Project Documentation

TEAM 77 - AI INTERVIEW

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Introduction

In today's globalized world, proficiency in the English language is essential for success in numerous areas, including professional growth, education, and everyday communication. Despite its importance, many individuals struggle with improving their English skills, particularly in speaking, listening, and reading. These challenges can be further exacerbated when preparing for job interviews, where effective communication is critical. Recognizing these needs, we propose the development of a mobile application designed to assist users in enhancing their English proficiency and interview preparation.

Many individuals face significant challenges in improving their English language skills, particularly in the areas of speaking, listening, and reading. These skills are crucial for achieving success in various aspects of life, such as job interviews, academic pursuits, and social interactions. Additionally, preparing for interviews can be daunting and discouraging without proper guidance and practice. The lack of accessible, comprehensive resources exacerbates these challenges, leaving individuals feeling unprepared and anxious.

The proposed mobile application will address these specific needs by offering a comprehensive, user-friendly platform for enhancing English proficiency and interview preparation. The app will provide a range of features designed to support users in improving their speaking, listening, and reading skills while also offering targeted resources for effective interview preparation.

OVERVIEW

Our app focuses on three core aspects of English language improvement: Reading, Speaking, and Listening. By leveraging AI technologies, we provide users with personalized and interactive experiences to enhance their language proficiency.

Reading:

AI-Based Paragraph Generation: Our app utilizes advanced AI algorithms to generate tailored reading paragraphs. These paragraphs are customized based on the user's current proficiency level, interests, and learning goals. This ensures that users are consistently challenged and engaged, promoting effective learning and retention.

User Reading and Speaking Analysis: As users read the generated paragraphs, our app tracks and analyzes their reading patterns. This includes metrics such as reading speed, pronunciation accuracy, and fluency. The app provides detailed feedback and suggestions for improvement, helping users to develop better reading habits and enhance their overall reading skills. Additionally, the app can highlight common pronunciation errors and offer practice exercises to address them.

Speaking:

AI-Based Topic Generation: To improve speaking skills, our app generates diverse topics using AI. These topics are designed to be engaging and relevant, encouraging users to practice speaking about a wide range of subjects. The AI takes into account the user's interests and current events to ensure the topics are both interesting and educational.

User Speaking Skill Analysis: Our app records and analyzes user speech, focusing on key aspects such as pronunciation, intonation, grammar, and vocabulary usage. The AI provides comprehensive feedback, highlighting areas of strength and identifying areas that need improvement. Users receive personalized exercises and tips to help them refine their speaking abilities, build confidence, and achieve greater fluency.

Listening:

AI-Based Audio Generation: Our app features AI-generated audio clips designed to improve listening skills. These audio clips cover various accents, speech speeds, and topics to provide a well-rounded listening experience. The content is dynamically adjusted based on the user's proficiency level and learning goals, ensuring that they are constantly challenged and improving.

User Listening and Understanding Skills Analysis: While users engage with the audio content, the app tracks their listening comprehension and understanding. This includes assessing their ability to recognize words, understand context, and follow conversations. The app offers detailed feedback and personalized exercises to help users enhance their listening skills.

Project Workflow

Project Initiation:
The project workflow for our English proficiency and interview preparation mobile app began with project initiation, where we defined goals, identified stakeholders, and allocated resources.

Requirement Gathering:
During the requirement gathering stage, we collected and documented functional and non-functional requirements through user stories and a comprehensive feature list, ensuring we met technical specifications.

Design Phase:
The design phase involved creating UI designs using Figma to develop a user-friendly and intuitive interface, followed by wireframing and prototyping.

Development Phase:
In the development phase, we built the frontend using Dart, leveraged Firebase for backend integration, and incorporated AWS Cloud APIs for content generation, speech-to-text conversion, and accuracy checking.

Testing:
Rigorous testing included unit, integration, and user testing, with subsequent bug fixing to ensure functionality.

