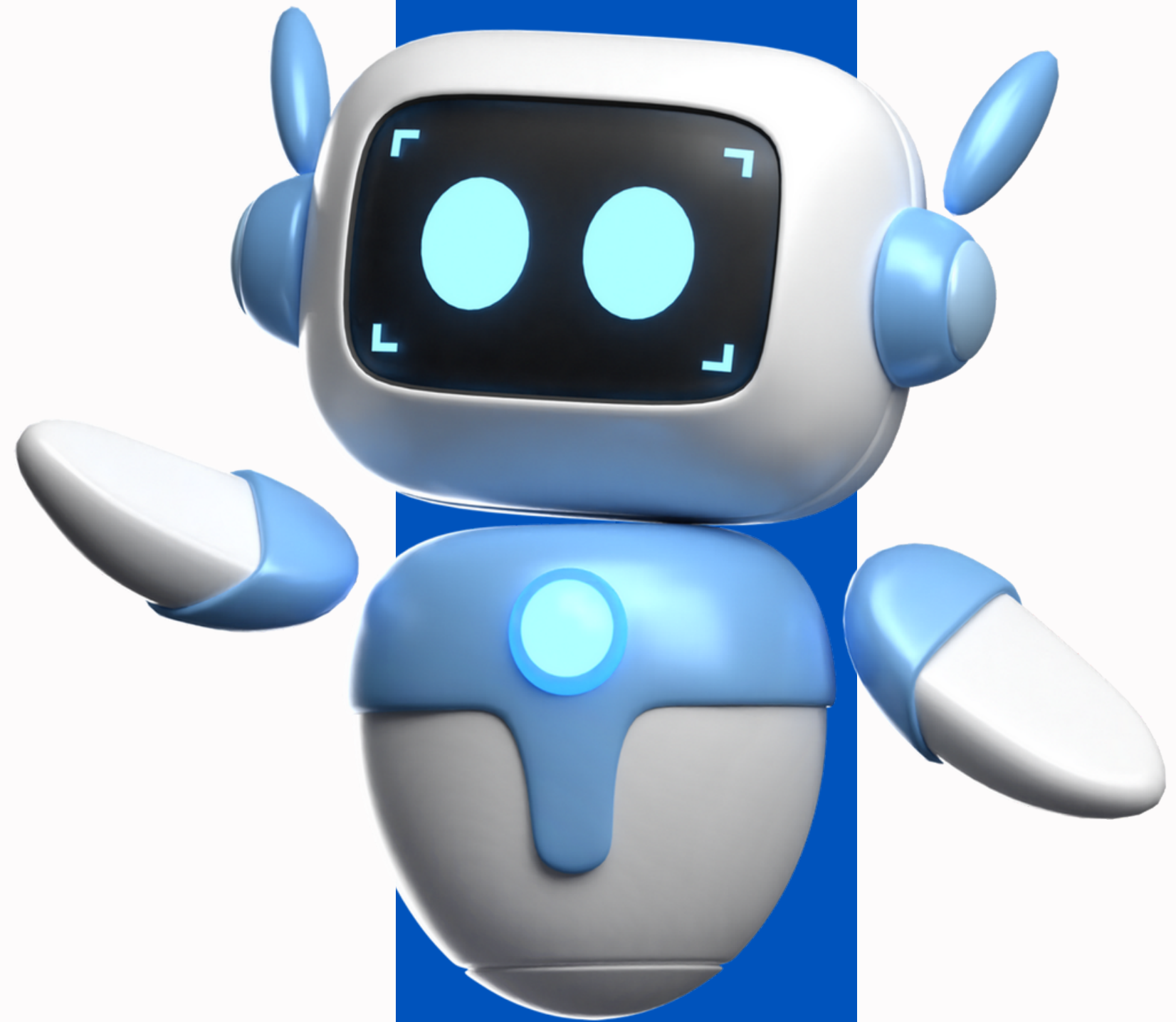


STUDENT PERFORMANCE EVALUATOR AND COURSE MATERIALS SUGGESTOR



Project Title : Student performance Evaluator and Course Materials Suggestor

Group- 1

2221699642

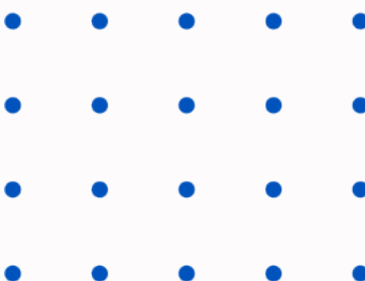
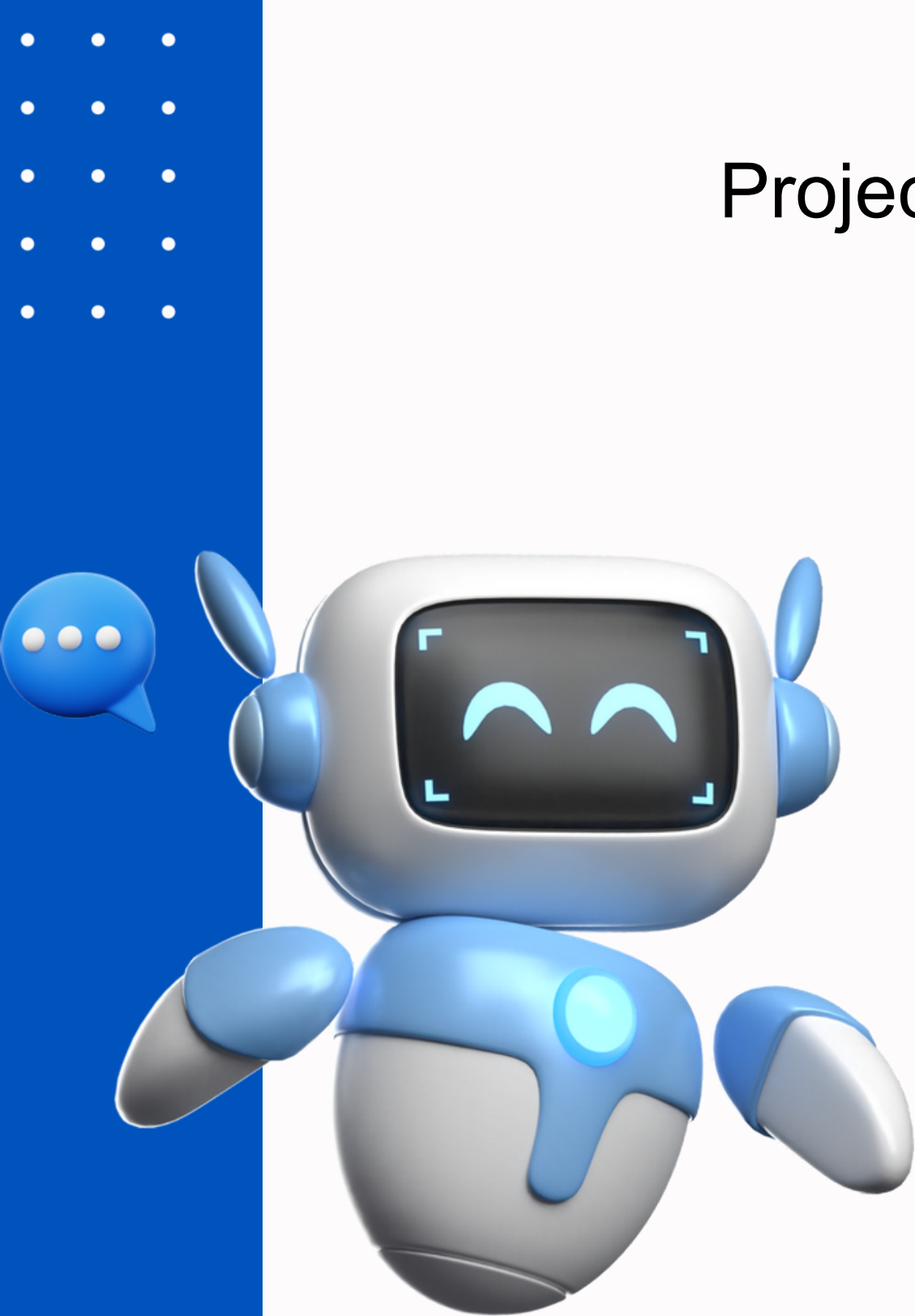
Abir Al Mahdi Akhand

2012328043

Rafio Tazowar

2112347642

Muhammad Ahnaf Islam



Brief about topic

This project predicts your academic performance and offers personalized recommendations to help you excel. It analyzes your data to identify strengths, weaknesses, and tailor tips, resources, and strategies to your individual