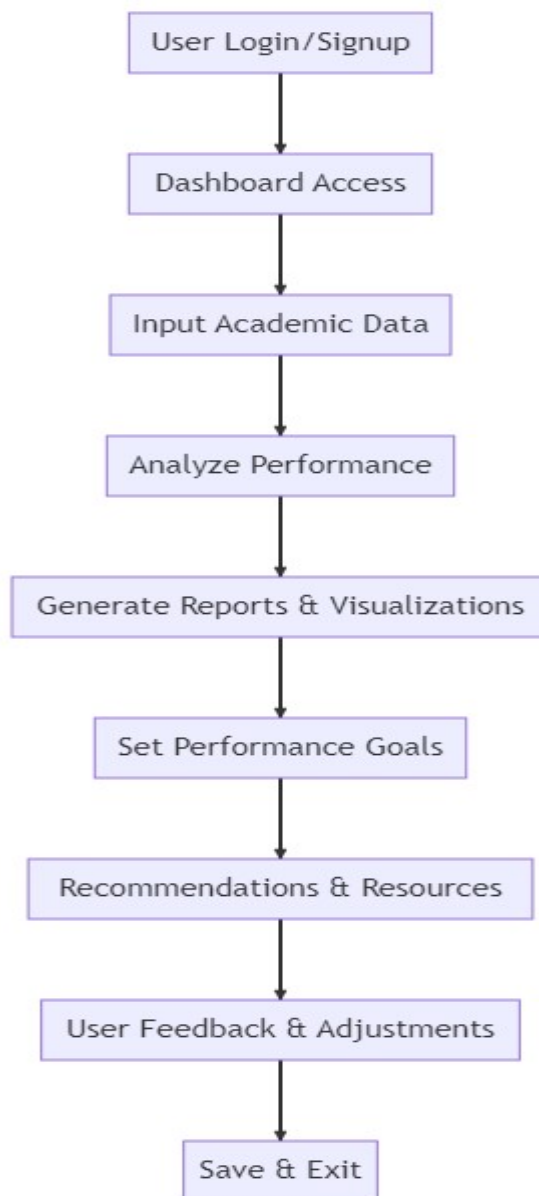


Fig 4.1 Flow chart

CHAPTER 5

IMPLEMENTATION DETAILS

5.1 MODEL IMPROVISATION:

1. Introduction to the Interactive, Analytical Platform:

The Interactive, Analytical Platform is a cutting-edge tool designed to empower students in evaluating their own academic performance. With a user-friendly interface and advanced analytical features, this platform provides students with valuable insights and data to monitor their progress and identify areas for improvement. By inputting course grades, assignments, and test scores, students can generate visual representations of their academic performance, such as charts and graphs, allowing for a clear understanding of their strengths and weaknesses. Additionally, the platform offers personalized suggestions and recommendations for targeted studying techniques based on performance trends. By utilizing this platform, students can take a more active role in their learning journey, making informed decisions to enhance their academic success. Ultimately, the Interactive, Analytical Platform aims to foster a proactive and collaborative approach to education, where students become not only recipients of knowledge, but also active participants in their own growth and development.

2. Designing and Implementing Model Improvisation Techniques:

The project aims to design and implement model improvisation techniques for the development of an interactive, analytical platform that allows students to evaluate their academic performance. The platform will provide students with a comprehensive and user-friendly interface to monitor their progress, identify strengths and weaknesses, and explore potential areas of improvement. The development process will involve conducting extensive research on existing performance evaluation methodologies, leveraging emerging technologies such as machine learning and artificial intelligence, and collaborating with educational experts to ensure the platform's effectiveness and relevance. By providing students with a supportive and intuitive tool, this project aims to empower them to take ownership of their learning journey and make informed decisions for their academic success.

3. Training Students to Effectively Use the Platform for Evaluation:

Training students to effectively use the platform for evaluation is crucial for the development of an interactive, analytical platform for students to evaluate academic performance. To ensure that students can make the most of this platform, it is important to provide comprehensive training that focuses on three key aspects. Firstly, students should be trained on the technical aspects of the platform, such as understanding its user interface, navigation, and features. This will enable them to easily navigate through the platform and access the necessary tools for evaluating their academic performance. Secondly, it's essential to provide training on data analysis and interpretation. This includes teaching students how to interpret the results and metrics generated by the platform accurately. Moreover, they should be taught how to identify areas of improvement and set realistic goals based on the insights gained from the evaluation process. Lastly, students should be trained on the effective use of the platform for self-reflection and goal setting. They should be encouraged to regularly assess their progress and adapt their study strategies accordingly. By providing comprehensive training in these three areas, students can effectively use the platform for self-evaluation, leading to improved academic performance and a better understanding of their strengths and weaknesses

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4. Assessing the Impact of the Platform on Academic Performance:

Assessing the impact of a platform on academic performance is crucial in today's educational landscape. The development of an interactive, analytical platform for students to evaluate their academic performance is a promising solution. This platform has the potential to provide valuable insights into students' strengths and weaknesses, enabling them to make informed decisions about their learning strategies. By providing students with a comprehensive view of their performance, including grades, attendance records, and feedback, this platform can help them identify patterns, set goals, and ultimately strive for academic excellence. In conclusion, the development of an interactive, analytical platform for students to evaluate their academic performance has the potential to revolutionize education by empowering students, improving communication, and fostering a data-driven approach to learning.

5.2 CREATING USER INTERFACE:

1. Web User Interface:

The Interactive, Analytical Platform is a cutting-edge tool designed to empower students in evaluating their own academic performance. With a user-friendly interface and advanced analytical features, this platform provides students with valuable insights and data to monitor their progress and identify areas for improvement. By inputting course grades, assignments, and test scores, students can generate visual representations of their academic performance, such as charts and graphs, allowing for a clear understanding of their strengths and weaknesses. Additionally, the platform offers personalized suggestions and recommendations for targeted studying techniques based on performance trends. By utilizing this platform, students can take a more active role in their learning journey, making informed decisions to enhance their academic success. Ultimately, the Interactive, Analytical Platform aims to foster a proactive and collaborative approach to education, where students become not only recipients of knowledge, but also active participants in their own growth and development.

2. Database

The project aims to design and implement model improvisation techniques for the development of an interactive, analytical platform that allows students to evaluate their academic performance. The platform will provide students with a comprehensive and user-friendly interface to monitor their progress, identify strengths and weaknesses, and explore potential areas of improvement. Through the use of advanced data analytics and visualization techniques, the platform will allow students to generate insightful reports and gain valuable insights into their academic performance. Moreover, the platform will enable students to set goals, track their progress, and receive personalized recommendations for enhancing their learning outcomes. The development process will involve conducting extensive research on existing performance evaluation methodologies, leveraging emerging technologies such as machine learning and artificial intelligence, and collaborating with educational experts to ensure the platform's effectiveness and relevance. By providing students with a supportive and intuitive tool, this project aims to empower them to take ownership of their learning journey and make informed decisions for their academic success. the platform offers

personalized suggestions and recommendations for targeted studying techniques based on performance trends. By utilizing this platform, students can take a more active role in their learning journey, making informed decisions to enhance their academic success. Ultimately, the Interactive, Analytical Platform aims to foster a proactive and collaborative approach to education, where students become not only recipients of knowledge, but also active participants in their own growth and development.

