Project Report: Language Learning Application (LSpeak)

Introduction

LSpeak is a modern language learning application designed to facilitate the learning of German, English, and Polish languages through interactive exercises. This report details the implemented features, technologies used, encountered challenges, and proposals for future expansions of the project.

Implemented Features

1. Interactive Learning Modes
    - Microphone Input: Allows users to practice vocabulary by speaking into the microphone, using AssemblyAI for speech-to-text transcription.
    - Text Input: Enables users to type responses for vocabulary exercises.
2. Technologies Used
    - Frontend: Developed using Vue3 for its reactive and component-based architecture.
    - Styling: Utilized SCSS for enhanced CSS capabilities and maintainable styling.
    - Backend: Built with FASTAPI, leveraging its fast and asynchronous capabilities for handling API requests and data processing.
    - Speech Transcription: Integrated AssemblyAI library for accurate speech transcription to text.
3. Encountered Challenges
    - Data Format Configuration: Adjusting data formats for speech transcription functionality posed challenges, requiring careful handling and adaptation to AssemblyAI's API requirements.

Educational Resources Utilized

- Vue3 Documentation: Vue3 Documentation
- SCSS Documentation: SCSS Documentation
- FASTAPI Documentation: FASTAPI Documentation
- AssemblyAI API Documentation: AssemblyAI API Documentation

Proposals for Future Functional Extensions

4. Expansion of Language Support
    - Introducing additional languages beyond German, English, and Polish to cater to a broader user base.

5. Implementation of User Authentication and Database
    - Incorporating user authentication and database integration to store user progress securely, moving away from local storage for enhanced data persistence and security.

Conclusion

LSpeak combines innovative technology with user-centric design to provide a robust language learning platform. By leveraging Vue3, SCSS, and FASTAPI, alongside AssemblyAI for speech transcription, the application offers an immersive learning experience. Future enhancements aim to broaden language support and improve user management functionalities, ensuring continuous development and usability.

Sources

- Knowledge acquired through two years of learning programming in JavaScript and Python. Both privately, at university and at work
- Assemblyai tutorials:
    - https://www.youtube.com/shorts/3k0iGI7fy-0
    - https://www.youtube.com/watch?v=YdYTSxEW5bA&t=71s
- Chat GPT
- GithubCompilot