Deployment:
Once ready, we prepared for deployment by finalizing features, and released the apk version of the application.

Technologies and Tools Used

1. Flutter
Description : An open-source UI software development kit created by Google.
Purpose : Used for developing natively compiled applications for mobile, web, and desktop from a single codebase.
Benefits :
- Cross-platform development.
- Fast development cycle with hot reload.
- Rich set of pre-designed widgets.

2. Dart
Description : A programming language optimized for building mobile, desktop, server, and web applications.
Purpose : The primary language used to write Flutter applications.
Benefits :
- Strong typing and object-oriented features.
- AOT (Ahead Of Time) and JIT (Just In Time) compilation for optimized performance.
- Easy to learn and productive.

3. Firebase
Description : A platform developed by Google for creating mobile and web applications.
Purpose : Provides backend services such as real-time databases, authentication, cloud storage, and analytics.
Benefits :
- Real-time data synchronization.
- Comprehensive suite of tools for app development and management.
- Scalability and ease of integration with other Google services.

4. Cloud Service
Description : Cloud computing platforms like AWS, Google Cloud, or Azure.
Purpose : Hosting the backend infrastructure, storing data, and ensuring application scalability and availability.
Benefits :
- Flexible and scalable infrastructure.
- High availability and redundancy.
- Variety of services like compute, storage, databases, and machine learning.

5. Figma
Description : A web-based graphics editing and user interface design app.
Purpose : Used for designing the user interface and user experience of the application.
Benefits :
- Collaborative design environment.
- Real-time updates and feedback.
- Easy handoff to developers with design specifications.

Project Code

Reading Module:

```
Future<void> compareText(String s1, String s2) async {
  final apiKey = "AIzaSyD4z8TqJJ-8aGwpNJBFZFMQqy2oCImrnxA";

  final model = GenerativeModel(model: 'gemini-pro', apiKey: apiKey);
  final content = [
    Content.text(
        'compare the given two texts and return the accuracy between them '
            '(assume the second text is a text spoken by a person) 1) $s1 \n 2) $s2 '
            'output format: one decimal value out of 100 in double form ')
  ];

  final response = await model.generateContent(content);

  final String responseText = response.text.toString().trim();
  final String accuracyString = responseText.split(' ')[0];
  final double accuracy = double.tryParse(accuracyString) ?? 0.0;

  setState(() {
    result = responseText;
    this.graph = accuracy;
    print(accuracy);
    print(graph);
  });
 }
```

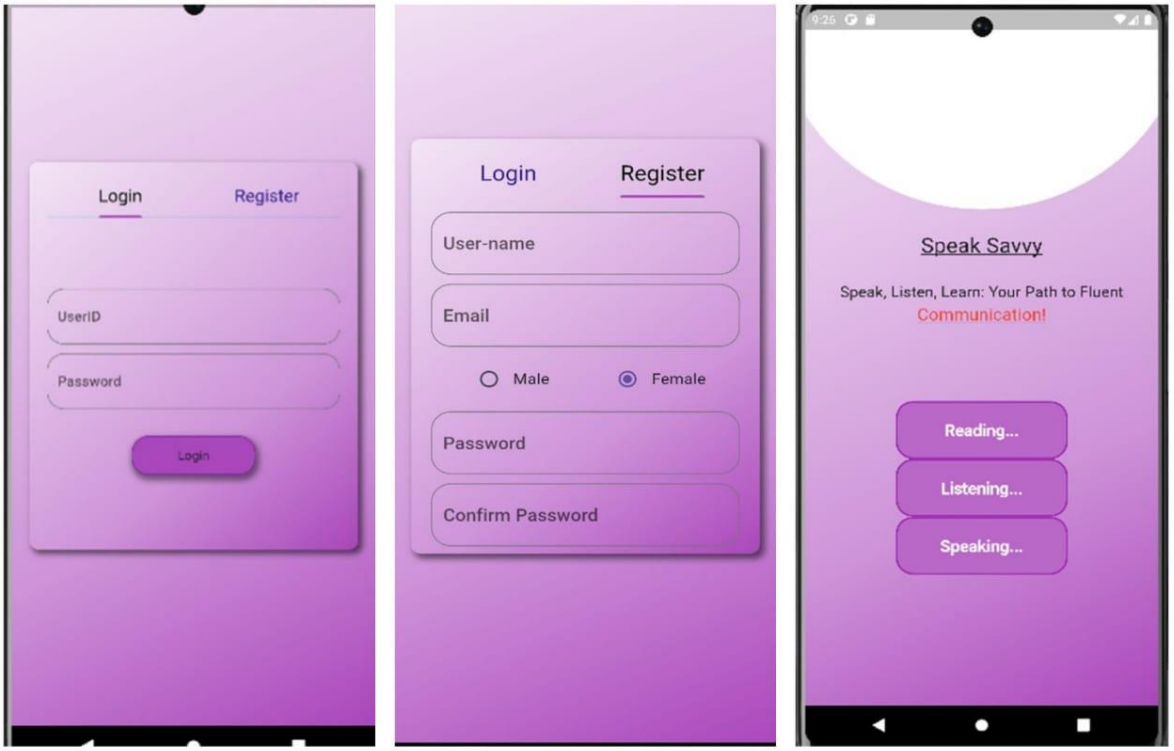
Listening Module:

