

# COGNIFRIEND

*AI-Powered Personalised Tutor*

***SUBMITTED BY***

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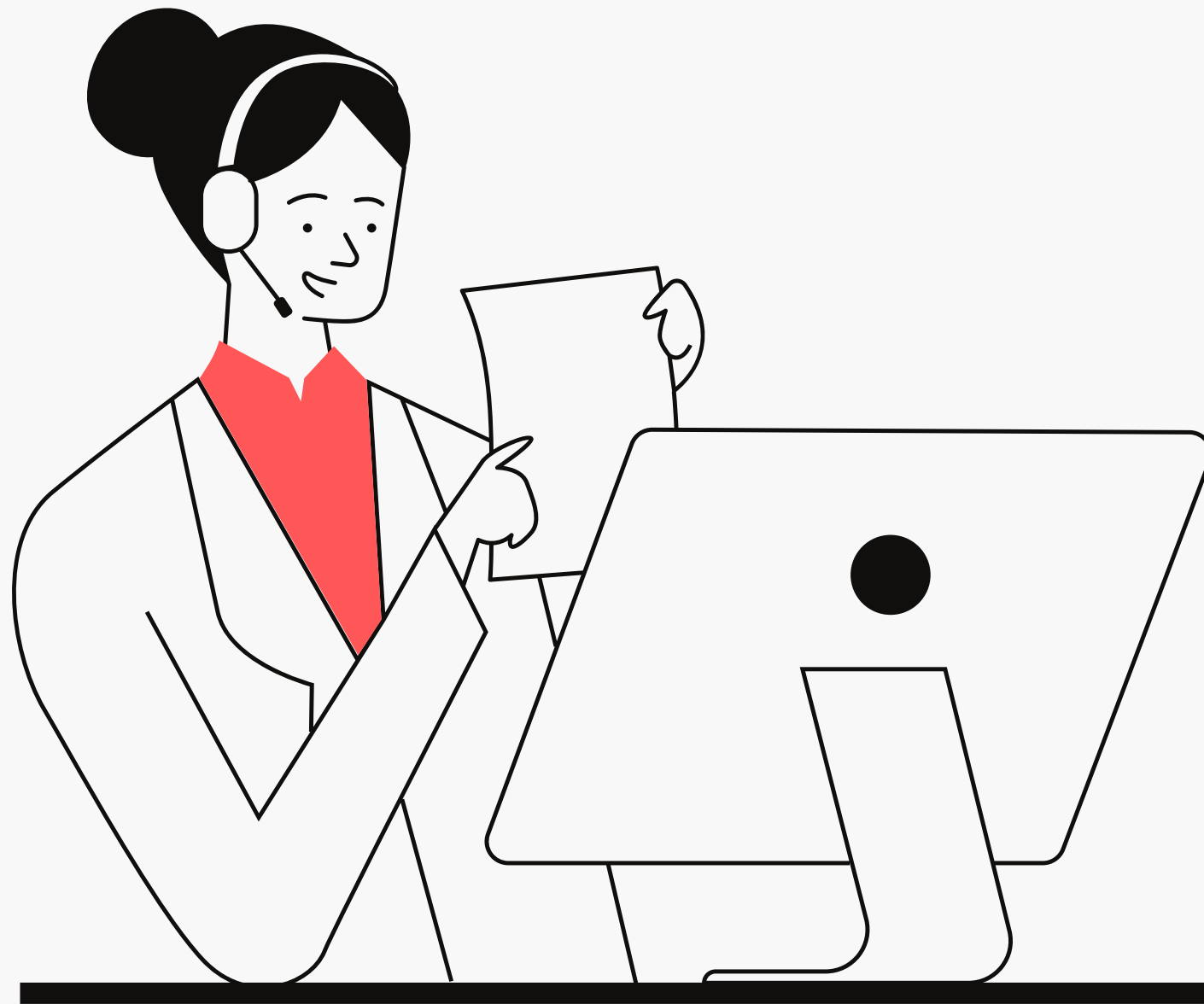


# Problem Statement

- Disengagement that is caused by the lack of personalised content
- When the students are overwhelmed or under-challenged, the traditional methods lead to ineffective learning.
- Preventing educators from optimizing the learning pathways and limitations in progress tracking.

# Abstract

- In the emergence of AI and impersonal mass education, “Cognifreind” emerges as a transformative and a powerful solution that obliterates the archaic “one-size-fits-all” academic model.
- It is designed as an adaptive, scalable digital mentor, the intelligent system dynamically tailors content according to the user’s preference.
- This is built upon a robust architecture featuring a frontend that is responsive using HTML,CSS and JavaScript along with a Node.js-Express backend, MongoDB for data persistence and storage and the AI engine that is built with Transformer based Large Language Model and LSTM.
- Cognifriend is built so that the learners are able to embrace the new-age learning with the emerging AI thus proving the traditional methods inefficient.



# System architecture

Component	Technology	Purpose
FRONTEND	HTML, CSS, JavaScript	Provides an interactive UI for quizzes.
BACKEND	Node.js, Express.js	Handles quiz generation, answer evaluation.
DATABASE	MongoDB	Stores user progress, questions, and scores.
AI ENGINE	Transformer-based, large language model ,LSTM	Generates questions and evaluates responses.

# Step by Step implementation

## FrontEnd (HTML,CSS)

- HTML structure for displaying the questions.
- The responsiveness is provided by CSS styling.
- Implementation of JavaScript logic



## Backend (JavaScript)

- Setup Express.js so that it can handle API requests from the client side.
- Define the routes: /generate-quiz: Fetches questions from the AI model.
- Integration with hugging face API for generation of quiz.

## AI (transformer based LLM , LSTM models)

1. The AI is prompted to generate questions. e.g.:” Generate a math question at beginner level”
2. Displays the AI-generated content in the frontend.
3. Accepts and the student’s answer to /evaluate.
4. Receives the feedback from AI and updates the progress.