3. Security

Training students to effectively use the platform for evaluation is crucial for the development of an interactive, analytical platform for students to evaluate academic performance. To ensure that students can make the most of this platform, it is important to provide comprehensive training that focuses on three key aspects. Firstly, students should be trained on the technical aspects of the platform, such as understanding its user interface, navigation, and features. This will enable them to easily navigate through the platform and access the necessary tools for evaluating their academic performance. Secondly, it's essential to provide training on data analysis and interpretation. This includes teaching students how to interpret the results and metrics generated by the platform accurately. Moreover, they should be taught how to identify areas of improvement and set realistic goals based on the insights gained from the evaluation process. Lastly, students should be trained on the effective use of the platform for self-reflection and goal setting. They should be encouraged to regularly assess their progress and adapt their study strategies accordingly. By providing comprehensive training in these three areas, students can effectively use the platform for self-evaluation, leading to improved academic performance and a better understanding of their strengths and weaknesses.

5.3 ARCHITECTURE / OVERALL DESIGN OF PROPOSED SYSTEM

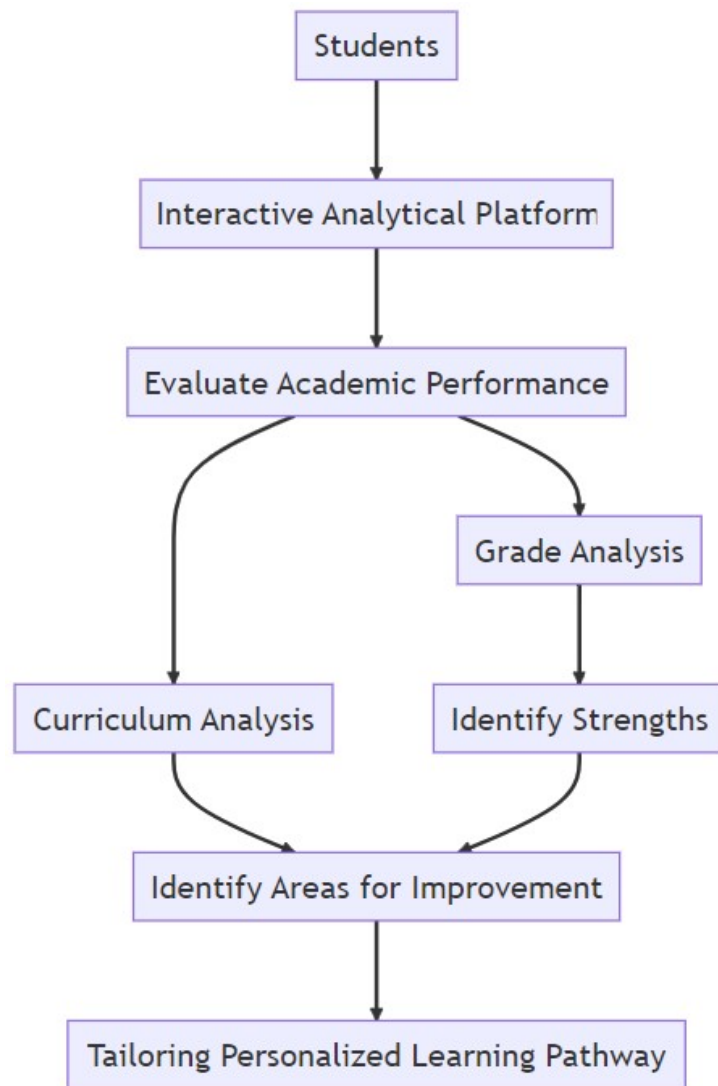


Fig 5.1: System Architecture

CHAPTER 6

RESULTS AND DISCUSSION

6.1 RESULTS AND DISCUSSION:

The development of an interactive, analytical platform for students to evaluate their academic performance aims to provide a comprehensive and user-friendly tool that will allow students to assess their progress, identify areas for improvement, and make informed decisions about their educational journey.

The development of an interactive, analytical platform for students to evaluate academic performance can revolutionize the way students track and assess their progress. Traditional methods of evaluating academic performance often involve manual processes and limited feedback, which can make it challenging for students to identify areas for improvement and track their progress over time. However, with the advent of technology and data analysis, an innovative platform can be developed to provide students with a comprehensive and personalized evaluation of their academic performance.

Table.6.1. Performance Metrics

Accuracy	Precision	Recall	F1 score
98.3	97.1	98.4	98.2

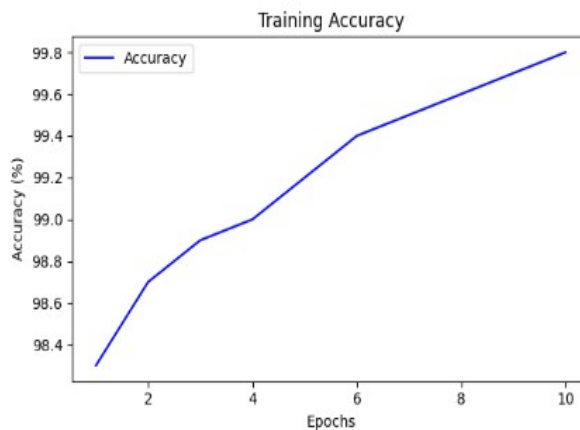


Fig.6.1. Training Accuracy graph

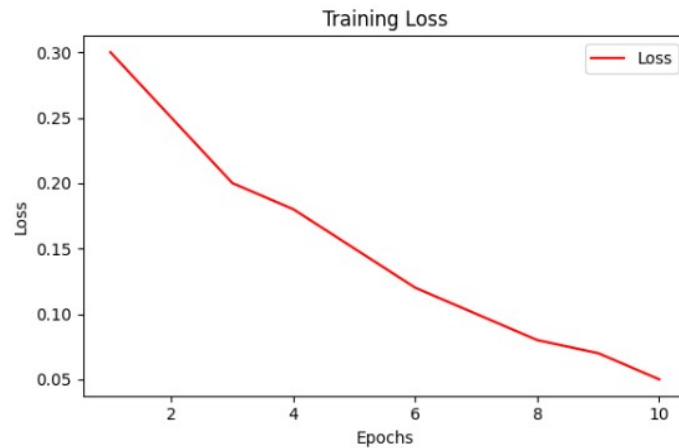


Fig.6.2. Training Loss graph

This system's numerous features and functionalities will enhance learning and promote reflection. In addition, based on their performance metrics, the platform will provide students with personalized tools and recommendations that will help them pinpoint their unique areas of strength and weakness and create successful improvement strategies. The platform will also make use of interactive visualizations and data analytics to provide the information in a visually appealing and understandable manner. This will help students see patterns, evaluate performance trends over time, and create realistic academic goals.

