Dupli Checker

Plagiarism Scan Report

0% Plagiarism	**0%** Exact Match	
	0% Partial Match	

100% Unique

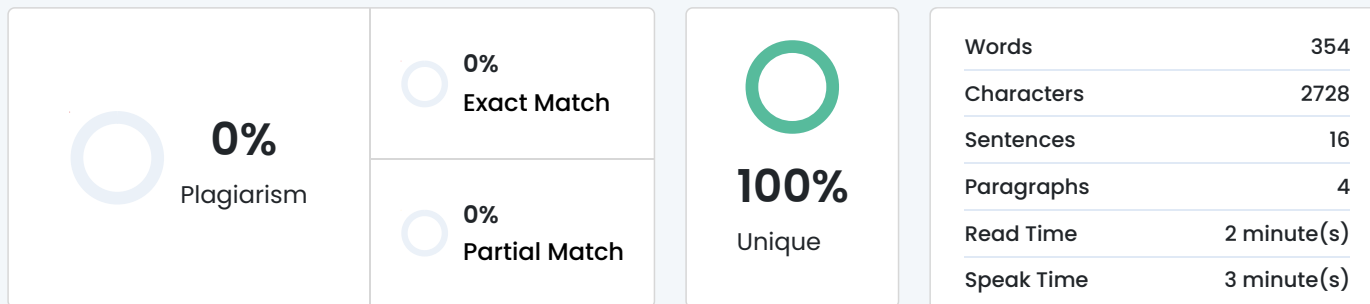|	
Words	354
Characters	2728
Sentences	16
Paragraphs	4
Read Time	2 minute(s)
Speak Time	3 minute(s)

Content Checked For Plagiarism

In conclusion, our project presents a real-time multilingual virtual voice assistant specifically designed for learners, incorporating four essential academic domains: Math, Chemistry, Physics, and Biology. The system enables users to interact naturally using voice-based queries in three languages—English, Hindi, and Marathi —bridging language barriers in education and supporting diverse linguistic communities. This multilingual capability ensures that learners can engage with the assistant in their preferred language, fostering inclusivity and better understanding of complex concepts.

To ensure seamless user interaction, the assistant leverages a robust combination of technologies. The backend is powered by Flask, providing a lightweight and scalable web framework, while SpeechRecognition handles voice input. For audio output, gTTS and pyttsx3 convert responses into natural-sounding speech, and Googletrans is used for automatic language translation. For mathematical processing, the assistant utilizes SymPy, and all user interactions are logged using SQLite for easy retrieval of chat history. Most notably, the assistant integrates GPT4All, an open-source large language model, to generate accurate, intelligent, and context-aware answers when predefined responses are not available—making the system far more dynamic and responsive to varied queries.

To validate its performance, we developed a comprehensive set of 12 test cases, with three test cases assigned to each academic module. Each module was evaluated using queries in English, Hindi, and Marathi, ensuring the assistant's multilingual capabilities were thoroughly tested. The system consistently demonstrated accurate language detection, effective query interpretation, contextually appropriate responses, and high-quality voice output across all tests. This successful testing confirms the system's reliability and usability in real-world educational scenarios.

Overall, this multilingual voice assistant showcases the powerful intersection of speech technology, natural language processing, and AI-driven knowledge systems in education. By enabling real-time, interactive, and language-inclusive learning, it opens the door to personalized and accessible education for a wider audience. Future enhancements may include expanding subject coverage, integrating more regional languages, improving natural dialogue through advanced large language models, and deploying the system on mobile devices or Raspberry Pi for broader reach. With these developments, the assistant has the potential to become a valuable tool for students, educators, and self-learners alike, revolutionizing how knowledge is accessed and delivered in multilingual environments.

Matched Source

Congratulations !

No Plagiarism Found