needs. It empowers students to learn efficiently, stay engaged, and achieve their full academic potential. For educators, it provides valuable insights to personalize learning approaches, identify struggling students, and optimize resource allocation. It is the future of personalized learning, revolutionizing education by empowering both students and educators.

Expected Outcomes:

Improved academic performance: Higher grades and better understanding of concepts.

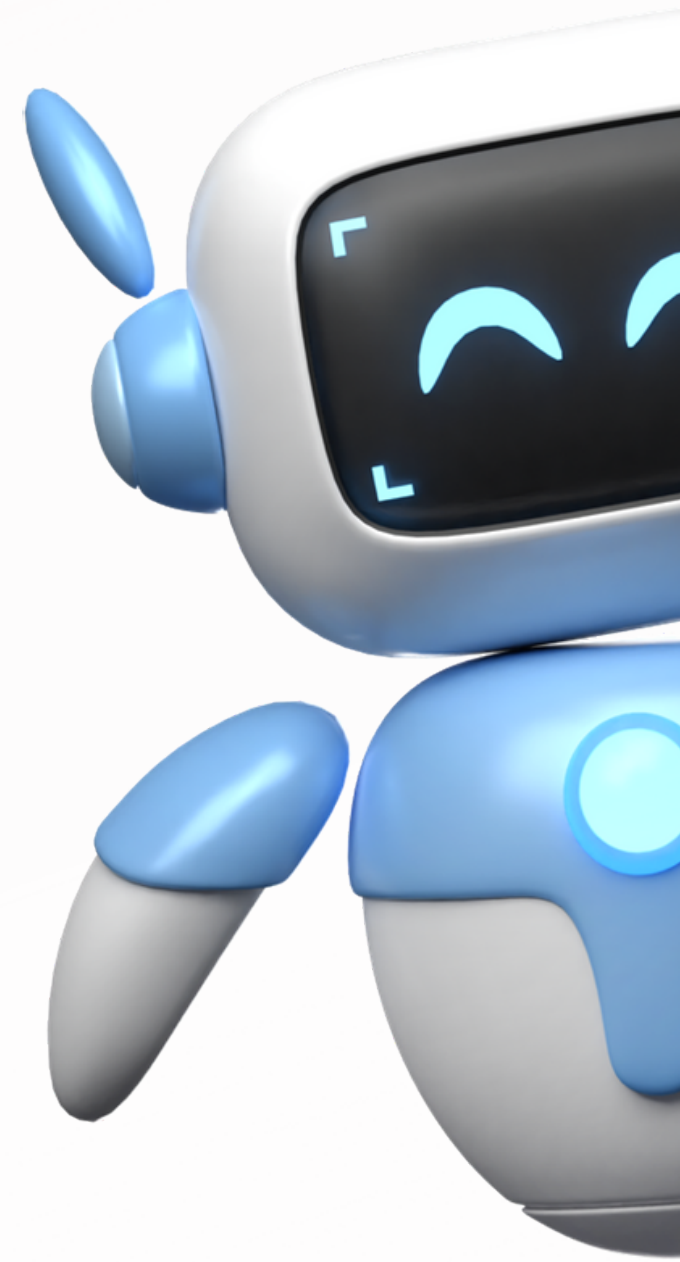
Increased motivation and engagement: Students feel more confident and invested in their learning.