## DataBase (MongoDB)

- Storage of quizzes for consistency
- Log student’s responses to track improvement.
- Adjusts the difficulty level in a dynamic manner

# System Integration



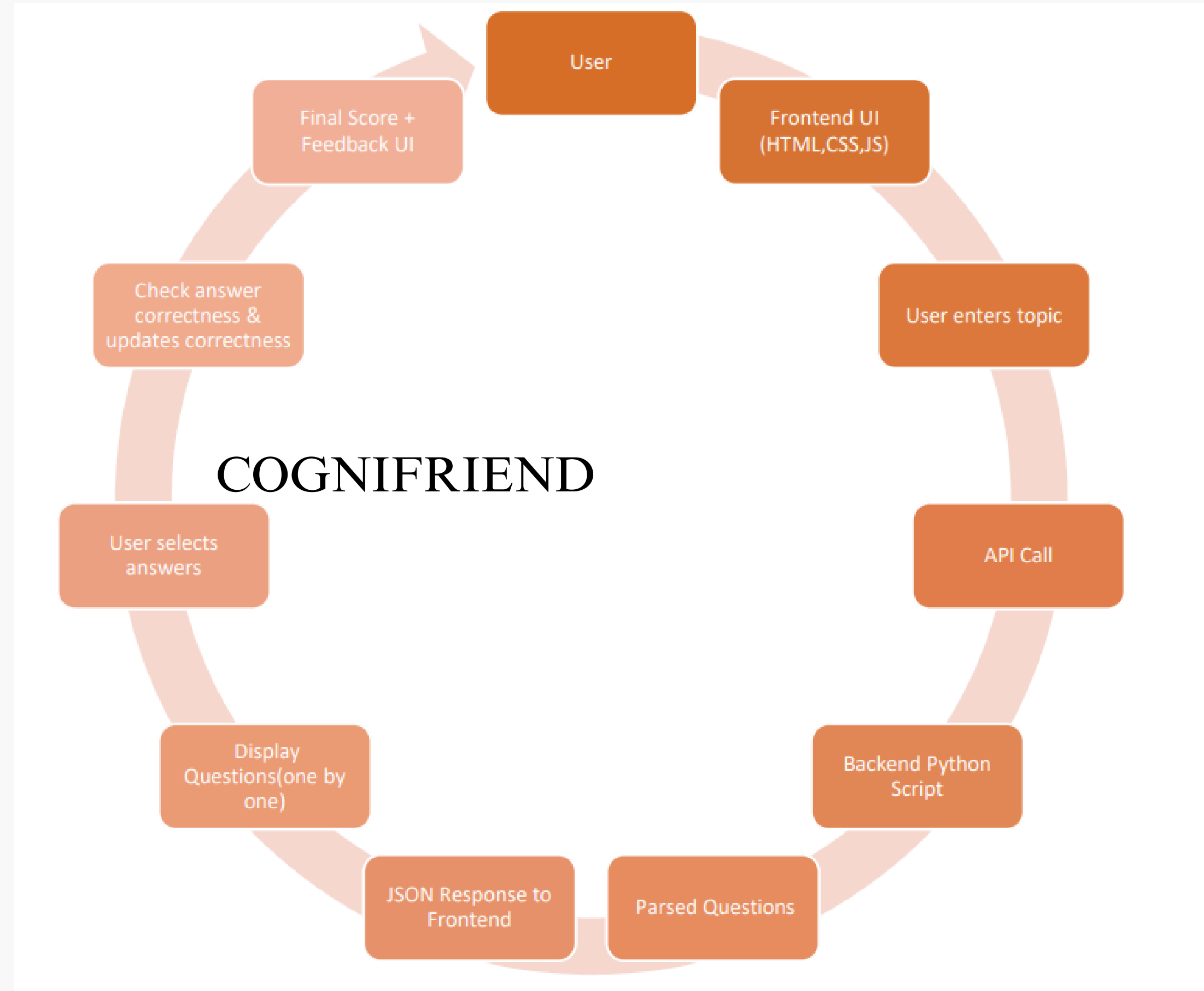
1. User clicks “Start Quiz”, this action sends a request to the backend.
2. The backend fetches a question from the AI model.
3. The frontend displays the questions along with the choices for the user to choose.
4. The student submits the answer and this is sent to the backend for evaluation.
5. AI evaluates the response and sends the feedback to the frontend.
6. System updates the user progress in MongoDB.
7. The next question is generated based on the updated learning level.