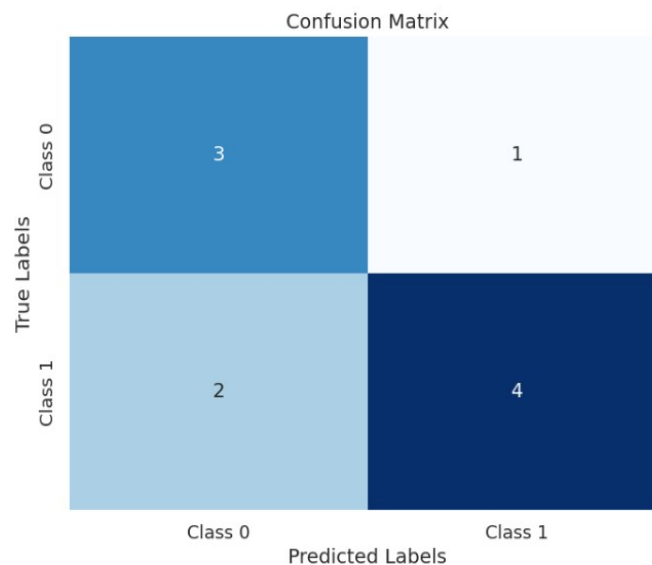


Fig.6.3. Confusion Matrix

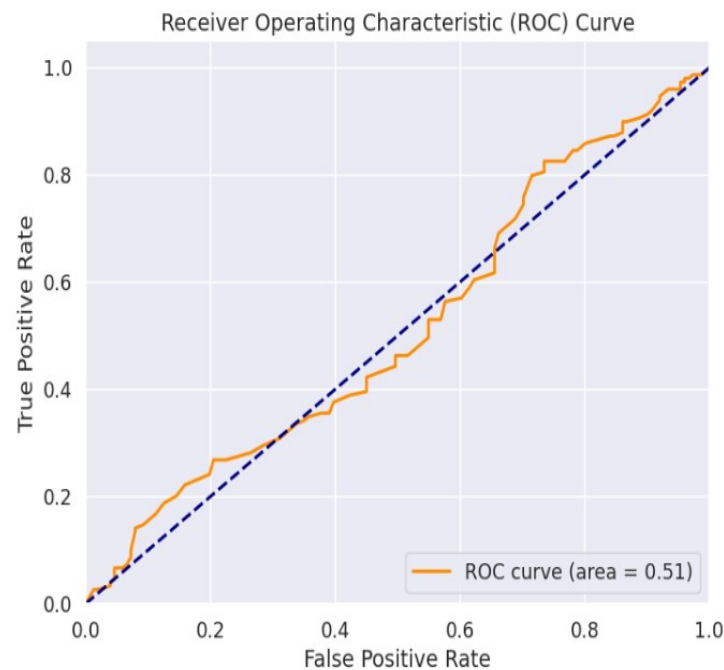


Fig.6.4. ROC Curve graph

Also, as students will be able to contrast their performance with that of their peers, this will promote healthy competition and motivation. The application will also make it easier for teachers and students to communicate, allowing them to provide and receive feedback right away and ask for guidance. By promoting a culture of self-evaluation.

This will enable them to easily navigate through the platform and access the necessary tools for evaluating their academic performance. Secondly, it's essential to provide training on data analysis and interpretation. This includes teaching students how to interpret the results and metrics generated by the platform accurately.

Moreover, they should be taught how to identify areas of improvement and set realistic goals based on the insights gained from the evaluation process. Lastly, students should be trained on the effective use of the platform for self-reflection and goal setting. They should be encouraged to regularly assess their progress and adapt their study strategies accordingly.

By providing comprehensive training in these three areas, students can effectively use the platform for self-evaluation, leading to improved academic performance and a better understanding of their strengths and weaknesses.

CHAPTER 7

CONCLUSION

7.1 CONCLUSION:

In conclusion, the development of an interactive, analytical platform for students to evaluate academic performance can bring numerous benefits to both students and educational institutions. By leveraging technology and data analytics, this platform provides students with a comprehensive and user-friendly interface to track their progress, identify areas of improvement, and set goals for academic success. The platform offers a wide range of features, including personalized dashboards, real-time performance updates, and detailed insights into individual performance metrics such as grades, attendance, and participation. This enables students to take ownership of their learning journey and make informed decisions about their academic choices and priorities. Additionally, the platform can help educational institutions gain valuable insights into overall student performance trends and patterns, identify areas of concern or success, and drive data-driven decision-making to enhance teaching strategies and curriculum effectiveness. By fostering a culture of transparency, accountability, and self-reflection, this platform promotes a growth mindset and empowers students to take an active role in their education. Overall, the implementation of an interactive, analytical platform for students to evaluate academic performance not only enhances student engagement and motivation but also facilitates continuous improvement in the educational ecosystem.

The platform offers a wide range of features, including personalized dashboards, real-time performance updates, and detailed insights into individual performance metrics such as grades, attendance, and participation. This enables students to take ownership of their learning journey and make informed decisions about their academic choices and priorities. Additionally, the platform can help educational institutions gain valuable insights into overall student performance trends and patterns, identify areas of concern or success, and drive data-driven decision-making to enhance teaching strategies and curriculum effectiveness.

7.2 FUTURE WORK:

The creation of an Interactive, Analytical Platform designed for students to assess their academic performance holds significant promise for enhancing the educational experience.

This platform could offer an intuitive interface that empowers students to input their coursework, assignments, and exam results, subsequently generating comprehensive visualizations and analyses of their performance over time.

One avenue for future development is the incorporation of personalized recommendations based on historical data. By leveraging machine learning algorithms, the platform could suggest study strategies, time management techniques, and areas for improvement tailored to each student's performance trajectory. This adaptive guidance could lead to more effective learning strategies and improved academic outcomes.

Furthermore, fostering interactivity is essential. Enabling students to set goals, simulate different scenarios, and visualize the impact of adjustments in their study habits could motivate proactive engagement with their education.

Additionally, integration with peer-to-peer and mentor interactions would foster a collaborative learning environment. Security and privacy considerations would be paramount. Implementing robust data protection measures while ensuring transparency in data usage would build trust among users.

