RAJALAKSHMI INSTITUTE OF TECHNOLOGY
BELIEVE IN THE POSSIBILITIES
AN AUTONOMOUS INSTITUTION

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

ACADEMIC YEAR 2025 - 2026

SEMESTER III

ARTIFICIAL INTELLIGENCE LABORATORY

MINI PROJECT REVIEW

Student Mark's Predictor

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PROBLEM STATEMENT

- Predicting the academic performance of students using manual observation is inefficient and error-prone.
- There is a need for an automated system that can accurately predict students' performance based on various academic and behavioral factors using Machine Learning techniques.
- Possibilities:
- Institutions can identify weak students early.
- Teachers can personalize learning strategies.
- Students can track their academic progress and improve.

THEORETICAL BACKGROUND

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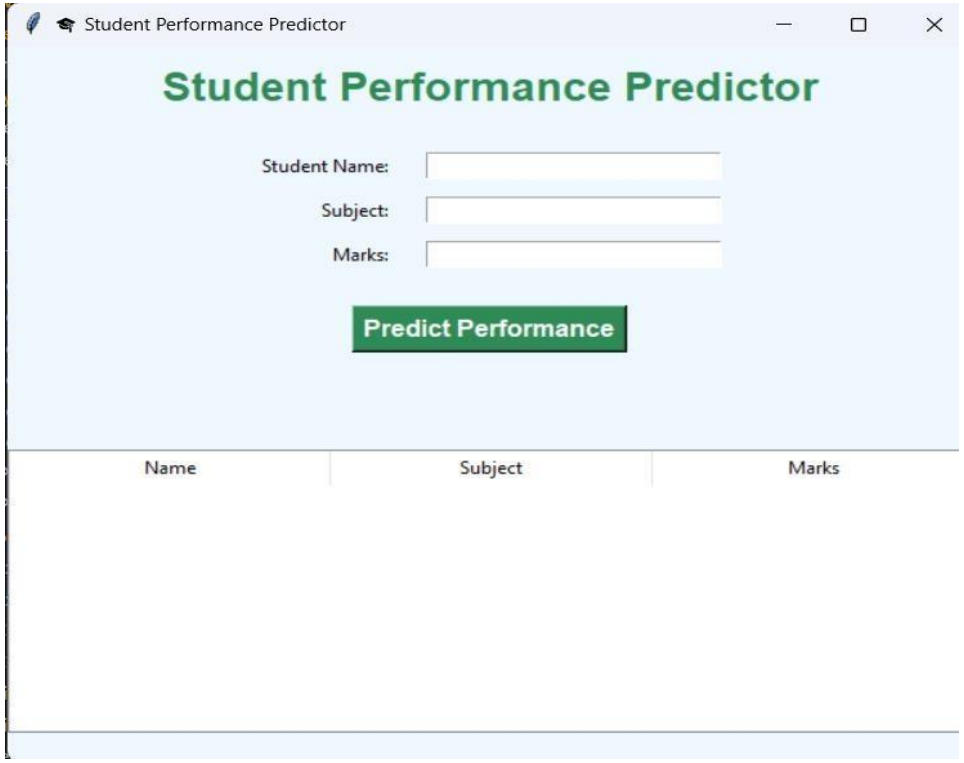
- About the Problem
- Student performance prediction is a classification problem that uses multiple input factors to predict a categorical output (e.g., Pass/Fail).
- It involves collecting data, preprocessing it, selecting appropriate algorithms, training the model, and evaluating its performance.
- Algorithm Used: Decision Tree Classifier
- A Decision Tree is a supervised learning algorithm used for both classification and regression tasks. It splits the dataset into subsets based on the value of input attributes, forming a treelike model of decisions.