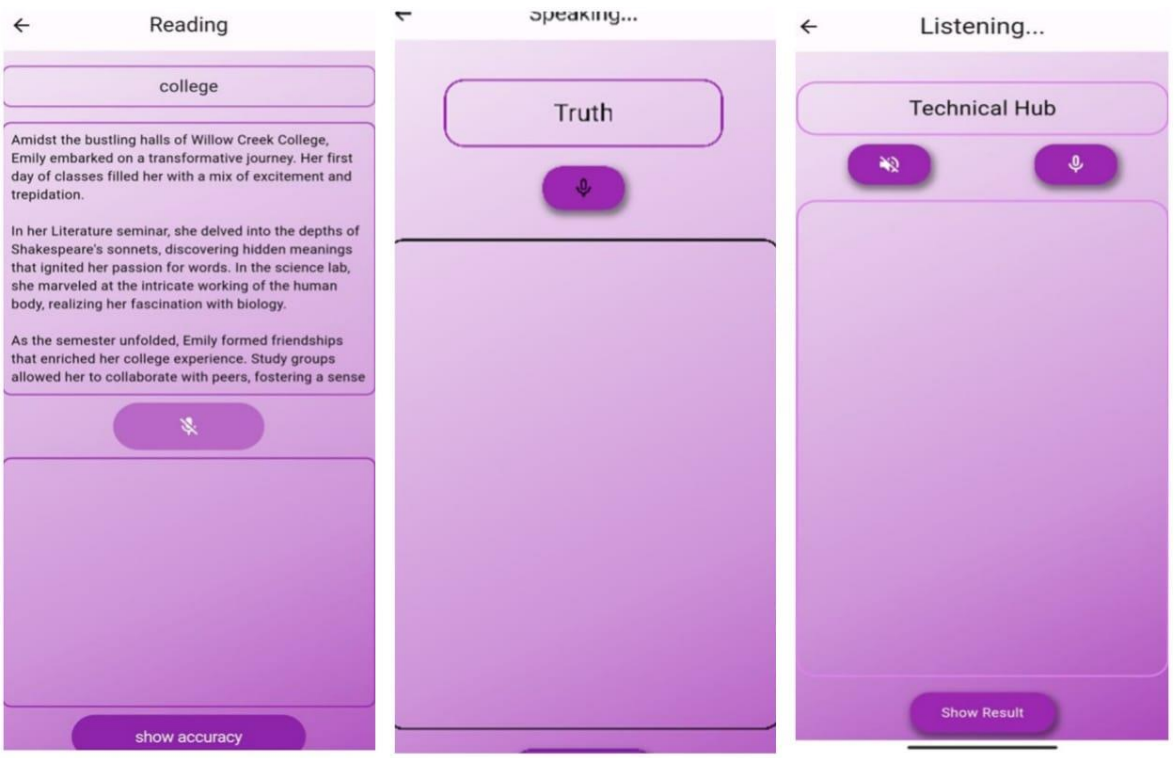
```
Future<void> generateText() async {
    final apiKey = "AIzaSyD4z8TqJJ-8aGwpNJBFZFMQqy2oCImrnxA";
    if (apiKey == null) {
      print('No \$API_KEY environment variable');
      return;
    }
    final model = GenerativeModel(model: 'gemini-pro', apiKey: apiKey);
    final content = [Content.text('write a paragraph about ${widget.text}  for 30 Seconds only
or in 50 words')];
    final response = await model.generateContent(content);
    setState(() {
      generatedText = response.text.toString();
    });
  }
  //Language,pitch and speech rate
  Future<void> speak(String text) async {
    await flutterTts.setLanguage("en-US");
    await flutterTts.setPitch(0.4);
    await flutterTts.setSpeechRate(0.4);
    await flutterTts.speak(text);
  }
  void micAndVoice(){
    if(ch1){
      Volume_help();
      speak(generatedText);
    }
    else{
      Volume_help();
      _stop();
    }
  }
```