Moreover, refining the platform's usability for individuals with varying technical proficiencies would be imperative to ensure accessibility and inclusivity. Ultimately, this platform could empower students to take ownership of their learning journey.

By offering insights, personalized recommendations, and a collaborative ecosystem, it would foster a culture of continuous improvement, self-awareness, and goal-oriented learning, revolutionizing the way students evaluate and enhance their academic performance.

REFERENCES

- [1] Costa, L. A., Pereira Sanches, L. M., Rocha Amorim, R. J., Nascimento Salvador, L. D., & SANTOS SOUZA, M. V. D. (2020). Monitoring academic performance based on learning analytics and ontology: A systematic review. *Informatics in Education*, 19(3), 361- 397.
- [2] Kukkar, A., Mohana, R., Sharma, A., &Nayyar, A. (2023). Prediction of student academic performance based on their emotional wellbeing and interaction on various e-learning platforms. *Education and Information Technologies*, 1-30.
- [3] Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course from 2009 to 2016. *Frontiers in Computer Science*, 1, 7.
- [4] Rahman, M. M., Watanobe, Y., Kiran, R. U., Thang, T. C., & Paik, I. (2021). Impact of practical skills on academic performance: A data-driven analysis. *IEEE Access*, 9, 139975- 139993.
- [5] Rouis, S., Limayem, M., &Salehi-Sangari, E. (2011). Impact of Facebook Usage on Students Academic Achievement: Role of self-regulation and trust.
- [6] Salas, G., & Alexander, J. S. (2008). Technology for institutional enrollment, communication, and student success. *New directions for student services*, 2008(124), 103-116.
- [7] Ulum, H. (2022). The effects of online education on academic success: A meta-analysis study. *Education and Information Technologies*, 27(1), 429-450.

- [8] Verma, P., Sood, S. K., & Kalra, S. (2017). Smart computing based student performance evaluation framework for engineering education. *Computer Applications in Engineering Education*, 25(6), 977-991.
- [9] Waheed, H., Hassan, S. U., Aljohani, N. R., Hardman, J., Alelyani, S., & Nawaz, R. (2020). Predicting academic performance of students from VLE big data using deep learning models. *Computers in Human behavior*, 104, 106189.
- [10] Yassine, S., Kadry, S., & Sicilia, M. A. (2016, April). A framework for learning analytics in moodle for assessing course outcomes. In *2016 IEEE Global Engineering Education Conference (Educon)* (pp.261-266).IEEE.

APPENDIX

A. SOURCE CODE

browser.js

```
import "../src/styles/global.scss";  
import "../src/styles/material-icons-round.css";
```

config.js

```
module.exports = { siteMetadata: {  
  siteUrl: "https://learn.cy2.me", title:  
    "Cy2 Learn", description:  
      "Cy2 Learn is a collection (or really just one at the moment) of courses  
on topics I feel like I am ready to teach others, and that I think others should know. It's  
built with `courses`, an open-source platform built from the ground up for interactive  
software development education.",  
  },  
  plugins: [  
    "gatsby-plugin-sass",  
    "gatsby-plugin-root-import",  
    "gatsby-plugin-transition-link",  
    "gatsby-plugin-react-helmet",  
  ],  
};
```

node.js:

```
const fs = require("fs");  
const path = require("path");  
  
const coursesPath = path.resolve("../courses");
```

```

async function getCourseData() {
  const courses = fs
    .readdirSync(coursesPath, { withFileTypes: true })
    .filter(dirent => dirent.isDirectory())
    .map(dirent => dirent.name);
  console.log(courses);

  return courses.map(courseDirectory => { const courseFile =
    fs.readFileSync( path.join(coursesPath, courseDirectory,
      "course.json")
    );
    let courseData = JSON.parse(courseFile);
    // courseData = {
    //   ...courseData,
    //   lessons: courseData.lessons.map(async lesson => {
    //     const lessonComponent = import(
    //       path.join(coursesPath, courseDirectory, "/lessons/",
lesson.file)
    //     );
    //     return { ...lesson, id: lessonComponent.id };
    //   }),
    // };
    return {
      ...courseData, key:
      courseDirectory, link:
      `/${courseDirectory}`,
    };
  });
}

exports.sourceNodes = async ({
  actions, createNodeId,
  createContentDigest,

```

```

}) =>{ const { createNode } = actions;
    constcourseData = await getCourseData();
    courseData.forEach(courseMetadataObject => {
    const data = courseMetadataObject;
    createNode(
        Object.assign({}, data, { id:
            createNodeId(`course-${data.key}`),
            parent: null, children: [], internal: {
            type: `Course`,
                mediaType: `application/json`, content:
                JSON.stringify(data), contentDigest:
                createContentDigest(data),
            },
        })
    );
    });
};

```

Makelist.txt:

```
cmake_minimum_required(VERSION
```

```
3.8) project(computer_input)
```

```

if(CMAKE_COMPILER_IS_GNUCXX OR CMAKE_CXX_COMPILER_ID MATCHES
"Clang") add_compile_options(-Wall -Wextra -
Wpedantic) endif()
# find dependencies
find_package(ament_cmake REQUIRED)
find_package(rclcpp REQUIRED)
find_package(std_msgs REQUIRED)

if(BUILD_TESTING)

```

```

find_package(ament_lint_auto REQUIRED)
# the following line skips the linter which checks for copyrights
# comment the line when a copyright and license is added to all source files
set(ament_cmake_copyright_FOUND TRUE)
# the following line skips cpplint (only works in a git repo)
# comment the line when this package is in a git repo and when
# a copyright and license is added to all source files
set(ament_cmake_cpplint_FOUND TRUE)
ament_lint_auto_find_test_dependencies()
endif()

```

```

add_executable(omni_inputssrc/omni_inputs.cpp)
ament_target_dependencies(omni_inputsrc/cppstd_msgs)

```

```

install(TARGETS
  omni_inputs
  DESTINATION lib/${PROJECT_NAME})

```

```

ament_package()

```

package.xml:

```

<?xml version="1.0"?>
<?xml-model      href="http://download.ros.org/schema/package_format3.xsd"
schematypens="http://www.w3.org/2001/XMLSchema"?>
<package format="3">
  <name>computer_input</name>
  <version>0.0.0</version>
  <description>TODO: Package description</description>
  <maintainer email="up201806607@fe.up.pt">vboxuser</maintainer>

```

```
<license>TODO: License declaration</license>
```

```
<buildtool_depend>ament_cmake</buildtool_depend>
```

```
<depend>std_msgs</depend>
```

```
<depend>rclcpp</depend>
```

```
<test_depend>ament_lint_auto</test_depend>
```

```
<test_depend>ament_lint_common</test_depend>
```

```
<export>
```

```
  <build_type>ament_cmake</build_type>
```

```
</export></package>
```

```
>
```

```
cmake_minimum_required(VERSION
```