Reduced stress and anxiety: Early identification of potential difficulties and proactive interventions.

Enhanced self-awareness and confidence: Understanding their strengths and weaknesses helps students develop ownership of their learning.

Improved resource allocation and data-driven decision making: Data insights inform resource allocation and curriculum development.

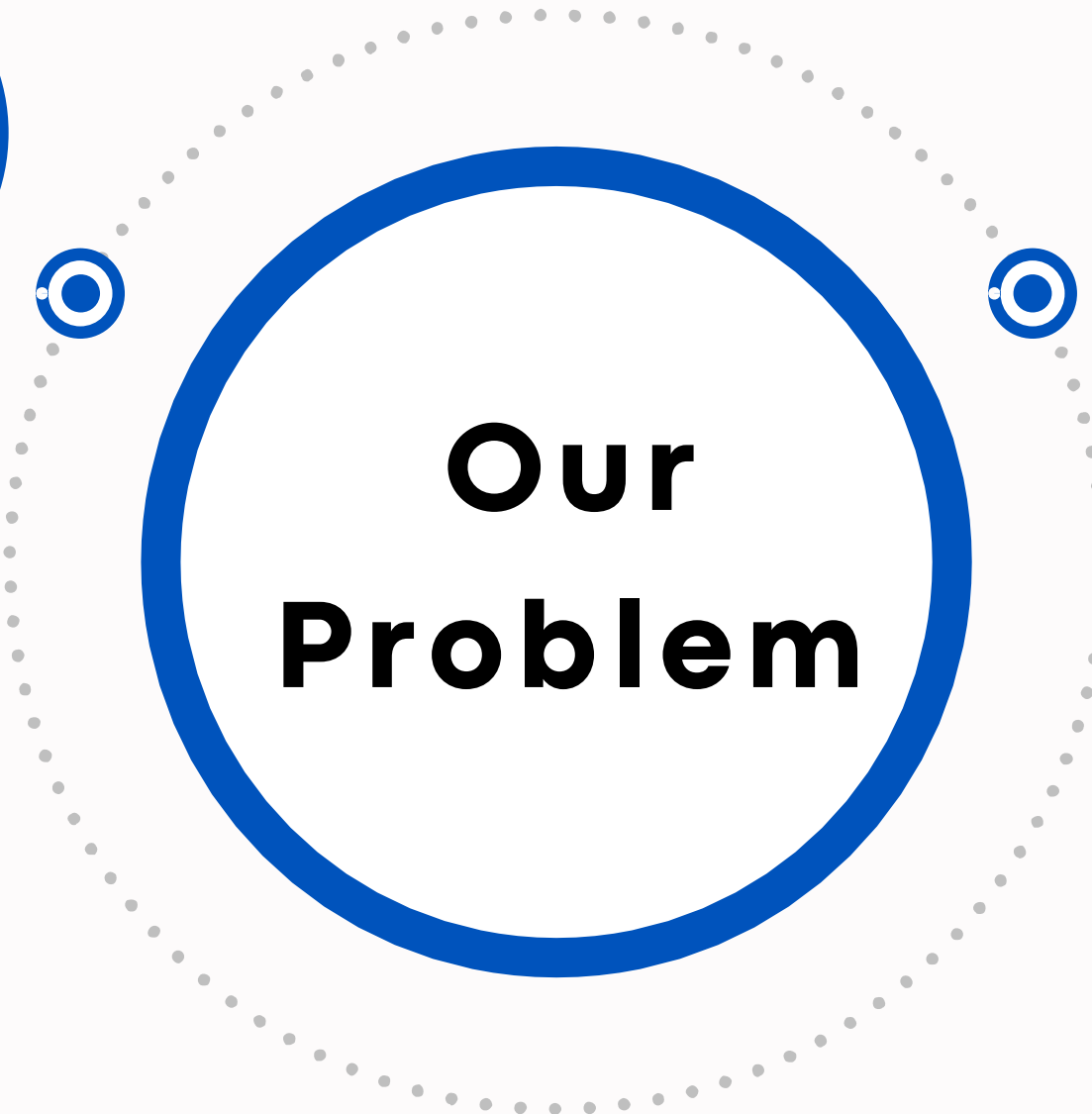
Suggest resources: Suggests resources to a student regarding a particular discipline and course





Objective:

Predict individual student performance and offer personalized recommendations to improve academic outcomes and suggest academic course materials.



Problem Statement:

Students often lack personalized feedback and resources to address their unique strengths and weaknesses, leading to suboptimal learning and performance. Many of them lack in resources and don't know what books to follow.

