# PluginLive Hackathon - 2024

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# 1. Overview

This document outlines the detailed requirements, deliverables, evaluation criteria, and best practices for developing an **AI-driven English communication assessment system**. The system will assess verbal communication through video responses and provide comprehensive feedback, ensuring high accuracy for Indian regional accents and delivering an intuitive user experience.

# 2. Important Points to Remember

- **AI Integration**:
  The core of the system should leverage **AI models** and **scalable services** for video processing, speech analysis, and assessment.
- **Focus on Indian Context**:
  - Special emphasis on **Indian regional accents** for speech-to-text and analysis accuracy.
- **Exceed Industry Standards**:
  - Research and implement benchmarks for speech analysis, pronunciation scoring, and grammar evaluation.
  - Ensure the system surpasses basic functionalities with innovative approaches.
- **Deadline Compliance**:
  - All deliverables must be submitted by the specified deadline, 11:55pm 13th December (Submission form will be shared to the participants on the same day)

# 3. Core Requirements

### 3.1. Video Interface

- **Functionality**:

    - Record live video responses for predefined prompts (30-60 seconds).
    - Save and store the videos securely for further analysis.
- **Questions**:
    - "Tell us about yourself?"
    - "What's your view on remote work culture?"
    - "How do you stay updated with industry trends?"
    - "What inspired you to choose your career path?"
- **Playback**:
    - Provide basic video playback functionality for users to review recordings.

### 3.2. Speech Analysis

- **Real-time Speech-to-Text**:
    - Convert video responses into text with **>70% accuracy for Indian accents**.
- **Grammar Analysis**:
    - Highlight and score grammatical errors.
- **Pronunciation Assessment**:
    - Evaluate word clarity and phonetic accuracy.
- **Fluency Measurement**:
    - Analyze:
        - Speaking rate.
        - Pause patterns.
        - Filler word usage (e.g., "uh," "um").

### 3.3. Assessment Module

- **Scoring Metrics**:
    - Assess verbal communication and provide a **comprehensive score**.
- **Feedback**:
    - Offer instant feedback on:
        - Grammar mistakes.
        - Pronunciation errors.

        - Speaking pace.
        - Voice clarity.
- **Report Generation**:
    - Generate detailed assessment reports with **clear metrics** for user understanding.

### 3.4. User-Facing Requirements

- **Authentication**:
    - Implement a **secure login system** for users.
- **Assessment Interface**:
    - Design a user-friendly video recording and assessment interface.
- **Reports**:
    - Enable users to **view and download assessment reports**.
    - Provide access to their **past assessment history**.

### 3.5. Bonus Features (Choose Any One)

#### Option A: Advanced Body Language Analysis

- Analyze non-verbal cues, including:
    - Posture.
    - Gestures.
    - Eye contact.
- Create scoring metrics and combine them with verbal analysis for a holistic assessment.

#### Option B: Multiple Language Support

- Support communication assessment in **multiple Indian languages** (Tamil, Hindi, Marathi etc.)

#### Option C: Personalized Improvement Plan

- Offer **structured, actionable feedback** based on industry standards.

- Provide specific, measurable improvement goals to guide the user's progress.

# 4. Deliverables

### 4.1. Working MVP Hosted on the Cloud

- Fully functional and accessible over a secure web interface.

### 4.2. Demonstration Video

- A **5-minute video** showcasing the core features, system flow, and working of the platform.

### 4.3. Documentation

#### a. Repository Link

- Full access to source code for quality analysis.
- Include instructions for setup and deployment.

#### b. System Design

- Wireframes and diagrams detailing the system architecture.

#### c. Code Documentation

- Inline and external documentation to explain the functionality of major components.

### 4.4. Model and Services Documentation

- **Selection Justification**:
  - Explain the choice of AI models and services.
  - List alternative options considered.
- **Performance Metrics**:

    - Accuracy of speech-to-text conversion for Indian accents.
    - API response times and overall system efficiency.
- **Implementation Details**:
    - Cost analysis for scaling the system.
    - Trade-offs, limitations, and recommendations for improvement.

# 5. Evaluation Criteria

### 5.1. Core Features (50 points)

- **Video Functionality**: Recording, storage, and playback.
- **Speech Analysis**: Real-time transcription with >70% accuracy.
- **Assessment Features**: Scoring and feedback mechanisms.

### 5.2. Technical Implementation (30 points)

- **System Design**: Scalable and well-documented architecture.
- **User Experience**: Seamless interface and workflow.
- **Report Quality**: Clarity and representation of results.

### 5.3. Bonus Features (20 points)

- **Body Language Analysis**, **Multiple Language Support**, or **Personalized Improvement Plan**.

### 5.4. Auto-Disqualification

- Failure to achieve a **minimum point of 70/100**.
- Critical features (video capture, analysis, or reporting) do not work.
- Response time exceeds **1.5 minutes**.

# 6. Best Practices

1. **User Experience**:
    - Focus on an intuitive interface for seamless interaction.
2. **Scalability**:
    - Design the system architecture to handle high user traffic and large datasets.
3. **Error Handling**:
    - Implement robust error handling and test for edge cases.
4. **Documentation**:
    - Document as you go, clearly outline assumptions, limitations, and functionality to aid understanding.

# 7. Frequently Asked Questions

1. **What constitutes a "critical feature" for auto-disqualification?**

    We have divided the features into core and bonus sets, it's mandatory to submit core features for us to consider your submission further.

2. **Are there any specific AI/ML models or services recommended for speech analysis?**

    Teams are encouraged to utilize their own choice of AI models and services for implementation. This allows participants to:

    - Select tools that best fit their technical requirements
    - Experiment with different service providers
    - Manage their own resource allocation
    - Build with technologies they're most comfortable with

3. **Do I get API keys for models or services?**

We recommend researching and evaluating various APIs and services that offer free tiers or student credits for development purposes. The selection and procurement of necessary API keys and services will be the responsibility of the participating teams.

4. **What should be included in the 5-minute demonstration video?**

   Due to the high number of expected submissions, the video showcase becomes critical for initial filtration. Below is the format for your reference.

   1. Introduction (30 seconds)
   2. Core features demonstration (2.5 minutes)
   3. Bonus Feature Showcase (1 minute)
   4. Technical Highlights (45 seconds)
   5. Closing Summary (15 seconds)

   **Common Mistakes to Avoid:**

   - Spending too much time in talking instead of live demo
   - Showing code instead of working features
   - Poor audio quality or unclear narration
   - Exceeding the 5-minute limit
   - Demonstrating features through screenshots instead of live usage

5. **Do you provide UI mockups?**

   We encourage teams to showcase their design thinking and creativity in developing the user interface. Your UI/UX should:

   - Align with the core requirement of creating an intuitive user experience
   - Reflect your understanding of user needs and workflow

- Demonstrate originality in solving the communication assessment challenges
- Follow best practices in accessibility and user-centric design

6. **Are there any restrictions on programming languages or frameworks?**

   No, We believe in fostering independent problem-solving skills and encourage teams to leverage their collective expertise and research capabilities throughout the hackathon journey.

7. **Do I get a dedicated mentor assigned or any technical support?**

   No, We believe in fostering independent problem-solving skills and encourage teams to leverage their collective expertise and research capabilities throughout the hackathon journey.

8. **Miscellaneous**
   a. **I am unable to see the workspace after logging in on the mobile app?**

      If you have previously joined the workspace, re-check the email Id from settings and use the same for the login

   b. **Why is scalability being considered, even though it is a Hackathon?**

      The architecture design and model/service choice directly influences the scalability, we would like to see the technical design choices you and your team has made.