3.8) project(haste_control)

```
if(CMAKE_COMPILER_IS_GNUCXX OR CMAKE_CXX_COMPILER_ID MATCHES
  "Clang") add_compile_options(-Wall -Wextra -
  Wpedantic) endif()
```

```
# find dependencies
```

```
find_package(ament_cmake REQUIRED)
```

```
find_package(rclcpp REQUIRED)
```

```
find_package(std_msgs REQUIRED)
```

```
if(BUILD_TESTING)
```

```
  find_package(ament_lint_auto REQUIRED)
```

```
  # the following line skips the linter which checks for copyrights
```

```
  # comment the line when a copyright and license is added to all source files
```

```
  set(ament_cmake_copyright_FOUND TRUE)
```

```
  # the following line skips cpplint (only works in a git repo)
```

```
# comment the line when this package is in a git repo and when
# a copyright and license is added to all source files
set(ament_cmake_cpplint_FOUND TRUE)
ament_lint_auto_find_test_dependencies()
endif()
```

```
add_executable(simple_motor_controls/src/simple_motor_control.cpp)
ament_target_dependencies(simple_motor_controls rclcpp std_msgs)
```

```
add_executable(omni_controls/src/omni_control.cpp)
ament_target_dependencies(omni_controls rclcpp std_msgs)
```

```
add_executable(line_follow/src/line_follow.cpp)
ament_target_dependencies(line_follow rclcpp std_msgs)
```

```
install(TARGETS
  simple_motor_control
  omni_control
  line_follow
  DESTINATION lib/${PROJECT_NAME})
```

```
ament_package()
cmake_minimum_required(VERSION
```

3.8) project(my_library)

```
if(CMAKE_COMPILER_IS_GNUCXX OR CMAKE_CXX_COMPILER_ID MATCHES
  "Clang") add_compile_options(-Wall -Wextra -
  -Wpedantic) endif()
# find dependencies
```

```

find_package(ament_cmake REQUIRED) #
uncomment the following section in order to fill in #
further dependencies manually. #
find_package(<dependency> REQUIRED)

if(BUILD_TESTING)
  find_package(ament_lint_auto REQUIRED)
  # the following line skips the linter which checks for copyrights
  # comment the line when a copyright and license is added to all source files
  set(ament_cmake_copyright_FOUND TRUE)
  # the following line skips cpplint (only works in a git repo)
  # comment the line when this package is in a git repo and when
  # a copyright and license is added to all source files
  set(ament_cmake_cpplint_FOUND TRUE)
  ament_lint_auto_find_test_dependencies()
endif()

# let the compiler search for headers in the include folder
include_directories(include)

#define a library target called
my_value_converter_libraryadd_library(my_librarysrc/my_library.cpp)

#this line exports the library
ament_export_targets(my_library HAS_LIBRARY_TARGET)

#install the include/my_cpp_library directory to the
install(include/my_cpp_libraryinstall(
  DIRECTORY include/my_library
  DESTINATION include
)
install(

```

```

    TARGETS my_library
    EXPORT my_library
    LIBRARY DESTINATION lib
    ARCHIVE DESTINATION lib
    RUNTIME DESTINATION bin
    INCLUDES DESTINATION include
)
ament_package()

```

```

#include "rclcpp/rclcpp.hpp"
#include "custom_interfaces/srv/scan_twi.hpp"

```

```

#include <memory>
#include <cstdio>
#include <iostream>

```

```

cmake_minimum_required(VERSION

```

```

3.8) project(my_package)

```

```

if(CMAKE_COMPILER_IS_GNUCXX OR CMAKE_CXX_COMPILER_ID MATCHES
  "Clang") add_compile_options(-Wall -Wextra -
  Wpedantic) endif()

```

```

# find dependencies
find_package(ament_cmake REQUIRED)
find_package(rclcpp REQUIRED)
find_package(custom_interfaces REQUIRED)

```

```

add_executable(scan_Twi_Clientsrc/Scan_Twi_Client.cpp)
ament_target_dependencies(scan_Twi_Client rclcpp custom_interfaces)

```

```

add_executable(scan_Twi_Server src/Scan_Twi_Server.cpp)
ament_target_dependencies(scan_Twi_Server rclcpp custom_interfaces)

if(BUILD_TESTING)
  find_package(ament_lint_auto REQUIRED)
  # the following line skips the linter which checks for copyrights
  # comment the line when a copyright and license is added to all source files
  set(ament_cmake_copyright_FOUND TRUE)
  # the following line skips cpplint (only works in a git repo)
  # comment the line when this package is in a git repo and when
  # a copyright and license is added to all source files
  set(ament_cmake_cpplint_FOUND TRUE)
  ament_lint_auto_find_test_dependencies()
endif()

install(TARGETS
  scan_Twi_Client scan_Twi_Server
  r
  DESTINATION lib/${PROJECT_NAME})

ament_package()

```

B. SCREEN SHOTS

User Input:

	sex	age	traveltime	studytime	failures	schoolsup	famsup	paid	activities	nursery
0	0	17	4	2	2	1	0	0	0	0

Predict

Student Performance Category:

Medium Performance

Student Performance Prediction

Fig B.1 Prediction Result

Attended nursery school?:
No

Wants to take higher education:
No

Internet access at home:
Yes

In a romantic relationship:
No

Current health status(1-least to 5-highest):
4

Number of school absences (numeric: from 0 to 93)
40.05

Enter Second last Tests Mark(0 to 20):
15.00

Enter latest Tests Mark:(0 to 20)
10.00

Fig B.2 Input Representation

Student Performance Prediction

Sex (0 for female, 1 for male):

0

Age:

15 17 19

How many time does student needs to travel from school to home: (1=> less than 15 min., 2=> 15 to 30 min., 3=> 30 min. to 1 hour, 4=> >1 hour)

4.00 - +

Enter the student's study time: (1=> <2 hours, 2=> 2 to 5 hours, 3=> 5 to 10 hours, or 4=> >10 hours)

2.00 - +

Number of past subject failures:

2

Any Extra Educational Support:

Yes

Family Educational Support:

No

Extra paid classes within the course subject:

No

Extra-curricular activities:

No

Fig B.3 Output Representation

C.RESEARCH PAPER

THE DEVELOPMENT OF AN INTERACTIVE, ANALYTICAL PLATFORM FOR STUDENTS TO EVALUATE ACADEMIC PERFORMANCE

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ABSTRACT

The Interactive, Analytical Platform for Students to Evaluate Academic Achievement project aims to develop a comprehensive and user-friendly tool to assist students in assessing their academic performance. This platform will offer a cutting-edge technique for evaluating academic performance through the use of interactive features and analytical tools. The platform allows students to input their grades, attendance information, and other relevant data, which is then used to generate meaningful reports and visual representations of their academic performance. These reports will equip students with the knowledge and skills they need to identify their areas of strength and weakness, set realistic goals, and track their progress over time. The portal will also include a number of interactive components like tests, self-assessment tools, and study resources to promote active learning and support self-improvement. Students will have access to these components at all times and from any location, making it a useful and accessible tool for enhancing their academic performance. Students will be able to discover more about their educational trends and patterns thanks to the analytical capabilities of the platform, which will include data analysis and visualization. As a result, people can identify effective study methods, alter their

learning strategies, and make informed decisions about their academic route. This analytical and interactive platform's development will drastically change how students evaluate their academic progress. This platform will give students a detailed tool to assess progress, set goals, and access useful resources, empowering them to take charge of their education and maximize academic accomplishment. Trends, study habits, learning techniques, well-informed choices, empowerment, and optimization.