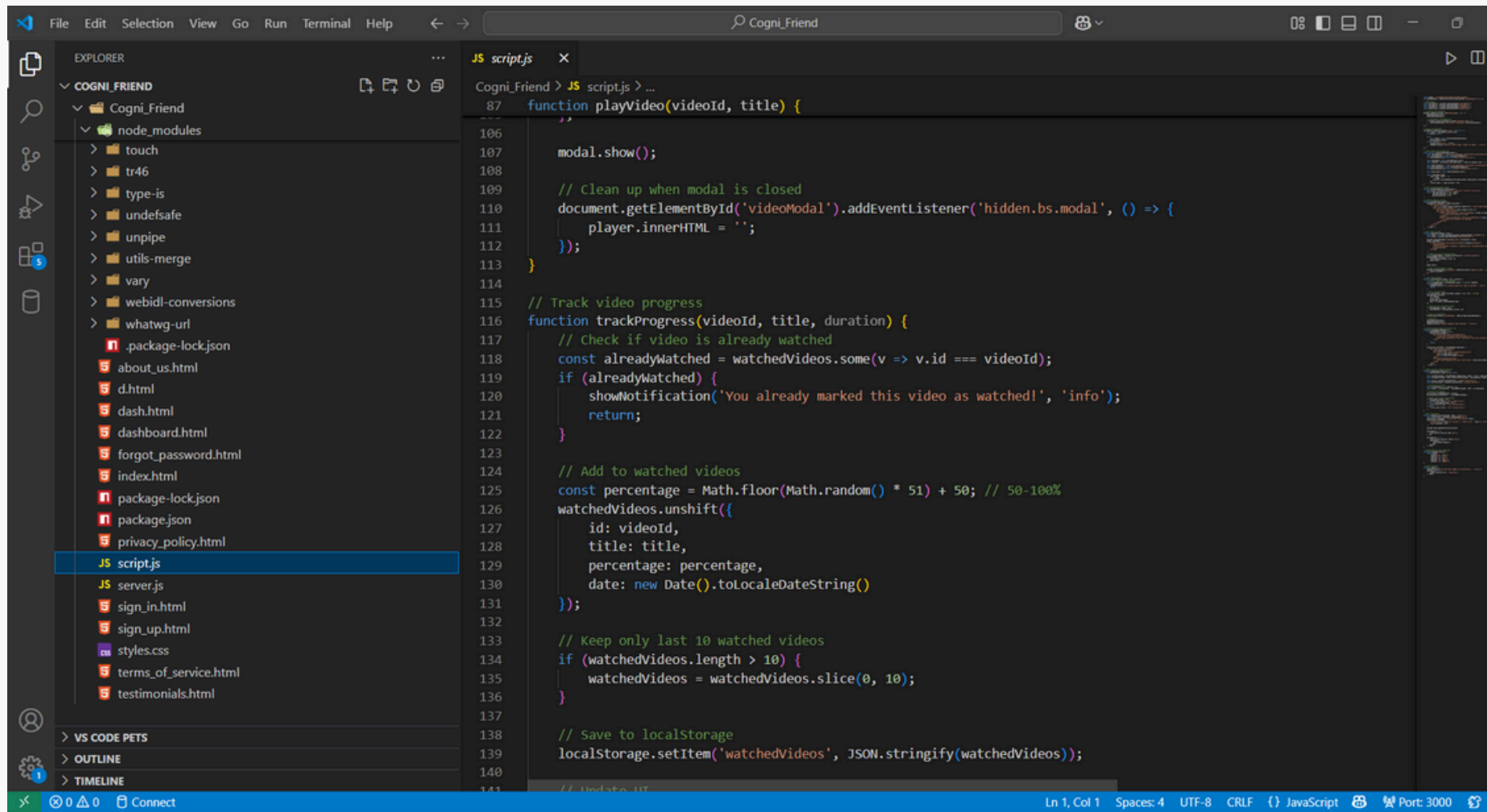
# Challenges and Solutions

Challenges	Solution
CORS Issues	Added middleware in Express - (app.use(cors())).
AI Latency	Optimized prompts & cached frequent questions.
Database Efficiency	Used NoSQL structure for fast lookups.