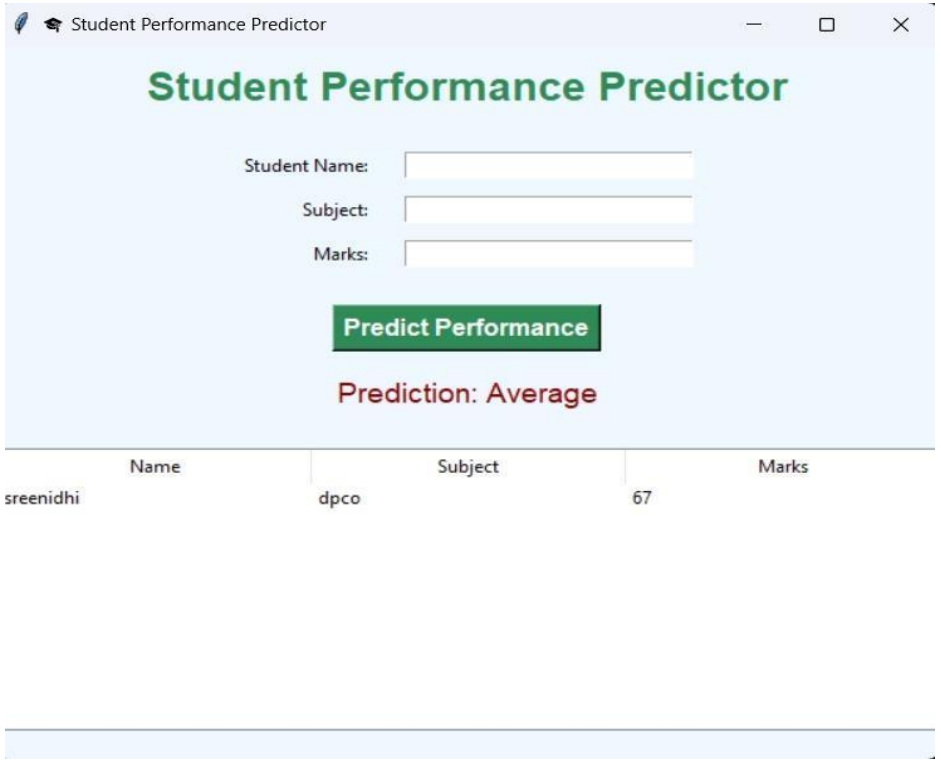
IMPLEMENTATION AND CODE

- Link to code in Git-hub Repository

List	Git-hub Repository Links
Implementation of Code Link	**https://github.com/sree867/Student-Performance-Predictor.git**
Word Document Report Link	**https://github.com/sree867/Student-Performance-Predictor.git**
PPT Link	**https://github.com/sree867/Student-Performance-Predictor.git.**

OUTPUT AND RESULTS





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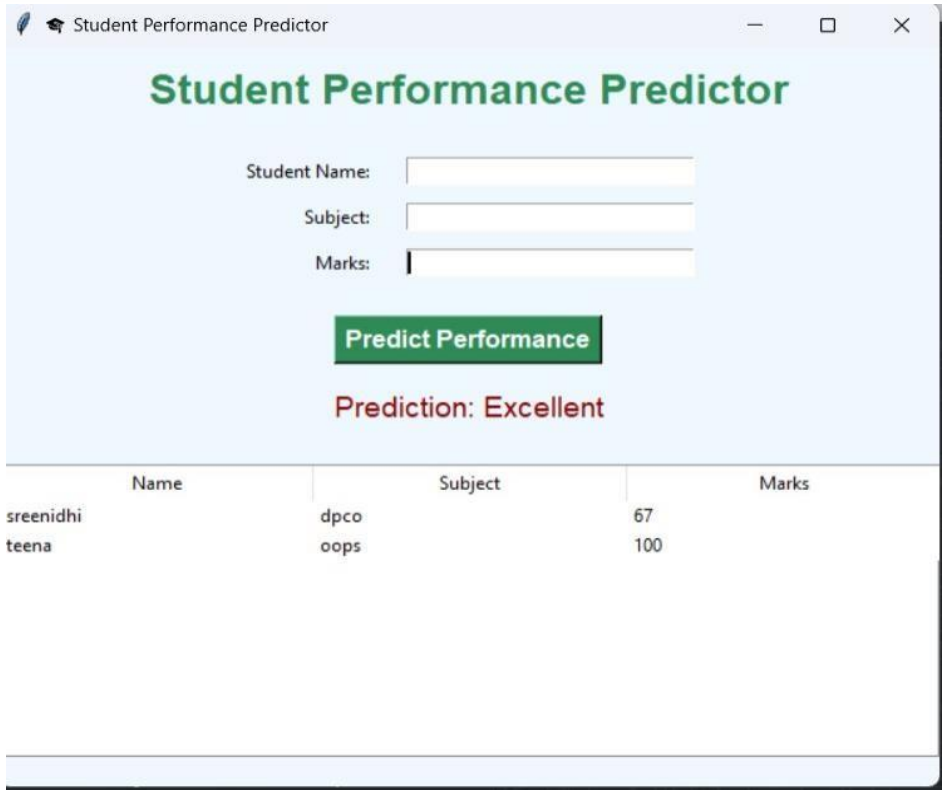

RESULTS AND FUTURE ENHANCEMENT

Results:

The Decision Tree model accurately predicted student performance with high precision.

Teachers can use it to identify low-performing students early.

The system demonstrated how AI can automate educational data analysis.

Future Enhancements:

Integrate more features like family background, psychological factors, or attendance trends.

Use ensemble models (Random Forest, XGBoost) for higher accuracy.

REFERENCES

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- Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow — Aurélien Géron (O'Reilly, 2022).
- "Introduction to Machine Learning with Python" – Andreas Müller & Sarah Guido
- Scikit-learn Official Documentation – https://scikit-learn.org/
- Towards Data Science – Logistic Regression Explained
- Analytics Vidhya – Student Performance Analysis Tutorial
- Medium Blog – Predicting Student Grades Using AI