Speaking Module :

```
final apiKey = "AIzaSyD4z8TqJJ-8aGwpNJBFZFMQqy2oCImrnxA";
  Future<void> generateText() async {
    final model = GenerativeModel(model: 'gemini-pro', apiKey: apiKey);
    final content = [Content.text('Generate a random simple word on which we can speak')];
    final response = await model.generateContent(content);
    setState(() {
      generatedText = response.text.toString().trim();
    });
    print(generatedText);
  }
  Future<void> compareText(String s1, String s2) async {
    final model = GenerativeModel(model: 'gemini-pro', apiKey: apiKey);
    final content = [
      Content.text(
          'Compare how much is the text meaning is correct about the first text and return
correctness and accuracy and if the text is not accurate then return 0'
              '(assume the second text is a text spoken by a person) and the first text is the topic
given to him 1) $s1 \n 2) $s2 '
              'output format: two decimal values out of 100 with space between them')
    ];
    final response = await model.generateContent(content);
    setState(() {
      result = response.text.toString();
      print(result.toString());
      print(result.toString().length);
    });
  }
```

APP SCREENS


Login
Register
UserID
Password
Login
Login
Register
User-name
Email
Male
Female
Password
Confirm Password
Speak Savvy
Speak, Listen, Learn: Your Path to Fluent Communication!
Reading...
Listening...
Speaking...


Reading
college
Amidst the bustling halls of Willow Creek College, Emily embarked on a transformative journey. Her first day of classes filled her with a mix of excitement and trepidation.
In her Literature seminar, she delved into the depths of Shakespeare's sonnets, discovering hidden meanings that ignited her passion for words. In the science lab, she marveled at the intricate working of the human body, realizing her fascination with biology.
As the semester unfolded, Emily formed friendships that enriched her college experience. Study groups allowed her to collaborate with peers, fostering a sense
show accuracy
Truth
Listening...
Technical Hub
Show Result

Use Case

Our mobile app addresses diverse needs in English language learning and interview preparation through tailored features and advanced technology integration. It serves as a comprehensive tool for individuals striving to enhance their English proficiency across various contexts:

- **Language Learning:**

  The app provides interactive exercises and personalized feedback for speaking, listening, and reading skills. Utilizing AI algorithms, it offers customized content based on user proficiency levels and learning speeds. Real-time pronunciation correction and interactive simulations foster practical speaking practice, ensuring a well-rounded learning experience.