# Project flow

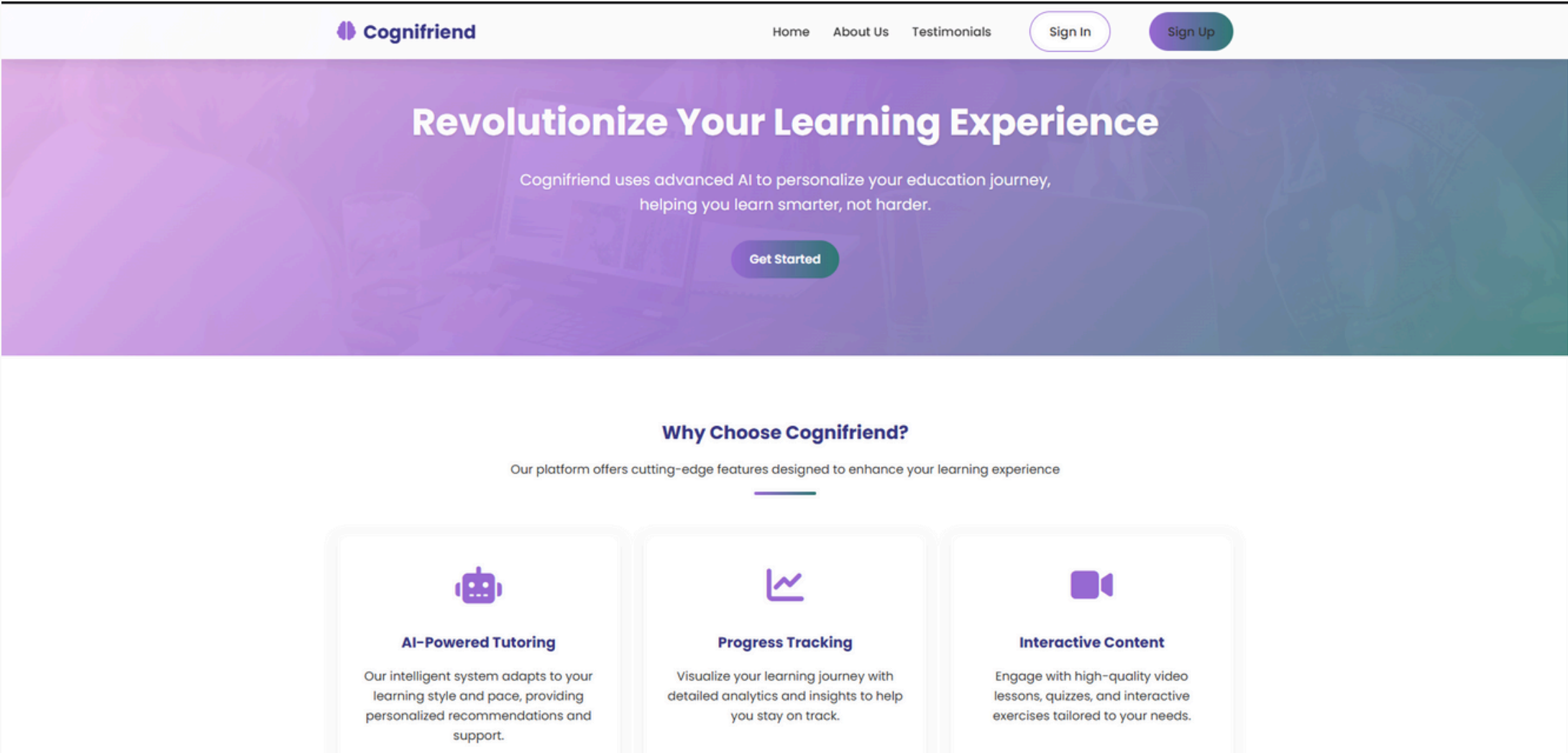




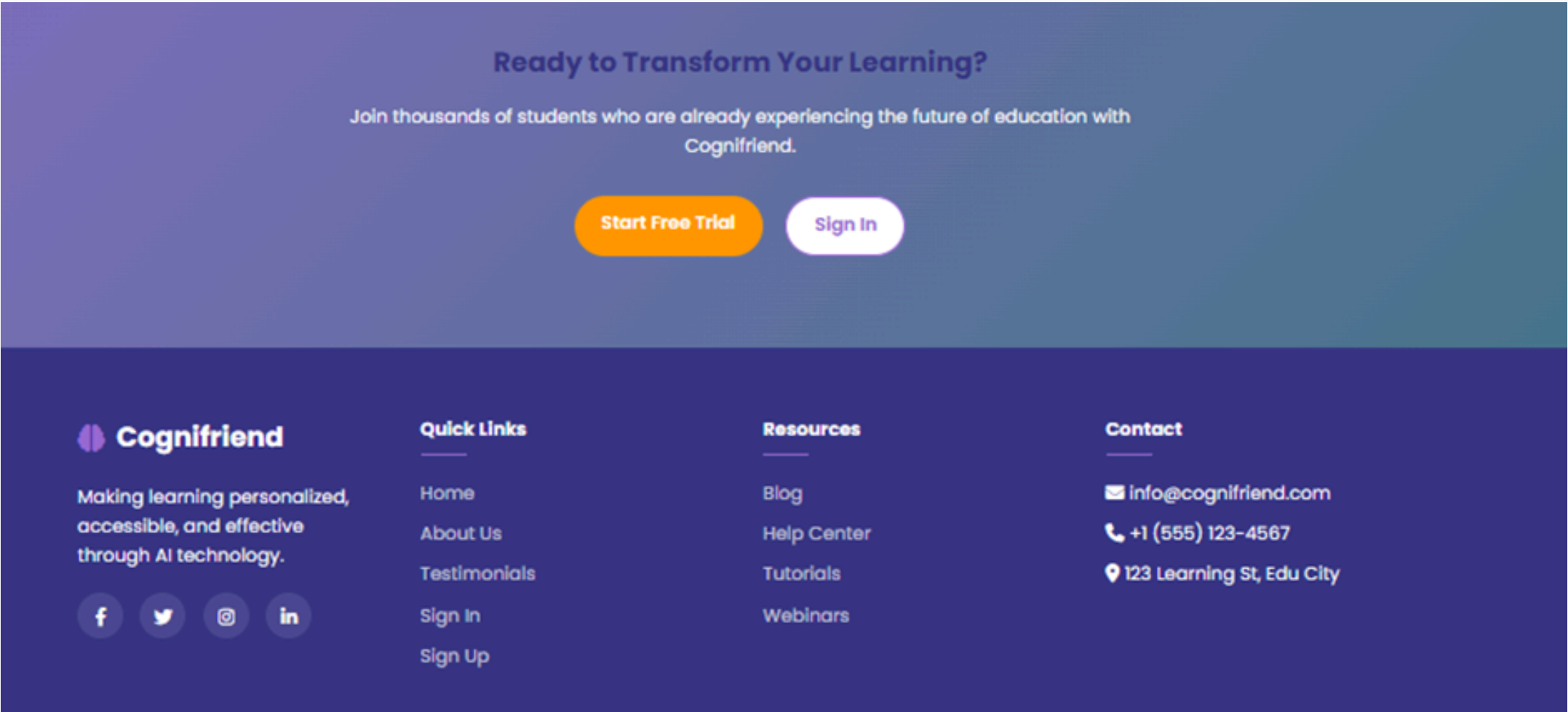


# Code Base





Home Page



# Sign up & in



## Create Account



Upload Photo

Full Name

Enter your name

Email Address

Enter your email

Password

Create a password

Rate Your Favorite Subjects (1 to 5 Stars)

Math Select Rating



English Select Rating



EVS Select Rating



Science Select Rating



Daily Screen Time (hours)

Enter hours per day

Register

## Welcome Back!

Sign in to continue your learning journey

Email Address

jeffyedwina@karunya.edu.in

Password

.....

☐ Remember me

[Forgot password?](#)

➔ Sign In

Don't have an account? [Sign up](#)



Welcome back, Jeffy!

Ready to continue your learning journey?

1,250

Level 5

## Daily Challenge

Complete today's challenge to earn bonus points!

Start Challenge

## Current Streak

7 days

Keep it up! Come back tomorrow to maintain your streak.

