

Development of an Intelligent Language Learning Platform with AI Tutoring, Real-time Communication, and Community Features
A Project Synopsis Submitted To

SANGAM UNIVERSITY, BHILWARA

Bachelors of Technology Submitted By Rahul

Kumhar

(2022BTCS0291)

Under the Supervision of

Pallavi ma'am



Department of Computer Science and Engineering, Sangam University,

National Highway-79, Chittor By-Pass, Atoon, Bhilwara, Rajasthan

2025-2026

Guided by:

Pallavi Purohit

Abstract

- This project presents 'Streamify', an AI-powered platform designed for intelligent language learning. It integrates artificial intelligence tutoring, real-time communication, and community-based learning. Streamify helps learners practice languages through AI-driven interactive sessions, voice/video chats, and social learning groups. The platform aims to make language learning engaging, accessible, and adaptive to individual user needs using modern web and AI technologies.
- Keywords: AI Tutoring, Language Learning, Web Application, Real-time Communication, Educational Technology

Introduction

- Language learning has evolved significantly with the introduction of digital tools, but many existing platforms still lack interactivity and personalization. Streamify bridges this gap by merging AI tutoring with social communication tools like chat and video calls. It enables learners to engage in real-time conversations, gain feedback from AI tutors, and join communities for collaborative learning.

Problem Statement

- Traditional language learning approaches often fail to provide immersive and personalized experiences. Learners lack access to real-time practice partners, adaptive tutoring, and a collaborative environment. Streamify addresses these issues by combining AI tutoring, real-time communication, and social networking.

Research Gap and Objectives

- Most existing language learning applications focus on static lessons or isolated AI chatbots. They lack real-time, community-driven environments and multimodal learning capabilities. This project fills that gap by merging AI tutoring with peer-to-peer communication and collaborative learning spaces.

Objectives:

- Develop an AI-powered tutoring system with real-time conversation ability.
- Create a platform for learners to connect and communicate globally.
- Enable multimodal interaction through text, voice, and video.
- Build a scalable and secure system using modern web technologies.
- Implement community-based learning to encourage collaboration.

Literature Review

1. Summary of Existing Research:

Existing studies show that AI and digital learning tools have revolutionized education, enhancing learner engagement and personalization. However, most tools lack real-time AI tutors and multimodal interaction capabilities.

2. Gaps Identified:

- Integration gap between AI tutoring and community learning.
- Lack of real-time multimodal communication support.
- Absence of collaborative learning communities within AI platforms.

Methodology

- The project follows an Agile development methodology using a microservices architecture. The tech stack includes React.js for the frontend, Node.js/Express.js for the backend, MongoDB for data storage, and AI integration through Google Gemini and OpenAI APIs. Real-time communication is enabled via Stream.io and WebRTC.

Detailed Explanation:

- Development phases include authentication, AI tutor integration, real-time chat and video, community modules, and optimization. Each feature undergoes continuous testing and user feedback loops to ensure reliability and engagement.

Tools and Technologies:

Frontend: React.js, Tailwind CSS, Framer Motion

Backend: Node.js, Express.js

Database: MongoDB

AI Tools: Google Gemini API, OpenAI API, Web Speech API

Communication: Stream.io, WebRTC

Security: JWT, bcryptjs

Version Control: Git & GitHub

Implementation Plan

Phase 1: Authentication and user management

Phase 2: AI tutor with speech recognition and synthesis

Phase 3: Real-time messaging and video calling

Phase 4: Community creation and social interaction

Phase 5: Testing, optimization, and deployment

Expected Outcomes

1. Seamless AI tutoring with multimodal interaction.
2. Real-time video and chat-enabled learning environment.
3. Active language learning communities with user-generated content.
4. Scalable architecture ready for global deployment.
5. Improved learner engagement and personalized education experience.