Student Performance Prediction using **ANN**

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DATASET OVERVIEW

Dataset taken from Kaggle

Contains 708 rows and 9 columns

Features : Gender, Study Hours, Attendance, Past Exam Scores, Parental Education, Internet Access, Extracurricular, Final Exam Score

Target : Pass_Fail

DATASET DESCRIPTION

- This dataset contains information about students academic performance, study habits, and factors affecting their final exam scores.

- Identifying key factors that impact academic performance

OBJECTIVE

Build an **Artificial Neural Network (ANN)** model to :

- **Predict** if a student passes or fails based on input features
- Analyze which **features** most influence **success.**
- Provide conclusion for **educational improvement**.

Artificial Neural Network

ANN is a **machine learning model** inspired by the **human brain**

Structure:

- **Input Layer: Receives the input data**
- **Hidden Layers: Learn patterns using weights and activation functions**
- **Output Layer : Predicts Output**

Why ANN

- Can handle both **numeric and categorical data**
- Captures **complex, non-linear relationships** between factors
- Provides better **accuracy** than simple models

FINDINGS

- Study Hours, and Attendance **strongly influence** outcome
- **Parental education** and extracurricular activities have **secondary** influence
- **Internet access** shows **mixed impact**
- Students with high **attendance** and more **study hours** shows higher **probability of passing.**

CONCLUSION

- The **ANN model** is effective in predicting **student pass/fail outcomes**
- **Study hours and attendance** are the most influential factors for academic success.
- Categorical factors like parental education, internet access, and extracurricular activities have a **smaller impact.**
- The model can help identify **at-risk students early**, enabling timely **academic support**

THANK YOU