## Recent Activity

Completed Algebra Basics

85%

## Search Educational Videos

Photosynthesis

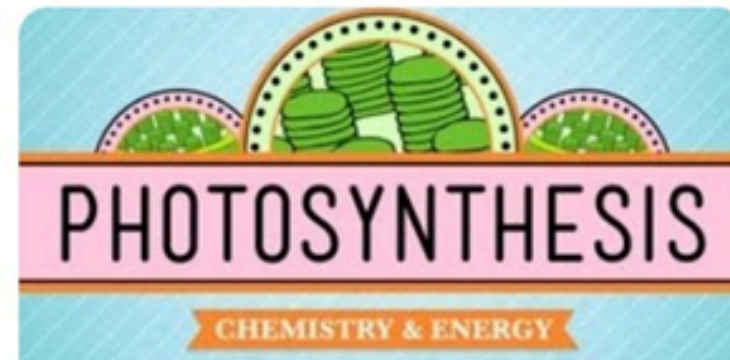
Search Videos



Fotosíntesis 🌻 ¡Hola Plantita! 🌱  
Canciones Infantiles | Plim Plim

Play Video

Mark as Watched



Photosynthesis: Crash Course  
Biology #8

Play Video

Mark as Watched



Photosynthesis | #aumsum #kids  
#science #education #children

Play Video

Mark as Watched



# Dashboard

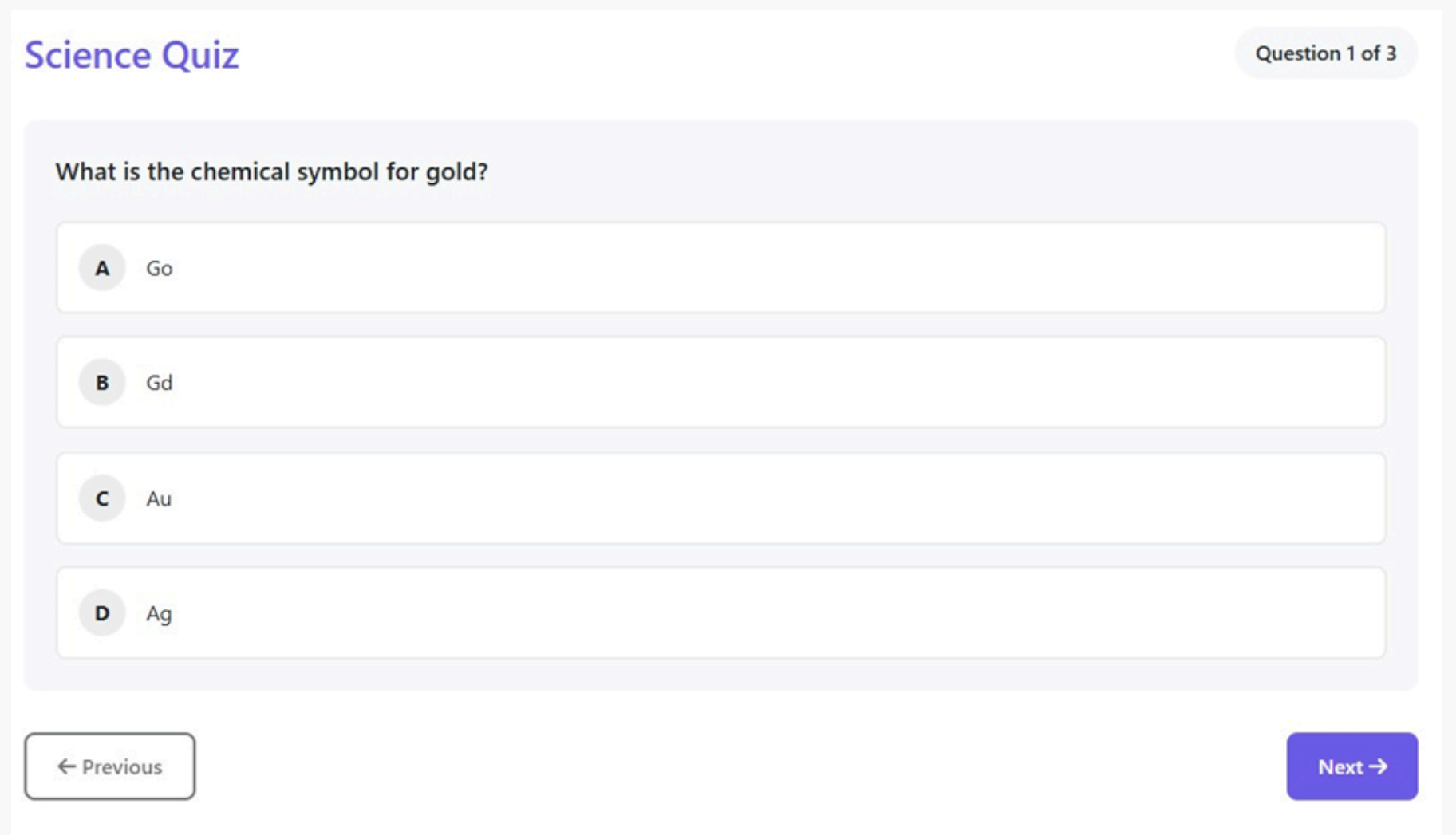
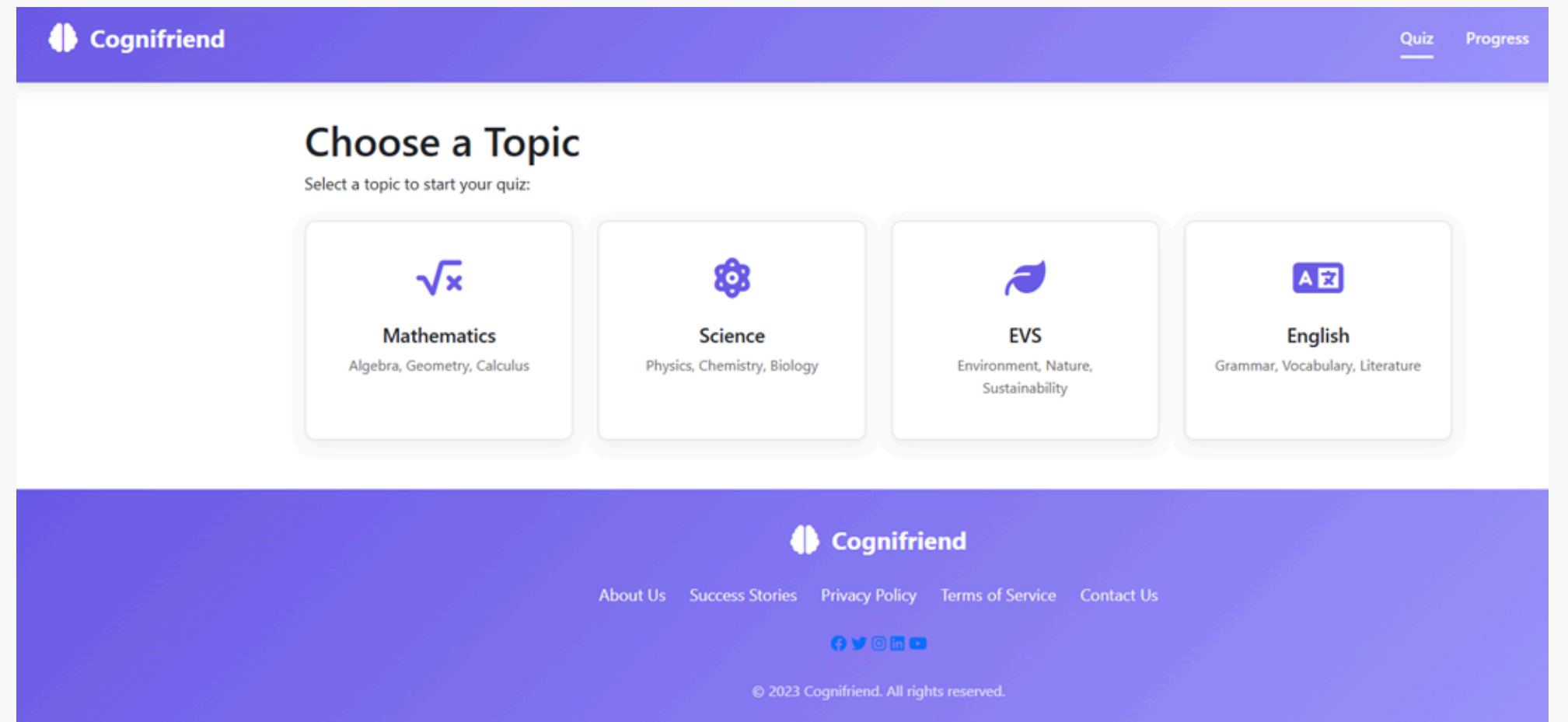
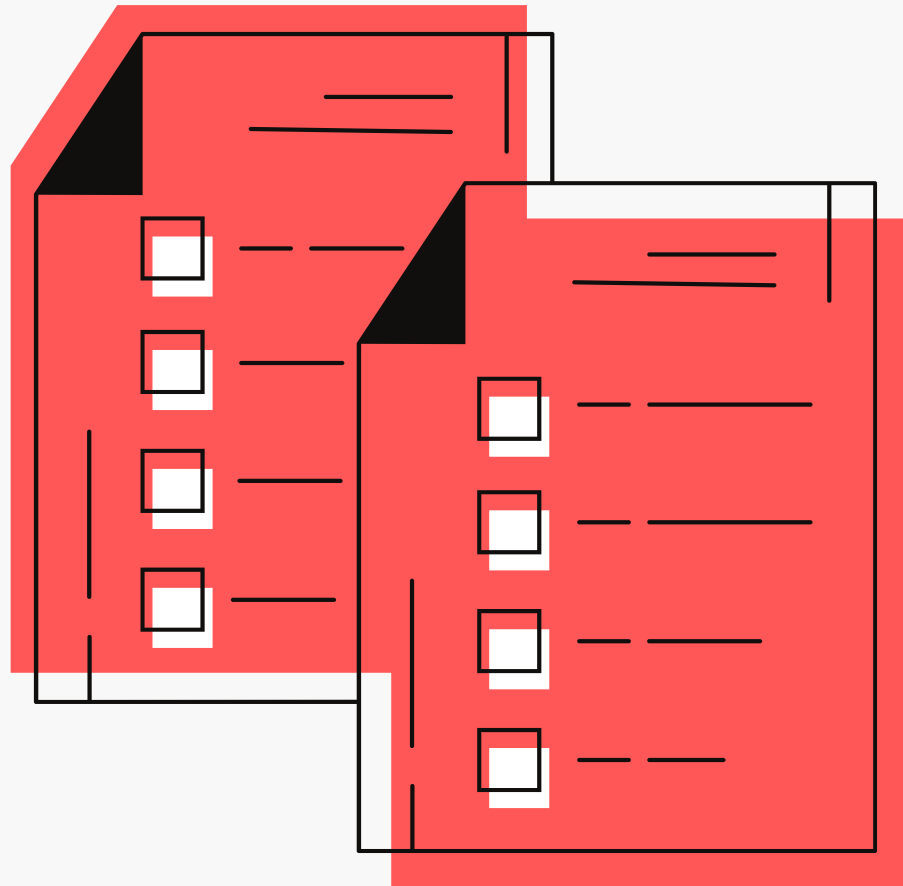
## Daily Goals