Motivation



PERSONALIZED LEARNING
TAILORED LEARNING FOR EACH STUDENT,
UNLOCKING THEIR POTENTIAL



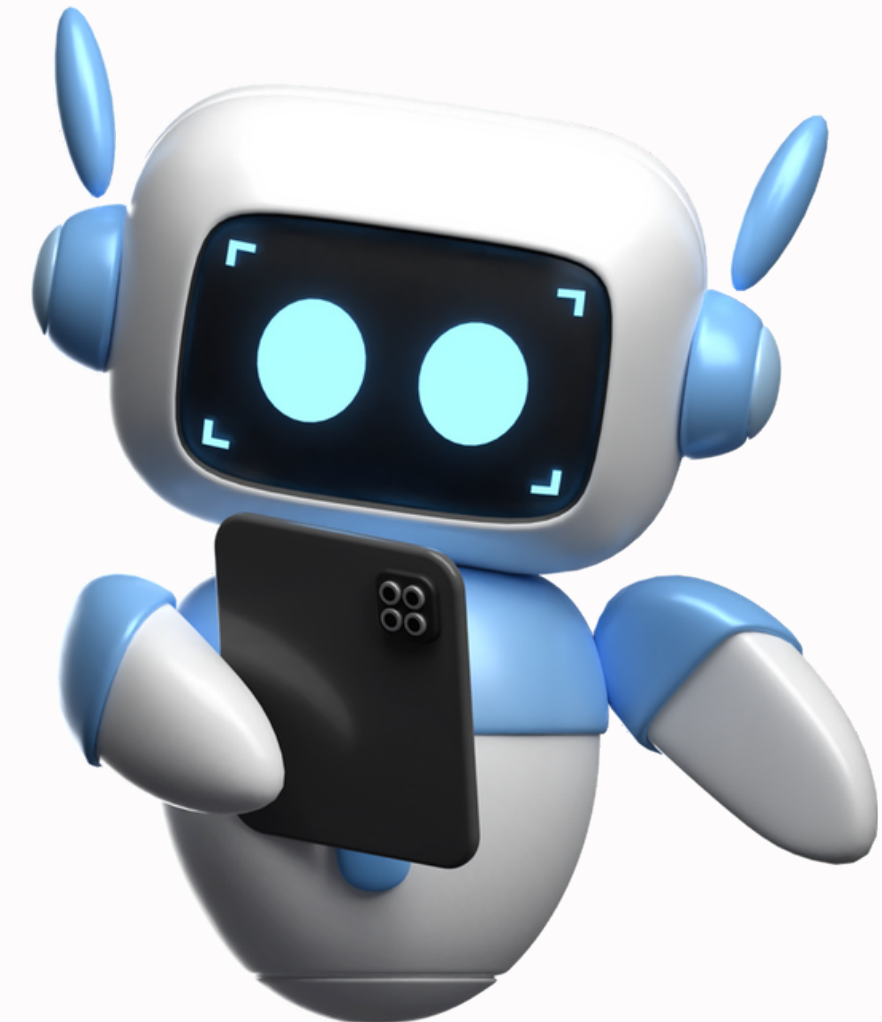
EARLY INTERVENTION
IDENTIFYING STRUGGLES EARLY, ENSURING
STUDENT SUCCESS



**PERSONALIZED LEARNING FOR
MAXIMUM POTENTIAL**
PAPIA personalizes learning, maximizing student
potential by catering to individual strengths and
weaknesses.



SUGGEST MATERIALS AND RESOURCES
suggests books and academic papers and
resources.



Related Works

01

Predicting student's performance of a university in Turkey using machine learning methods

Yahia Baashar; Gamal Alkawsi; Nor'ashikin Ali; Hitham Alhussian; Hussein T Bahboub

Student performance in higher education institutions impacts rankings, and predicting it is crucial for identifying weaknesses. This systematic review explores machine learning methods (ANNs, decision trees, SVM, KNN, naïve Bayes) and attributes (demographic, academic, family/personal, internal assessment) influencing student performance, with ANN showing the highest accuracy.

02

Predicting Underperforming students grades using machine learning

Opeyemi Ojajuni, Foluso Ayeni, Olagunju Akodu, Femi Ekanoye

This paper introduces an ML model utilizing various algorithms, including XGBoost, to predict student academic success with 97.12% accuracy based on historical data, identifying key factors and emphasizing the application of ML for early detection of underperforming students in the classroom.

03

Prediction of Students Performance using Machine learning

J. Dhillipan, N.Vijayalakshmi , S.Suriya , Arockiya Christopher

Utilizing data mining techniques, this study proposes a prediction system based on 10th, 12th, and previous semester marks, employing Binomial logical regression, Decision tree, Entropy, and KNN classifier to assist students in recognizing and improving their final grade and academic conduct.

Aim/goal

PERSONALIZED
PREDICTION



ACTIONABLE INSIGHTS
AND RECOMMENDATIONS

EMPOWERED LEARNING
AND ENGAGEMENT



IMPROVED ACADEMIC
OUTCOMES



Methodology:



Machine learning:

Analyzing student data (grades, demographics, learning patterns) to predict performance and identify strengths/weaknesses.

