Research Methodologies and Emerging Technologies : Learning App for Dyslexic Students

Abstract

A new educational application will stand as the core objective of this project to assist dyslexic students. Our objective will be to advance the reading, writing, and comprehension capabilities of dyslexic students through artificial intelligence (AI) and gamification with voice-based functionality. The app will deliver customized, interactive education that will bring distant educational opportunities to students dealing with learning disabilities. Each learner will experience adaptations in the system through which their progress will follow their distinct speed.

Technologies Used

The app will be built using the latest tools and technologies to ensure efficiency and ease of use:

- **Flutter & Dart:** These will be used for developing a smooth, cross-platform mobile application that works seamlessly on both Android and iOS devices.
- **Firebase:** This platform will handle real-time data management, user authentication, and cloud storage to ensure a secure and reliable backend system.
- **Chatbot API:** A chatbot will be integrated into the app to provide instant help, answer questions, and guide students throughout their learning journey.
- **AI Algorithms:** Artificial intelligence will personalize the content and activities according to each user's learning progress and behavior.

Algorithms Fulfillment

The app will incorporate several features to support the learning process:

- **Text-to-Speech (TTS):** This tool will help students by converting written content into spoken words, making it easier for them to follow along and understand.
- **Speech-to-Text (STT):** Students will be able to speak into the app, and their words will be converted into written text, helping those who struggle with writing tasks.
- **Adaptive Learning Algorithm:** The app will adjust the difficulty level of lessons and exercises based on each student's performance, providing a personalized learning path that evolves as they improve.

Aims and Objectives

The primary aim of this project is to create an inclusive learning platform that addresses the specific needs of dyslexic students. The key objectives are:

- To build a user-friendly app that helps dyslexic students learn effectively.
- To integrate AI for a personalized learning experience that adjusts to each student's pace and progress.
- To introduce gamification elements to make learning more engaging and enjoyable.
- To include a chatbot feature for real-time assistance and instant feedback.
- To ensure the app functions smoothly across different devices using Flutter and Dart

Fulfillment

This project establishes an educational application which functions as its foundational goal to provide assistance to dyslexic students. The proposed system will use artificial intelligence (AI) and voice-based gamification to enhance dyslexic students' reading writing capabilities as well as increase their understanding. Students with learning disabilities can access personalized interactive education through the app which brings distant educational opportunities to their reach. Every learner will experience variations in their learning system while moving at their individual pace

Conclusion

The learning app will serve as an inclusive and engaging platform for dyslexic students, helping them overcome their educational challenges. By combining AI-driven personalization, gamification, and voice-based features, the app will make learning enjoyable and accessible for all users. The final product will be a powerful tool that not only improves academic skills but also boosts confidence and motivation for students with dyslexia.