- ☐ Complete 1 lesson +50 pts
- ☐ Watch 1 educational video +30 pts
- ☐ Take a practice quiz +40 pts
- ☐ Maintain your streak +20 pts

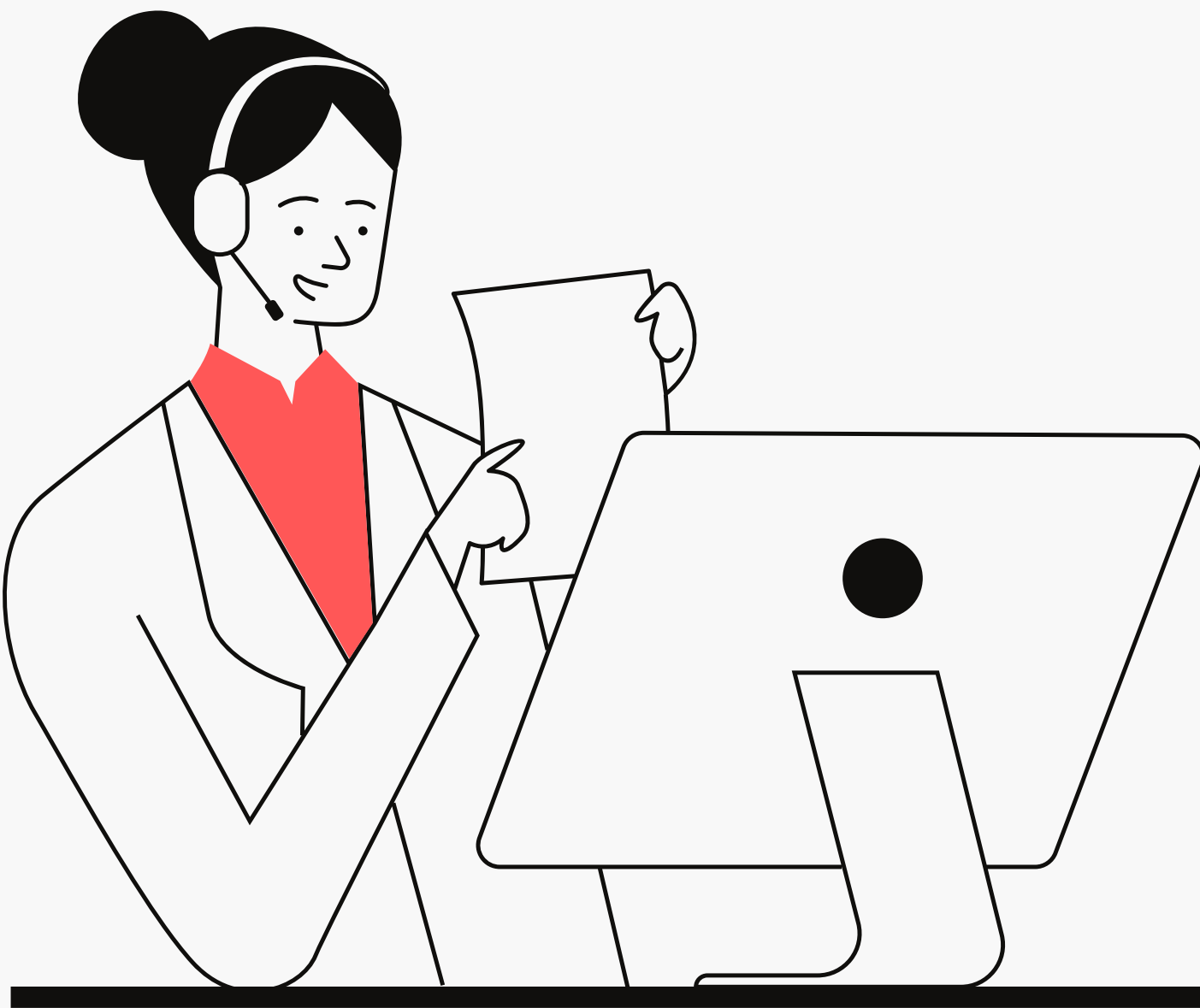


# Gamified

# Quizzes



# Progress



### My Learning Progress

Last 7 Days

Current Level

3

+1 from last week

Total coins

1,250

+320 this week

Quizzes Completed

7

+3 this week


Average Score

83%

-2% from last week

### Weekly Badges


< Last Week >



Fast Learner

Completed 5 quizzes in one day

Earned:




On a Roll

3-day streak of daily quizzes

Earned:

### Your Badges


5/12 unlocked



Newbie

Completed your first quiz


Earned: 2023-10-15



Perfectionist

Got a perfect score on a quiz


Earned: 2023-10-22



Fast Learner

Completed 5 quizzes in one day


Earned: 2023-10-20



On a Roll

3-day streak of daily quizzes

Earned: 2023-10-18



Math Ecoinsert

Mastered Mathematics with 90%+ average

Earned: 2023-10-25



Cognifriend

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What Our Students Say

Hear from learners who have transformed their education with Cognifriend

Cognifriend completely changed how I approach learning. The personalized recommendations helped me focus on areas I needed most.

Sarah Johnson

Computer Science Student

I've tried many learning platforms, but none adapt to my schedule and learning style like Cognifriend does.

Michael Thompson

High School Teacher

Read More Testimonials

About Cognifriend

Cognifriend was founded in 2022 with a mission to make personalized education accessible to everyone. Our team of educators, data scientists, and engineers have created a platform that leverages artificial intelligence to deliver tailored learning experiences.

- Personalized learning paths based on your strengths and weaknesses
- Adaptive content that evolves with your progress
- Comprehensive progress tracking and analytics

Learn More About Us

Your Courses

Mathematics

Progress78%

Science

Progress45%

English

Progress82%

Educational News

Refresh

Dusit International expands its presence in India, leading luxury hospitality growth in emerging Tier 2 and 3 cities – with a new focus on metro destinations to follow

Deepening its commitment to India, Dusit International, one of Thailand's leading hotel and property development companies, has announced plans to expand its presence in the country by launching its luxury and upper midscale brands in key emerging markets.

4/4/2025 • Hospitality Net

Union Cabinet approves Rs 6,839 cr for second leg of Vibrant Villages Programme for international land borders

The Union Cabinet has approved the Vibrant Villages Programme-II (VVP-II) with its 6,839 crore to develop villages near international borders from 2024-25 to 2028-29, targeting 15 States and Union territories, the scheme aims to improve living conditions, prov...

4/4/2025 • The Times of India

Munishi Faustin: Video of Singer Looking Ragged in Village Worries Fans

Munishi Faustin is known for his gospel songs transcending trends and time. His fans are concerned after he shared a video dancing to his latest hit.