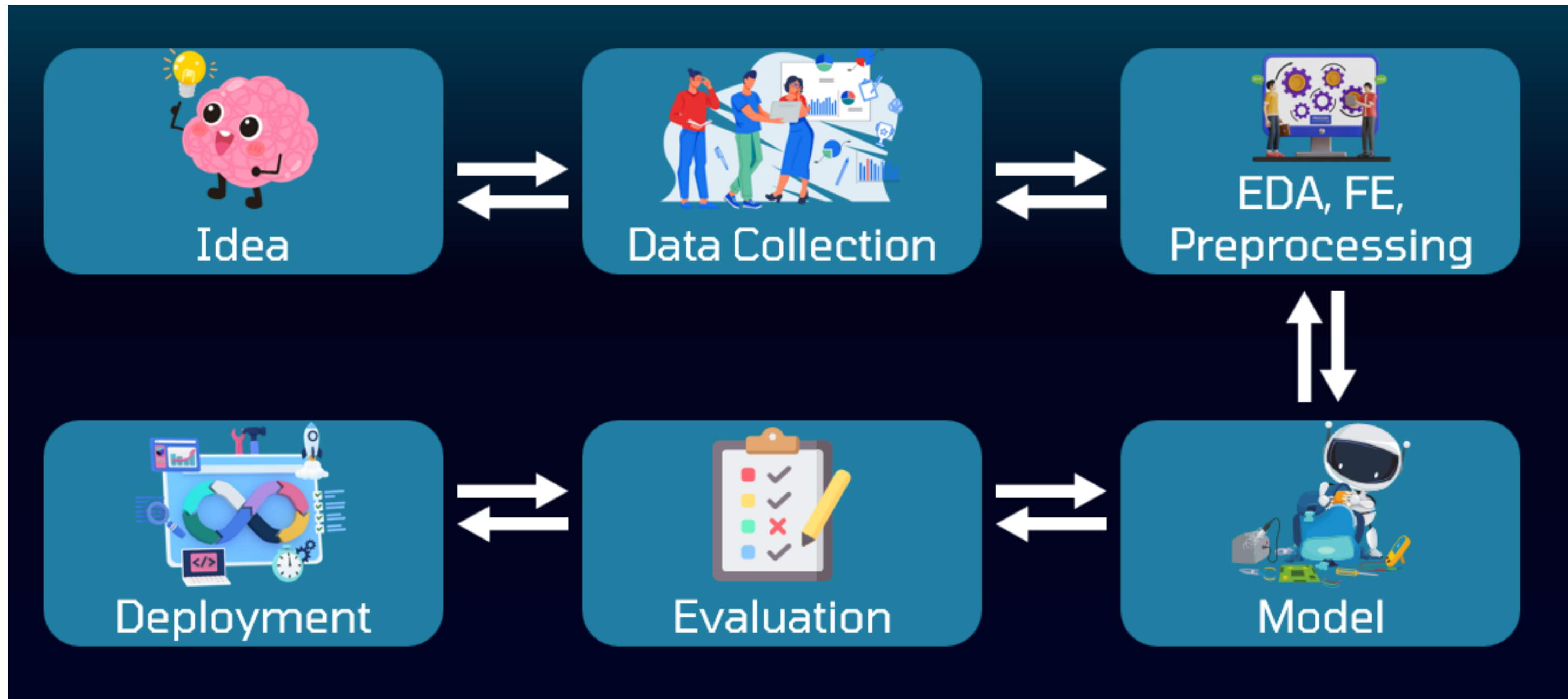
Personalized recommendations:

Tailored tips, strategies, and resources based on individual needs.

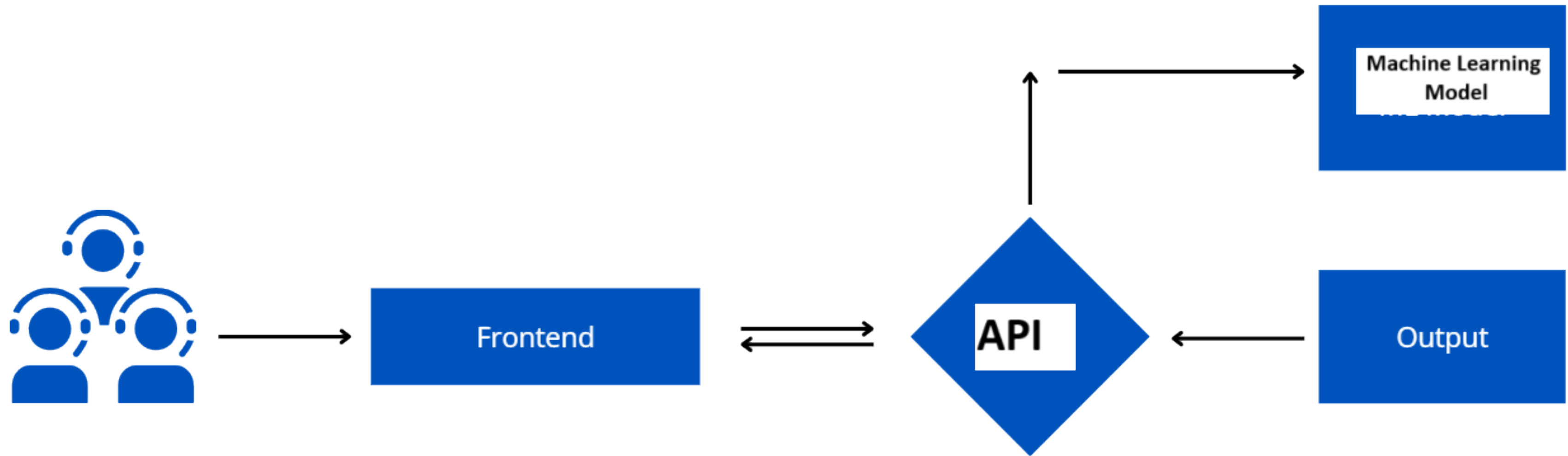
User-friendly interface:

Easy access to personalized insights and interaction with the system.