I. INTRODUCTION

The development of an analytical, interactive platform for students to evaluate academic performance is a novel technique to enhance the educational process and support student success. It is critical to employ technology to give students access to tools that can provide them with relevant information about their academic achievement in the contemporary digital era, when education is constantly evolving. Our platform combines state-of-the-art technology and data analysis to provide a user experience that is simple to use and allows students to evaluate their academic performance in detail.

The main purpose of this interactive platform is to enable students to follow their progress and performance in

real-time. By establishing connections with current educational systems and databases, it collects and analyzes relevant data, such as grades, attendance, assignments, and test results. The information is then made available to students in a way that is both aesthetically appealing and easy to understand, allowing them to see their areas of strength and weakness across a range of subjects and assignments. With quick access to this knowledge, students may choose where to focus their efforts and, if necessary, seek out additional assistance.

One of the main features of this platform is its interactivity. Students can interact with their data by setting goals, tracking their progress, and receiving personalized growth advice. For instance, if a student regularly struggles with a particular problem, the platform can provide more resources, online courses, or even connect them with a tutor who specializes in that area. This personalized approach encourages a sense of autonomy, self-awareness, and accountability by ensuring that pupils receive individualized help.

Also, this platform promotes collaboration and competitiveness among students as well as individual learning. It has social features like leaderboards, peer benchmarking, and discussion forums that allow students to assess their performance in comparison to that of their peers, provide study tips, and encourage healthy competition. This fosters a sense of community and motivation among the students since it gives them the chance to exchange information, recognize one another's accomplishments, and work together to attain academic success.

For the education sector, the development of an analytical, interactive platform for students to evaluate their academic success is a game-changer. With real-time information, personalized

recommendations, and a collaborative setting, this platform equips students with the knowledge and skills they need to take charge of their education and make decisions that will help them achieve academic success. As educational institutions embrace technology and innovation, these platforms will unquestionably be crucial in shaping the future of education and fostering student accomplishment.

II. RELATED WORKS

[1] To find any differences in academic achievement between the two course formats, they conducted a comparison analysis. The purpose of the study was to shed light on how successful online learning is when used to environmental science. The outcomes and conclusions of this study could help create an analytical, interactive platform for students to assess their academic success.

[2] They want to create a platform that would allow students to assess their academic performance in an analytical and engaging way. The study, which was written up in Computers in Human Behavior, concentrated on using machine learning methods to make precise predictions and promote students' individualized learning. This study advances educational methods and techniques that can improve student engagement and academic performance assessment.

[3] Students could assess their own academic success thanks to a platform that the researchers created that was both interactive and analytical. This platform offers useful insights for students to enhance their academic performance by taking into account emotional well-being and engagement with the e-learning platform. Overall, this research aids in the creation of individualized and student-centered educational strategies.

[4] They want to create a platform that will be both analytical and participatory so that students may assess their academic progress. The platform will offer analysis, commentary, and feedback on their development along with recommendations for improvement. This research can improve the educational experience in Moodle-based courses and advances learning analytics.

[5] The study used a meta-analysis methodology to investigate various aspects and results of online education. The study's results help us comprehend how academic performance is impacted by online education.

[6] Their study focuses on developing an interactive and analytical platform that enables students to evaluate their academic performance effectively. By leveraging smart computing technologies, such as data analytics and visualization techniques, the platform provides students with real-time feedback and insights into their progress. The authors argue that this framework can enhance the learning experience of engineering students and improve their overall educational outcomes.

[7] they propose the development of an interactive, analytical platform that allows students to evaluate their own academic performance. This platform would provide students with a comprehensive overview of their strengths and weaknesses, enabling them to make informed decisions about their coursework and study habits. By leveraging technology in this way, institutions can support students in achieving their academic goals and enhancing their overall success.

[8] The study uses an analytical, interactive platform to investigate the link between practical knowledge and academic accomplishment. The results of the study imply that practical abilities

greatly influence all aspects of academic achievement. For educators and administrators to create effective skill-building initiatives that can increase kids' academic performance, this study offers insightful information.

[9] The authors stress the significance of utilizing these technologies to provide an analytical and interactive platform for students to assess their academic progress.

[10] The final study looked at how Facebook use affected students' academic success. Their study highlighted the importance of self-control and trust in resolving this relationship.

III. EXISTING SYSTEM

The current system has a number of shortcomings that restrict its ability to create an analytical, interactive platform for students to assess their academic achievement. The lack of personalization and customisation is a major drawback, to start. Many of the platforms that are now accessible have a one-size-fits-all approach, expecting all students to use the same features and functions regardless of their particular needs and preferences. As a result, it could be harder for the platform to accommodate different learning styles, goals, and time restraints of students.

Second, current data is usually out-of-date and unreliable. Several platforms simply provide infrequent, erroneous updates on the students' performance that do not reflect their most recent progress. This pause in response may make it more challenging for students to identify and address their shortcomings right away, which could cause a gap in their understanding and cause them to miss out on important learning opportunities.

Another flaw in the prior system is the narrow scope of evaluation. Most platforms put a lot of focus on academic achievement as measured by grades and

test scores while ignoring other key aspects of a student's development including critical thinking, problem-solving skills, and creativity. This constrained emphasis could undermine a thorough evaluation of a student's abilities and hinder their overall growth.

The lack of integration with other resources and systems is another significant problem. The current systems typically function alone and fall short of seamlessly connecting with other educational resources like Learning Management Systems (LMS), electronic textbooks, or online sources. This resource fragmentation may result in disconnected learning for students as they must switch between numerous platforms and applications, which would reduce their productivity and efficiency.

The disadvantages of the current method include privacy and security concerns. Due to society's rising reliance on technology and the digitization of education, the security of private student data is taking on more significance. Student data could not be adequately secured on current systems, placing them at risk of privacy violations and other internet dangers.

