

Intelligent Goal Tracking and Performance Prediction System

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Abstract—The rapid evolution of AI technology such as artificial and machine learning has had a major impact on performance monitoring and improvement, particularly in education. In this paper, we present an Intelligent Goal Tracking and Performance Prediction approach to enhance student achievement by data-driven insights. The system employs such variables as academic achievement, attendance trends, behavioral patterns and Socioeconomic factors affect what will happen in the future. We don't need to wait to check how people are doing at specific times. Instead, we can monitor things continuously and catch any problems early. This allows us to help people sooner. The system uses something called intelligence to ensure we understand how it makes predictions. It also sends out alerts promptly. It provides personalized advice to help teachers and students address ongoing issues. This model creates a learning environment where people can take action and adjust, which helps them reach their goals and reduces their chances of failure.

Index Terms—intelligence, achievement, goal tracking, machine learning, performance prediction, student outcomes.

I. INTRODUCTION

In this current generation, we all know that the schools and colleges struggle to ensure students perform well and reach their desired goals. Most schools and colleges still judge how students are doing only after a test or assessment. This often ensures that they do not identify hardworking students until it's too late. Then, it becomes very difficult to get timely help. With intelligence and machine learning, we can research a lot of information. We can invent the things that we

cannot identify early. Socioeconomic features play important role in predicting better results. We need to take them into separate sector. Intelligence and machine learning help us to understand the information or data and make predictions. This allows us to make a learning circumstance where students of schools or colleges can reach their desired goals. Socioeconomic features and artificial intelligence are very important to making this occur in real life. Goal-setting frameworks such as SMART help to structure objectives, but without intelligent monitoring, they are not adaptive and lack real-time feedback [1]

The study presents a system that combines goal tracking and predictive analytics to create a more responsive and effective framework. Performance evaluation is important but so are predicting and proactive performance improvement.

The system prioritises:

1. Track progress on an ongoing basis
2. Detection of hazard in early stage
3. Comments and recommendations of each individual
4. Transparency in decision-making with Explainable AI

Integrating these elements helps the system to help educators and students make good decisions and support better overall outcomes.

II. LITERATURE REVIEW

Recently, Educational Data Mining (EDM) and Learning Analytics have received considerable attention for their ability to predict student performance. Several machine learning algorithms are

used in this domain like Decision Trees, Support Vector Machines (SVM), Random Forest, and Neural Networks have been widely used [2][3][4].

Research shows that one of the best predictors of future success is past academic performance. [5] Attendance and student engagement are also critical to determining outcomes. In addition, including socio-economic and demographic [6] factors have been demonstrated to improve the accuracy of prediction models.

Methods for feature selection and preprocessing that improve model performance are also important. The use of Principal Component Analysis (PCA) and ensemble learning methods [3] improves prediction reliability and reduces overfitting. AI has been used not just prediction but also for performance management and goal tracking systems. Studies show that the application of structured goal-setting methods together with AI-powered analytics leads to greater engagement and achievement [1]. Also, Natural Language Processing (NLP) has been applied to study the analysis of the learners' feedback and emotional patterns [7]. However, many existing systems have disadvantages such as poor integration of intervention techniques, limited interpretability, and absence of real-time analysis. Using explainability, goal tracking, prediction, and actionable recommendations in one single framework, the current proposed system tackles these issues.

III. METHODOLOGY

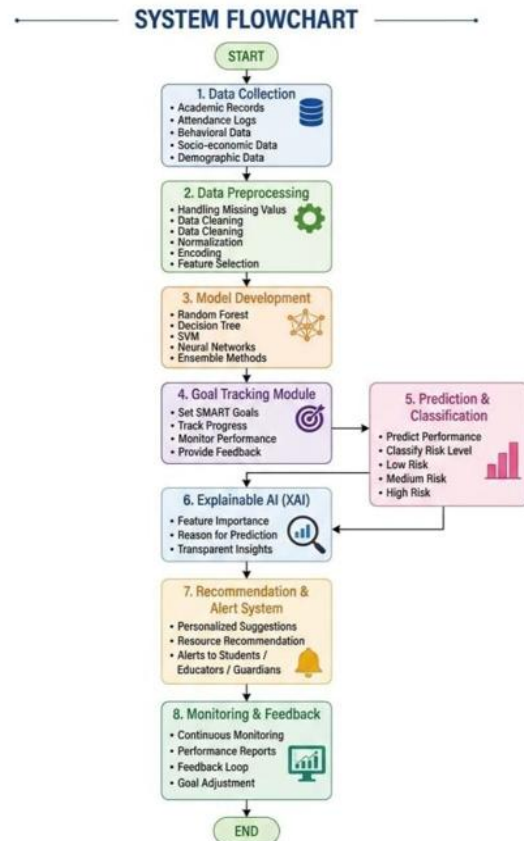
Accuracy, scalability, and usability are guaranteed using structured pipeline design.