Flow Chart



Software Architecture



Tech stack

Python

Numpy

Pandas

ScikitLearn

HTML

CSS

JavaScript

Django

Dataset Introduction

We have two datasets which is collected from Google forms and IEEE data-port. The link of the google form was released in different university groups, programming communities and student communities. The academic resources dataset was collected from IEEE data-port official website which scraped data from Amazon and other Ebook services.

Student performance dataset:

Total instances: 1272

Total features: 22

Books and Resources dataset:

Total instances: 56402

Total features: 5

Dataset Features (Student Performance)

Age	Gender	Scholarship	Co-Curricular/Additional Activities	Artistic or Sports Activities	Involvement in Romantic Relationship
Travel to University	Place of Residence		Mother's Education Level	Father's Education Level	Study Hours per Week
Non-Scientific Reading Frequency	Scientific Reading Frequency	Seminar/Conference Attendance	Impact of Personal Projects on Success	Class Attendance	Exam Preparation Timing
Note-Taking Frequency	Attentiveness in Class	Last Semester's CGPA	Credits Completed	Expected CGPA at Graduation	

Dataset Sample

age		Gender		scholarship		Co-Curricular/Additional Activities		Artistic or Sports Activities		Involvement in Romantic Relationship		
22-25		Male		50		0		1		0		
Travel to University				Place of Residence			Mother's Education Level		Father's Education Level		Study Hours per Week	
Other				On-Campus Housing			Masters		Masters		18	
Non-Scientific Reading Frequency		Scientific Reading Frequency		Seminar/Conference Attendance		Impact of Personal Projects on Success		Class Attendance		Exam Preparation Timing		
often		always		1		positive		sometimes miss classes		Regularly		
Note-Taking Frequency		Attentiveness in Class		Last Semester's CGPA		Credits Completed		Expected CGPA at Graduation				
always		sometimes		3.2		80		3.6				

Dataset Features (Books and Resources)

idbook	title	toc	Single_Label	Rest_of_labels
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Dataset Sample

<u>idbook</u>	title	toc	<u>Single_Label</u>	<u>Rest_of_labels</u>
99500000	Bioequivalence Requirements in Various Global ...	Canada / China / The European Union /...	Medicine	Pharmaceutical technology, Biomedicine, Pharm...

Feature Explanation

Age: Numerical (22-25)

Gender: Nominal (male / female)

Scholarship/Financial Aid Type: Numerical (0-100)

Co-Curricular/Additional Activities: Nominal (yes/no)

Artistic or Sports Activities: Nominal(yes/no)

Involvement in Romantic Relationship: Nominal(yes/no)

Travel to University: Categorical (public transport/ private car/ other)

Place of Residence: Categorical (on campus housing/ family/ other)

Mother's Education Level: Nominal(high school/bachelors/masters)

Father's Education Level: Nominal(high school/bachelors/masters)

Feature Explanation cont.

- Study Hours per Week: Numerical
- Non-Scientific Reading Frequency: Nominal (often/sometimes/occasionally/never)
- Scientific Reading Frequency: Nominal (often/sometimes/occasionally/never)
- Seminar/Conference Attendance: Nominal (yes/no)
- Impact of Personal Projects on Success: Nominal (positive/negative/neutral)
- Class Attendance: Nominal (Always attend classes and rarely miss classes/sometimes miss classes/frequently miss classes)
- Exam Preparation Timing: Nominal (close date to exam/regularly/never)
- Note-Taking Frequency: Nominal (always/sometimes/never)
- Attentiveness in Class: Nominal (always/sometimes/never)
- Last Semester's CGPA: Numerical
- Credits Completed: Numerical
- Expected CGPA at Graduation: Numerical

Dataset after Feature Engineering

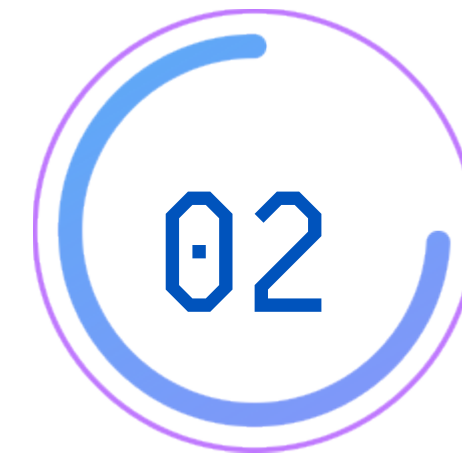
age	Gender	scholarship	Co-Curricular/Additional Activities	Artistic or Sports Activities	Involvement in Romantic Relationship
22-25	Male	50	0	1	0
Travel to University	Place of Residence	Mother's Education Level	Father's Education Level	Study Hours per Week	
Other	On-Campus Housing	Masters	Masters	18	
Non-Scientific Reading Frequency	Scientific Reading Frequency	Seminar/Conference Attendance	Impact of Personal Projects on Success	Class Attendance	Exam Preparation Timing
often	always	1	positive	sometimes miss classes	Regularly
Note-Taking Frequency	Attentiveness in Class	Last Semester's CGPA	Credits Completed	Expected CGPA at Graduation	To be dropped To be edited
always	sometimes	3.2	80	3.6	

Training method and Task



The training to be performed is

Supervised Learning
(Batch learning)



The task our model will perform is

**Regression and
Classification**

Training method and Task

Features:

Performance predictions: Predict individual student performance across various courses.