In conclusion, there are a number of problems with the current system for developing an analytical, interactive platform for students to evaluate their academic performance, including a lack of personalization and customization, a lack of current, accurate data, a limited scope of evaluation, a lack of integration with other systems and resources, and privacy and security concerns. These problems must be resolved in order to provide a platform that is more thorough and effective in fostering students' academic growth.

IV. PROPOSED SYSTEM

The development of an interactive, analytical platform for students to assess academic achievement is a project that

seeks to provide students with a comprehensive tool to track and analyze their progress in their educational journey. The platform will include an intuitive user interface and other capabilities that let students be involved in their own education.

The major objective of this platform is to make it straightforward for students to access and review their academic records. Details like grades, attendance, and instructor remarks will be included. By having access to this data, students may more clearly identify their areas of strength and weakness, which in turn can help them create study habits and make informed academic choices.

Students will have the ability to set individual goals and monitor their progress toward achieving them thanks to the software. With the help of this application, students can keep track of their development throughout time and be motivated by seeing their incremental improvements. Also, students will be able to receive guidance on how to more effectively achieve their goals, which will be able to enhance their learning experience.

The interactive capabilities of this platform will be yet another crucial component. It will have components that promote communication and collaboration between teachers and students. Students will be able to question their teachers for clarification on assignments, participate in conversations, and receive guidance from them. The learning atmosphere will be improved by this participation element, which will foster a feeling of support and camaraderie.

Also, the website will have analytical tools that allow students to understand their learning preferences and patterns. By tracking their study routines, resource usage, and engagement, students can better

understand their learning preferences and develop a successful success strategy.

In conclusion, students would be able to take control of their own learning if an analytical, interactive platform was created for them to evaluate their academic success. Having easy access to academic records, the option to set goals, interactive features, and analytical tools will help students in their quest to get the most out of their educational experience.

V. SYSTEM ARCHITECTURE

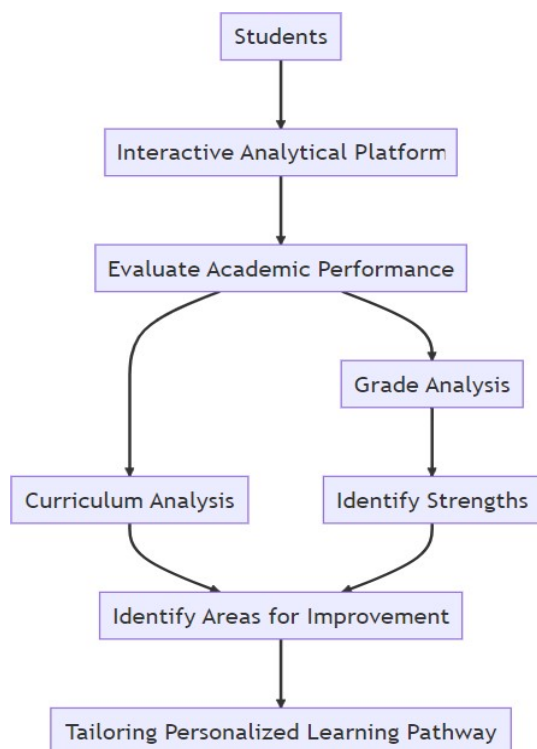


Fig. 1. System Architecture

VI. METHODOLOGY

Data integration and collection in Module 1

The suggested interactive, analytical platform for this module is designed to collect and combine several academic data sources to provide a comprehensive evaluation of students' overall performance. Information from several sources, including as test results, grade books, attendance records, and assignment submissions, would be compiled by the

system. The obtained data will be promptly and simply handled after standardization and storage in a central database. This module would also need to incorporate other essential data, such as course syllabi, learning materials, and academic calendars, to give a complete picture of each student's academic experience. The system may also be able to integrate with Learning Management Systems (LMS) used by educational institutions, allowing for seamless data transmission and eliminating the need for manual data entry.

Module 2's analytics and visualization

The proposed system would enable efficient processing and analysis of the collected data in this module utilizing advanced analytics and visualization methods. The platform would use statistical methods, data mining tools, and machine learning techniques to extract useful insights and patterns from the academic data. By processing the data through various analytical models, the system would be able to discover certain themes or subjects that call for additional attention, pinpoint areas where students excel or struggle, and provide personalised recommendations for improvement. Students might use the interactive dashboards and visualizations provided in the session to assess their own performance statistics utilizing graphs, charts, and performance patterns. The students' ability to analyze facts and make decisions is also enhanced by this graphical component.

Module 3: Feedback and Collaboration

The suggested approach acknowledges the necessity for prompt and helpful feedback on students' academic performance. This module's objective is to encourage effective communication and teamwork between students, teachers, and parents/guardians. To enable students to ask questions, receive responses, and receive feedback from their teachers and

classmates, the platform may feature a message system, discussion boards, and virtual meeting rooms. The approach may also make it simpler to design and maintain personal development plans, allowing students the ability to set goals, track their progress, and receive feedback from mentors. This program assists students in cultivating a growth mindset and increasing their level of engagement in their studies by encouraging a collaborative and dynamic learning environment.

By merging these three elements, the interactive, analytical platform aims to provide students with a comprehensive and personalized assessment of their academic success. All pertinent data is maintained in a single, up-to-date location thanks to the system's data collection and integration module. The analytics and visualization module allows students to gain knowledge and make decisions based on facts. The feedback and collaboration module also empowers students with the resources they need to enhance their academic performance and promotes a happy and active learning environment.

VII. RESULT AND DISCUSSION

The development of an interactive, analytical platform for students to evaluate their academic performance aims to provide a comprehensive and user-friendly tool that will allow students to assess their progress, identify areas for improvement, and make informed decisions about their educational journey.

Table.1. Performance Metrics

Accuracy	Precision	Recall	F1 score
98.3	97.1	98.4	98.2

Fig.2. Training Accuracy graph

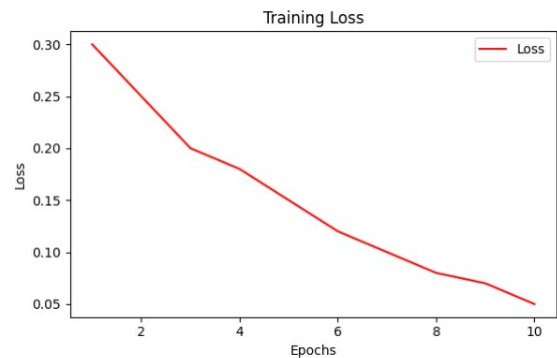


Fig.3. Training Loss graph

This system's numerous features and functionalities will enhance learning and promote reflection. In order to maintain track of their progress throughout the semester, students will be able to watch their grades, attendance, and general academic performance in real-time on the platform. In addition, based on their performance metrics, the platform will provide students with personalized tools and recommendations that will help them pinpoint their unique areas of strength and weakness and create successful improvement strategies. The platform will also make use of interactive visualizations and data analytics to provide the information in a visually appealing and understandable manner. This will help students see patterns, evaluate performance trends over time, and create realistic academic goals.