A. Information Gathering

Numerous sources are familiar to collect information, namely academic records, attendance logs, behavioral patterns, and socioeconomic data. This multidimensional dataset aids in the development of an all-encompassing model.

B. Preprocessing Data

The data is prepared and cleaned before analysis. Managing missing values, standardizing numerical data, and transforming categorical variables into machine-readable formats are all included in this. To determine the major fact, Characteristic Preference is carried out.



C. Model Creation

Many of machine learning models are generally helpful faeures, such as Random Forest, Decision Trees, Support Vector Machines, and Neural Networks. Ensemble techniques are applied to improve overall prediction performance and stability [3].

D. Module for Tracking Goals

Users can set and track goals with a specific module. Feedback is produced using real-time performance data, and progress is continuously monitored.

E. Classification and Prediction

Targeted interventions are made possible by the system's ability to predict future performance and classify users into low, medium, and high-risk levels.

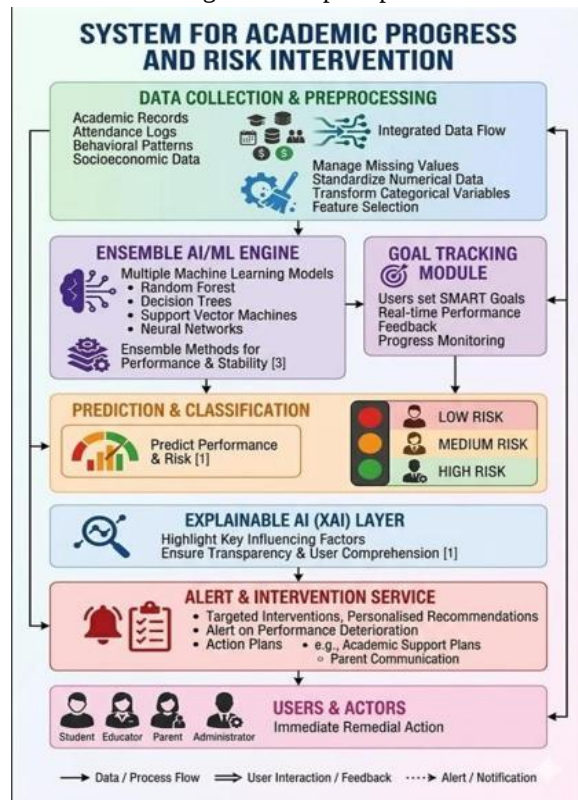
F. AI that can be explained (XAI)

Explainable AI techniques are employed to highlight the important factors influencing each prediction in order to ensure transparency.

This makes it easier for users to comprehend why a specific outcome was produced [1].

G. Alert and Recommendation System

The system makes tailored recommendations based on forecasts and notifies users when performance deteriorates. This guarantees prompt remedial action.



IV. RESULTS AND EVALUATION

Standard performance metrics like accuracy, precision, recall, and F1-score are employed to evaluate the system's efficacy.

- Important Findings

- 1) Previous academic performance strongly influences predictions [2]
- 2) One important factor in determining results is attendance.
- 3) Accuracy is increased by including behavioural and socioeconomic data.

- The System's Effect

1. Early detection of students who are at risk
 2. Increased rates of goal completion
 3. better support for decision-making
- Comparisons with traditional evaluation methods show that AI-based systems provide faster and more accurate insights, leading to improved outcomes [4].

V. FUTURE WORKS AND OUTCOMES

The system can be improved further by incorporating advanced technologies and expanding its capabilities.

- Future Enhancements
1. Time-based prediction using deep learning models like LSTM and RNN
 2. Learning Management System (LMS) Integration
 3. Dashboards for real-time analytics
 4. NLP-based sentiment and emotion analysis
 5. Cloud-based and mobile deployment

- Anticipated Results

1. Decreased rates of dropout
2. Increased academic achievement
3. Individualized educational opportunities

VI. CONCLUSION

The proposed Intelligent Goal Tracking & Performance Prediction System demonstrates how artificial intelligence can make traditional performance evaluation more proactive and intelligent. By combining predictive analytics, goal tracking, and explainable AI, the system enables for constant tracking and timely intervention.

Rather than reacting to poor performance after it happens, the system aims to predict and prevent it. This shift from reactive to proactive learning can boost student engagement, performance, and overall success.

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