Tailored recommendations: Receive actionable insights and strategies based on your strengths and weaknesses.

Recommendation of course materials: The system recommends valid course materials and books for the users to begin with.

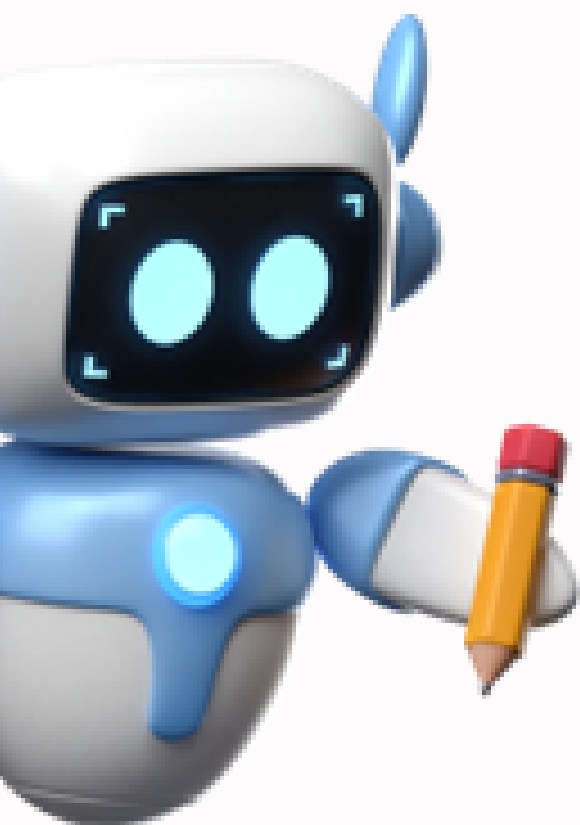
Goal setting: Set personalized goals and track your progress.
Communication channels: Connect with educators and access support services.

Data-driven insights for educators: Gain valuable data to personalize learning experiences and identify at-risk students.

Target Audience:

Students of all ages and educational levels seeking to improve their academic performance.

Application of the Project in Real Life



01

ENHANCED LEARNING EFFICIENCY
AND EFFECTIVENESS



STUDENTS OPTIMIZE RESOURCES & EDUCATORS
PERSONALIZE METHODS FOR BETTER LEARNING
OUTCOMES.

02

PERSONALIZED LEARNING
SUPPORT



•TAILORED RECOMMENDATIONS & SUPPORT SERVICES
EMPOWER STUDENTS FOR SUCCESS.

03

IMPROVED ENGAGEMENT
AND MOTIVATION



•GOAL-SETTING, PROGRESS TRACKING & ENGAGING
EXPERIENCES MOTIVATE STUDENTS.

04

REDUCED ACADEMIC
INEQUALITY



•PERSONALIZED INTERVENTIONS & RESOURCE
ALLOCATION BRIDGE ACADEMIC GAPS. ATE STUDENTS.

05

DATA-DRIVEN DECISION
MAKING



•DATA-DRIVEN DECISIONS OPTIMIZE PROGRAMS
& PERSONALIZE LEARNING EXPERIENCES.