- **English Language Exams Preparation:**

  Designed for TOEFL, IELTS, and Cambridge English exams, the app offers specialized modules and practice tests that simulate exam conditions. Detailed analytics track performance metrics and identify areas for improvement. Personalized study plans and targeted exercises optimize preparation efficiency and effectiveness.

- **Job Seekers and Career Advancement:**

  For professionals and job seekers, the app offers AI-generated interview questions and scenarios to practice responses. It provides feedback on pronunciation, grammar, and vocabulary usage, enhancing communication skills crucial for interviews and career growth. Modules on business English and professional communication further prepare users for workplace interactions.

- **Self-Study and Distance Learning:**

  Supporting self-paced learning, the app offers a variety of self-guided lessons and interactive exercises accessible anytime, anywhere. An adaptive learning system adjusts difficulty levels based on user progress, while features like speech-to-text conversion and real-time accuracy checking offer immediate feedback. Progress tracking and personalized recommendations ensure structured and effective learning experiences for students and professionals alike.

  Our app combines technological innovation with educational expertise to empower users in achieving their language learning and career advancement goals, making it an indispensable tool for diverse learners globally.

Advantages

- ✓ **Feedback and Improvement**

  Feedback is integral to learning and growth, offering insights into performance, identifying strengths, and pinpointing areas for development. Effective feedback is timely, specific, and actionable, guiding learners on correcting mistakes and deepening understanding. Regular feedback loops accelerate learning by enabling learners to adjust strategies, focus on weaknesses, and strive for continual improvement.

- ✓ **Personalized Learning**

  Personalized learning tailors educational experiences to individual needs, preferences, and learning paces. It acknowledges each learner's uniqueness, leveraging data and adaptive technologies to create customized learning paths aligned with goals and capabilities. This approach integrates various methods, including one-on-one tutoring, adaptive software, and differentiated instruction, fostering deeper engagement and effective learning outcomes.

- ✓ **Interactive Learning Experience**

  Interactive learning fosters active engagement through hands-on activities, group discussions, simulations, and multimedia resources. It promotes critical thinking, problem-solving, and collaboration, enhancing the dynamic and enjoyable nature of learning. Technology enriches interactive learning with tools like virtual labs, interactive whiteboards, and gamified platforms, making education immersive and impactful.

- ✓ **Comprehensive Skills Development**

  Education encompasses cognitive, social-emotional, and practical skills crucial for personal and professional success. Cognitive skills such as critical thinking and creativity, social-emotional skills like communication and teamwork, and practical skills including digital literacy are essential. Holistic education prepares learners to navigate complexities, adapt to change, and pursue lifelong learning.

- ✓ **Progress Tracking and Motivation**

  Tracking progress enables learners and educators to identify gaps, set goals, and celebrate achievements. It involves diverse assessment methods such as formative, summative, and self-assessment. Continuous monitoring supports timely interventions and adjustments, while goal-setting, rewards, and positive reinforcement sustain motivation and commitment to learning.

Conclusion

In conclusion, our English proficiency and interview preparation mobile app represents a transformative tool for learners seeking to enhance their language skills and career prospects. By integrating advanced technologies like AI for personalized learning experiences, speech-to-text conversion, and interactive feedback, the app provides a dynamic platform that adapts to individual learning needs and preferences.

Through comprehensive features such as language exam preparation modules, job interview simulations, and self-paced learning resources, the app caters to diverse user goals—from achieving proficiency in English language exams to advancing career opportunities through improved communication skills.

Furthermore, the emphasis on interactive learning experiences and comprehensive skills development ensures that learners not only acquire knowledge but also foster critical thinking, problem-solving abilities, and effective communication—essential skills for personal and professional success in today's globalized world.

By fostering a supportive learning environment with robust progress tracking and motivational tools, our app empowers users to navigate their educational journey with confidence and enthusiasm. We believe that this holistic approach will make a significant impact on learners' lives, equipping them with the skills and confidence needed to excel in their academic, professional, and personal endeavors.