4/4/2025 • Breaking NEWS in KDVIA for Today Night Now & Kenyan News | TUKO

Extensions of Front end





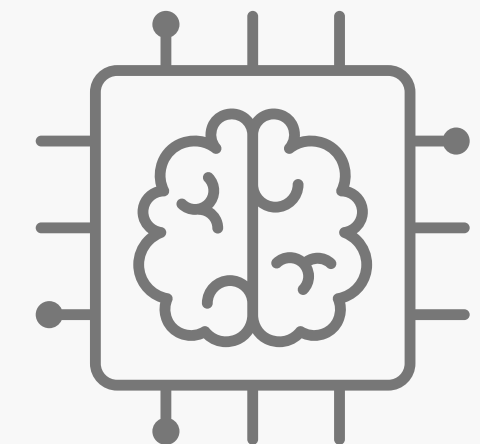
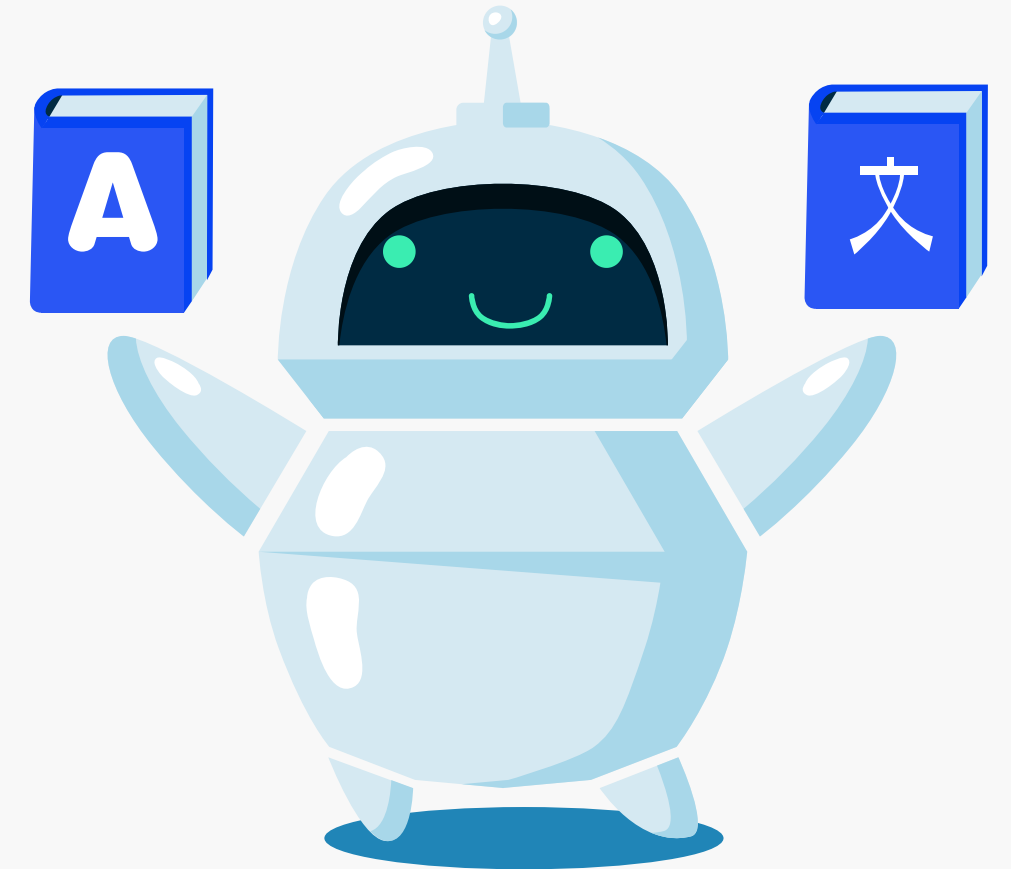
# AI Model

Transformer-based, large language model



This AI-powered quiz generator app uses the microsoft/phi-2 language model to create fun, educational multiple-choice quizzes for kids based on any topic you enter (like "Photosynthesis" or "Planets").

It automatically generates 5 questions with options and correct answers, then presents them in an interactive browser interface using Streamlit. Kids can take the quiz, get instant feedback on their answers, and see their final score—all in a fun, engaging way.



# LSTM Model

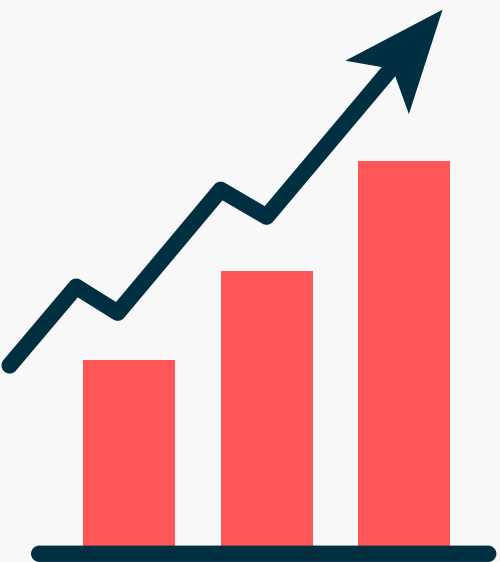


It's a multi-task learning model that predicts three outputs from a student's learning data and textual input:

Final\_Score: 🎯 Regression Task  
Predicts how well a student scores.

Learning\_Preference: 🧠 Classification Task  
Predicts the type of learner – uses 3 output nodes.

Disability\_Type: ♿ Classification Task  
Predicts based on the student disability.



	course_title
564	Machine Learning
567	Machine Learning for All
570	Machine Learning with Python
28	Advanced Machine Learning
595	Mathematics for Machine Learning

# Conclusion

- The AI tutor is revolutionizing education by providing a personalized learning experience, adjusting dynamically the difficulty of the quiz based on the performance of the student .
- It has interactive interface that ensures student engagement through real-time feedback, making traditional learning more enjoyable and effective.
- Additionally, future enhancements will also further enrich the user experience by integrating the multimedia support such as videos explanations and images to make the concepts more concise and intuitive.
- Gamification elements, weekly leaderboards and daily rewards will aid in boosting the motivation, while the voice interaction will enable students to answer the questions verbally making the AI tutor more engaging.

# Thank you