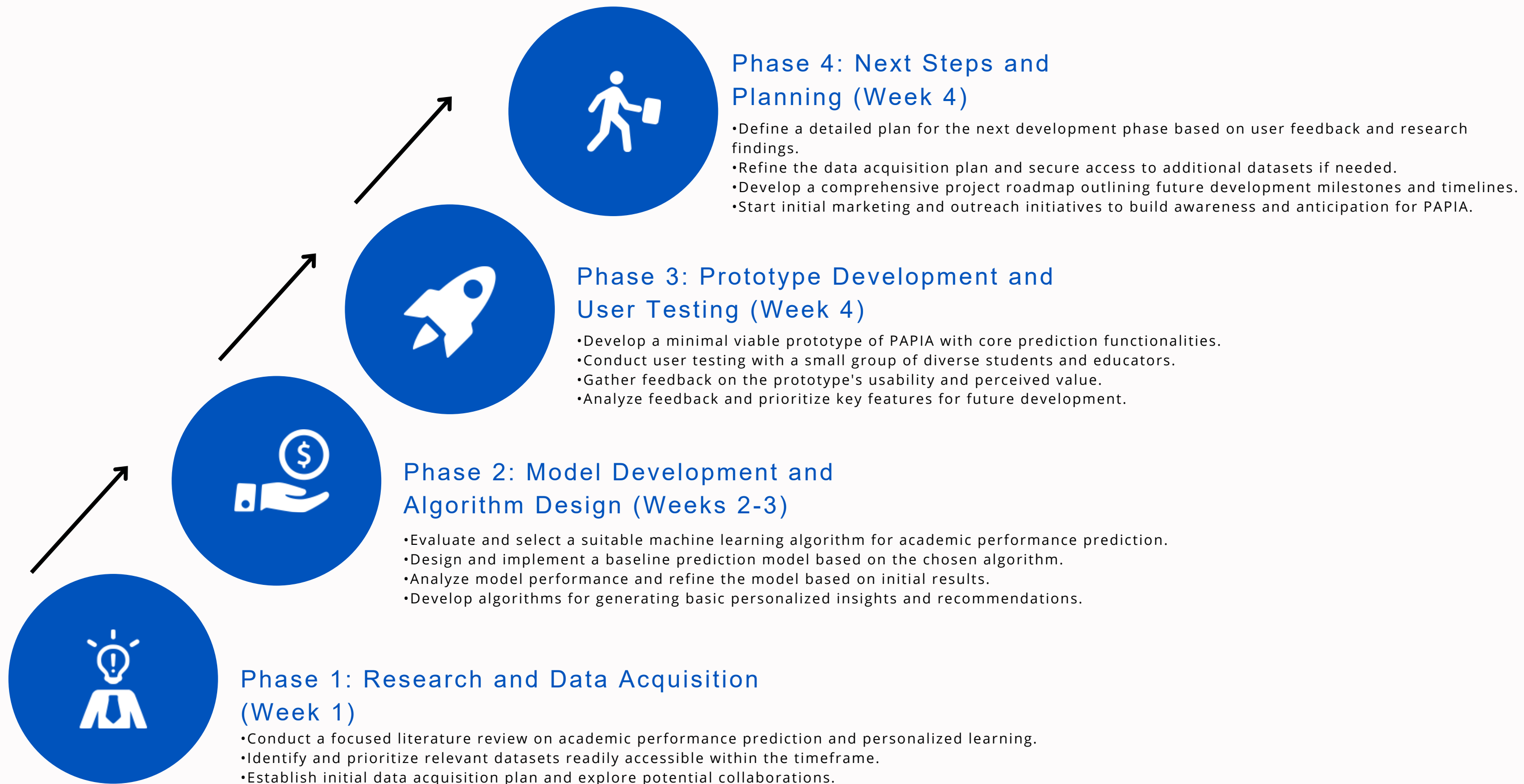
06

FUTURE OF EDUCATION

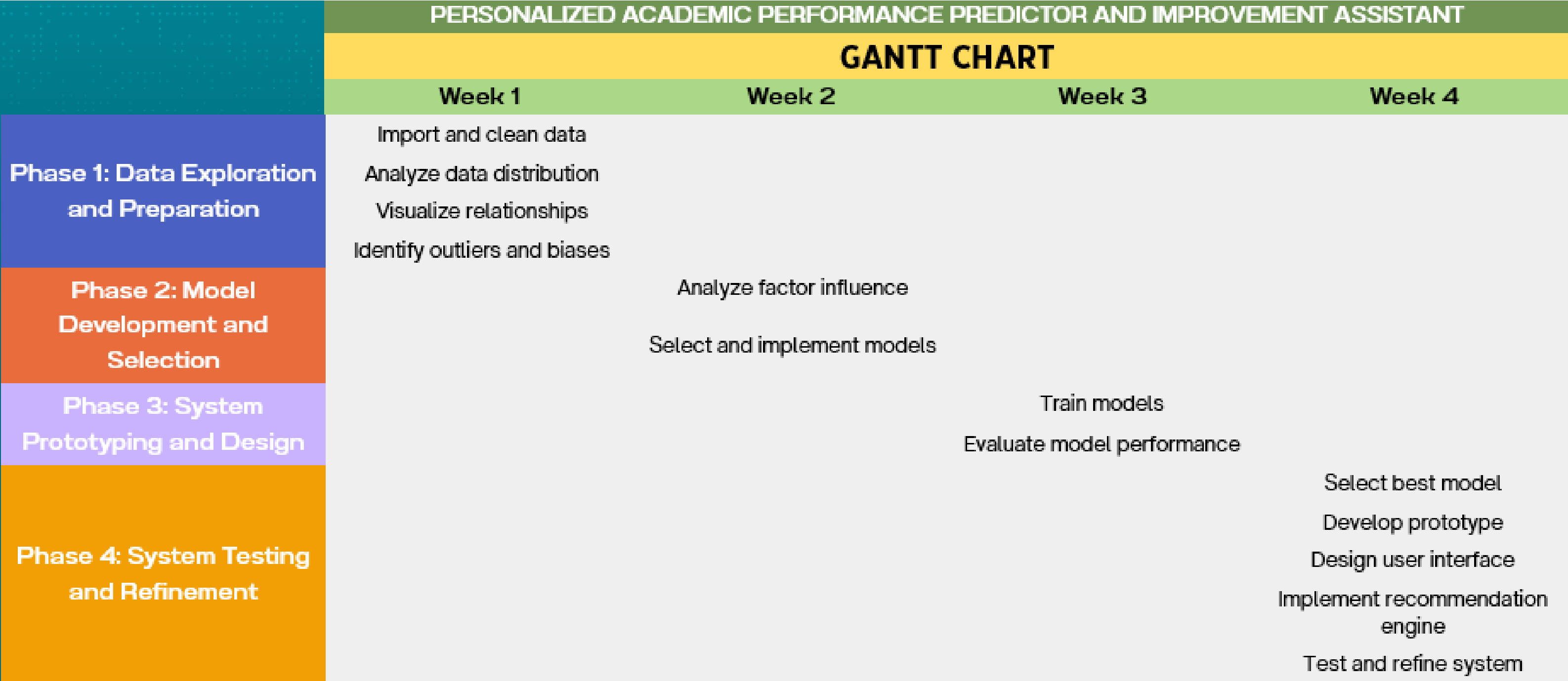


•PAPIA PAVES THE WAY FOR PERSONALIZED,
EQUITABLE, AND FUTURE-PROOFED EDUCATION.

Timeline



Gantt Chart



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THANK YOU!

