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### \*\*Slide 1: Title Slide\*\*

\*\*Project Title:\*\*

DESIGN AND IMPLEMENTATION OF PREDICTIVE ANALYSIS OF STUDENT ACADEMIC PERFORMANCE USING MACHINE LEARNING

\*\*Name/Matric No:\*\*

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\*\*Date:\*\*

June 2025

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### \*\*Slide 2: Presentation Outline\*\*

1. Introduction

2. Motivation

3. Statement of Problem

4. Aim and Objectives

5. Significance of the Study

6. Literature Review

7. Proposed Methodology

8. Expected Contribution to Knowledge

9. Conclusion

10. References

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### \*\*Slide 3: Introduction\*\*

- \*\*Overview:\*\*

- Machine learning (ML) techniques are increasingly used in education to predict student performance.

- Identifies high-risk students and factors affecting academic outcomes.

- \*\*Machine Learning:\*\*

- Subfield of AI that learns from data to make predictions.

- Differs from traditional programming by using statistical analysis.

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### \*\*Slide 4: Motivation\*\*

- High attrition rates in educational institutions.

- Need for early identification of at-risk students.

- Leveraging ML to improve decision-making in academic planning.

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### \*\*Slide 5: Statement of Problem\*\*

- Existing methods lack accuracy in predicting student performance.

- Absence of inquiry into specific courses affecting outcomes.

- Limited use of advanced ML algorithms like Naïve Bayes and KNN in current systems.

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### \*\*Slide 6: Aim and Objectives\*\*

\*\*Aim:\*\*

To design an ML model for predicting student academic performance.

\*\*Objectives:\*\*

1. Classify student performance using supervised ML algorithms (Naïve Bayes, KNN).

2. Analyze factors like marks, attendance, and staff opinions.

3. Compare algorithm accuracy and error rates.

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### \*\*Slide 7: Significance of the Study\*\*

- Helps institutions identify at-risk students early.

- Improves resource allocation and academic interventions.

- Contributes to the field of Educational Data Mining (EDM).

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### \*\*Slide 8: Literature Review\*\*

- \*\*Key Studies:\*\*

- Abdallah Namoun: Identified grades and online activities as performance indicators.

- Durgesh Ugale: Emphasized preprocessing for data extraction.

- Ali Salah Hashim: Compared ML algorithms (highest accuracy: 88.8%).

- \*\*Gaps:\*\*

- Lack of focus on specific courses and student feedback.

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### \*\*Slide 9: Proposed Methodology\*\*

1. \*\*Data Collection:\*\* Marks, attendance, staff opinions.

2. \*\*Preprocessing:\*\* Clean and normalize data.

3. \*\*Classification:\*\* Naïve Bayes and KNN algorithms.

4. \*\*Prediction:\*\* Evaluate performance metrics.

\*\*System Architecture:\*\*

- Input Data → Preprocessing → ML Model → Performance Prediction.

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### \*\*Slide 10: Expected Contribution to Knowledge\*\*

- Novel use of Naïve Bayes and KNN for student performance prediction.

- Comparative analysis of ML algorithms in an educational context.

- Framework for early intervention in academic institutions.

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### \*\*Slide 11: Conclusion\*\*

- ML models (Naïve Bayes, KNN) show high accuracy in predicting performance.

- Addresses limitations of existing systems.

- Potential to reduce dropout rates and enhance academic outcomes.

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### \*\*Slide 12: References\*\*

- Namoun, A., et al. (2025). \*Performance Prediction of Students Using Distributed Data Mining\*.

- Ugale, D. (2024). \*Data Mining Approach for Predicting Student Performance\*.

- Hashim, A. S. (2023). \*Mining Student Data Using Decision Trees\*.

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### \*\*Slide 13: Thank You!\*\*

\*\*Questions?\*\*

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