

[SE/P] Final Project Report

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1 Project Scope

1.1 Planned Functionalities as User Stories

Below is the final list of planned functionalities:

- **Registration and Login:** Completed.
- **Emotion Imitation Exercises:** Completed.
- **Calendar Integration:** Completed.
- **Analytics from Exercises:** Completed.
- **Relaxation Techniques:** Completed.

All functionalities meet their acceptance criteria.

2 Comparison with Existing Solutions

The Speech Assistant app has been compared with the following existing tools:

- **Eloquence App:** The Eloquence App provides basic speech analysis but lacks advanced emotion-based feedback. Our app stands out by offering emotion analysis.
- **Orai:** Orai focuses primarily on public speaking coaching with a focus on pronunciation and pacing. However, it does not offer calendar integration or personalized relaxation exercises. Our app addresses these gaps by allowing users to schedule event-specific training and manage stress effectively.
- **Glossika:** Glossika focuses on pronunciation and language learning but does not include emotion analysis or event-specific training. Our app differentiates itself by addressing these specific needs.

3 Tech Stack

- **Backend:** Python (Django, Django REST Framework).
- **Frontend:** React.js.
- **Audio Analysis:** PyAudioAnalysis, Hugging Face Transformers.
- **Database:** Amazon Web Services.
- **Testing Frameworks:** Django TestCase, Django REST Framework's APITestCase.

4 Database Diagram

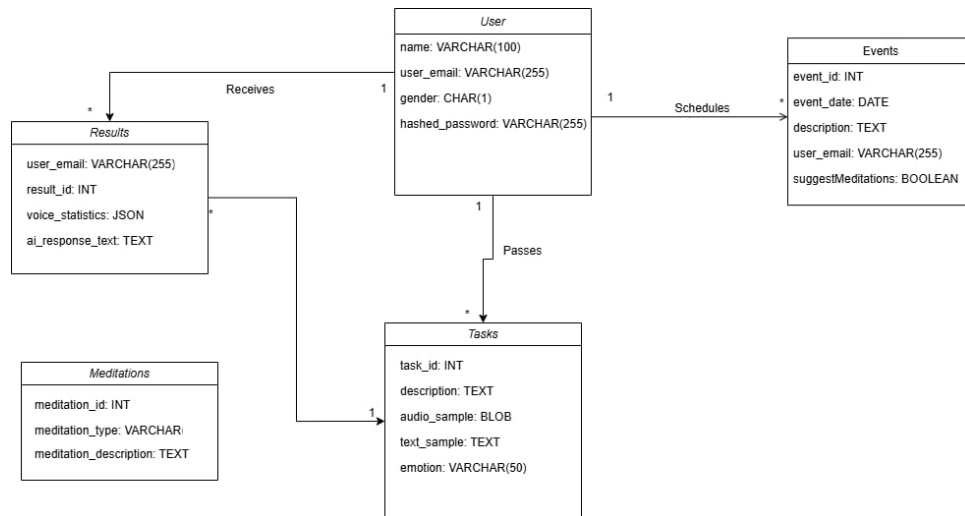


Figure 1: Database Diagram

5 Architecture Diagram

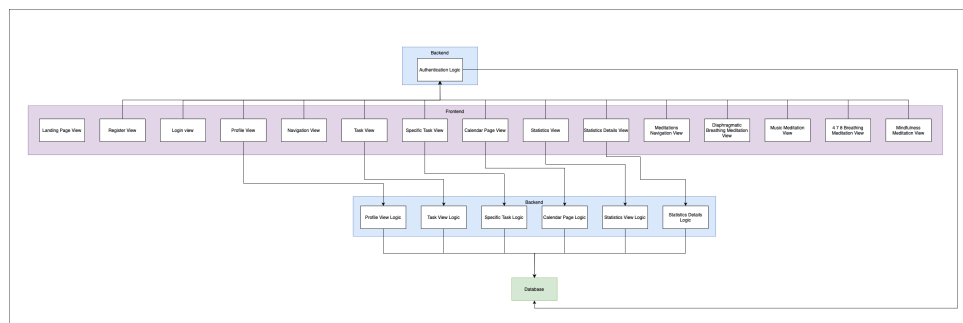


Figure 2: Architecture Diagram

6 Test Report

- **Unit Tests:** CRUD operations and API endpoints for User, Event, Task, and Result models.
- **Manual Testing:** Conducted testing to identify edge cases and ensure proper user experience across different scenarios.

7 Known Issues

- **Pronunciation Analysis:** Not implemented.
- **Desktop Version:** Not implemented.
- **Profile Page:** Backend not implemented.

8 Project Assessment

8.1 Achievements

- Successfully implemented most planned functionalities, including emotion analysis and relaxation techniques.
- Delivered a user-friendly interface and robust backend APIs.

8.2 Obstacles

- The pronunciation analysis, profile page and the desktop version and of the application were not implemented due to limited time.

9 Possible Future Improvements

- Implementing a better algorithm for more accurate audio and emotion analysis.
- Enhancing meditation features by collecting user feedback scores and suggesting the most effective meditations automatically in the calendar.