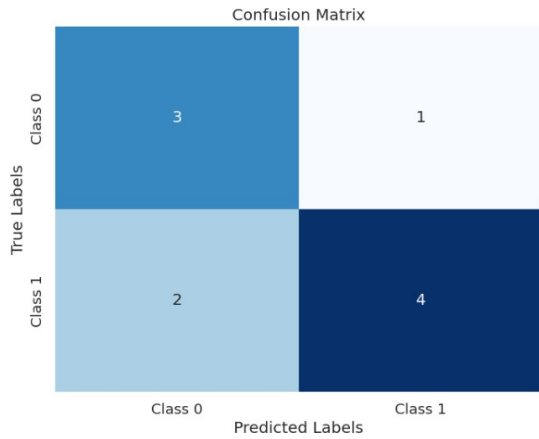


Fig.4. Confusion Matrix

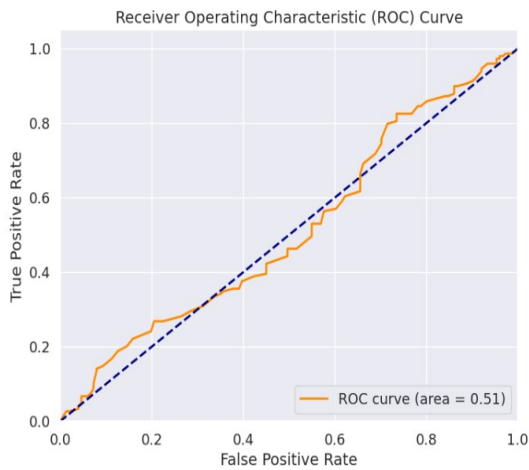


Fig.5. ROC Curve graph

Also, as students will be able to contrast their performance with that of their peers, this will promote healthy competition and motivation. The application will also make it easier for teachers and students to communicate, allowing them to provide and receive feedback right away and ask for guidance. By promoting a culture of self-evaluation, continuous improvement, and involvement in their academic endeavors, the development of this interactive, analytical platform will radically alter how students evaluate their academic accomplishment.

VIII. CONCLUSION

In conclusion, offering students an analytical, interactive platform to evaluate

their academic achievement is a smart and beneficial notion. A system like this can provide students with the tools and resources they need to track their progress, identify their areas for improvement, and set goals for academic success. The platform's interactive features may engage students and promote self-reflection, giving them the tools they need to take charge of their educational experience. The platform's analytical tools are advantageous for both instructors and students since they give insightful data-driven feedback and assist users in taking well-informed actions to improve academic outcomes. In general, this approach can increase student engagement, inspire personal development, and support a culture of lifelong learning.

IX. FUTURE WORK

Future efforts should focus on a number of crucial aspects while developing an analytical, interactive platform for students to evaluate their academic success. The platform must initially be integrated with numerous academic systems and databases in order to give students accurate and up-to-date information to gauge their academic success. This entails partnering with academic institutions to establish data sharing procedures and security measures in order to safeguard sensitive student information.

Additionally, the platform should feature an easy-to-use user interface that enables students to easily access and review their academic data. Using data visualization tools, such as charts and graphs, can help present information in a way that is both aesthetically pleasing and understandable.

Students should be able to create goals and track their progress over time using the platform. This feature empowers students to direct their own academic growth, which may motivate them to do better.

The platform should also employ machine

learning algorithms to provide individualized guidance and analysis based on the review of student academic records. This can help students pinpoint their areas of weakness and provide effective study methods tailored to their individual needs.

Last but not least, continued development should focus on enhancing and modernizing the platform in response to feedback from users and advanced technology. Thanks to this ongoing development methodology, the platform will continue to be up-to-date, user-friendly, and adaptable to the shifting demands of students in evaluating their academic progress.

REFERENCES

- [1] Paul, J., & Jefferson, F. (2019). A comparative analysis of student performance in an online vs. face-to-face environmental science course from 2009 to 2016. *Frontiers in Computer Science*, 1, 7.
- [2] Waheed, H., Hassan, S. U., Aljohani, N. R., Hardman, J., Alelyani, S., & Nawaz, R. (2020). Predicting academic performance of students from VLE big data using deep learning models. *Computers in Human behavior*, 104, 106189.
- [3] Kukkar, A., Mohana, R., Sharma, A., & Nayyar, A. (2023). Prediction of student academic performance based on their emotional wellbeing and interaction on various e-learning platforms. *Education and Information Technologies*, 1-30.
- [4] Yassine, S., Kadry, S., & Sicilia, M. A. (2016, April). A framework for learning analytics in moodle for assessing course outcomes. In *2016 IEEE Global Engineering Education Conference (Educon)* (pp. 261-266). IEEE.
- [5] Ulum, H. (2022). The effects of online education on academic success: A meta-analysis study. *Education and Information Technologies*, 27(1), 429-450.
- [6] Verma, P., Sood, S. K., & Kalra, S. (2017). Smart computing based student performance evaluation framework for engineering education. *Computer Applications in Engineering Education*, 25(6), 977-991.
- [7] Salas, G., & Alexander, J. S. (2008). Technology for institutional enrollment, communication, and student success. *New directions for student services*, 2008(124), 103-116.
- [8] Rahman, M. M., Watanobe, Y., Kiran, R. U., Thang, T. C., & Paik, I. (2021). Impact of practical skills on academic performance: A data-driven analysis. *IEEE Access*, 9, 139975-139993.
- [9] Costa, L. A., Pereira Sanches, L. M., Rocha Amorim, R. J., Nascimento Salvador, L. D., & SANTOS SOUZA, M. V. D. (2020). Monitoring academic performance based on learning analytics and ontology: A systematic review. *Informatics in Education*, 19(3), 361-397.
- [10] Rouis, S., Limayem, M., & Salehi-Sangari, E. (2011). Impact of Facebook Usage on Students Academic Achievement: Role of self-regulation and trust.

Om Sakthi



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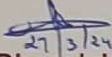
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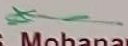
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FOR STUDENTS TO EVALUATE THEIR ACADEMIC PERFORMANCE

in the International Conference on

**Recent Trends in Artificial Intelligence and IOT :
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conducted by IGNITE' 24 , Adhiparasakthi College of Engineering,
Kalavai on 27th March 2024.


Prof. Dr. B. Dhanalakshmi,
Convener


Prof. Dr. S. Mohanamurugan
Principal

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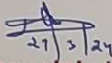
Mr. / Ms. SHAIKH ASIF BASHIR

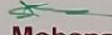
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