AI-Powered Public Speaking Training Platform

Methodology:

In order to build an interactive and adaptable learning environment, the **AI-Powered Public Speaking Training Platform** was created by combining web technologies, speech processing tools, and AI models. **Rapid Fire, Triple Step,** and **Conductor** are the three main exercises that the platform emphasizes. AI is used in each activity to assess user performance.

Key Tools & Techniques:

1. **Speech Processing**:

   - **Whisper** (OpenAI) was used for real-time speech-to-text transcription.

   - **Librosa** analyzed audio energy levels to track vocal variety and energy in the **Conductor** exercise.

2. **AI Evaluation**:

   - **Groq API** was used to evaluate analogy relevance and creativity in the **RapidFire** exercise.

   - **Sentence-BERT** analyzed speech coherence and topic adherence in the **Triple Step** exercise.

   - **Emotion Classification Pipeline** evaluated mood matching in the **Conductor** exercise.

3. **Scoring Methodology**:

   - **Rapid Fire Analogies**: Speech continuity and the relevance of the analogy were taken into consideration for determining scores. Relevance and inventiveness scores were provided using the Groq API.

   - **Triple Step**: Sentence-BERT calculated coherence and topic adherence, while a custom algorithm evaluated how smoothly distractor words were integrated.

   - **Conductor**: Scores were calculated based on **energy level** and **mood matching**. Energy levels were mapped using Librosa, and mood matching by an emotion classification model.

4. **Frontend & Visualization**:

   - **D3.js** was used to create interactive dashboards for visualizing user progress and scores.

   - **MySQL** stored user scores and exercise results for tracking progress over time.

Findings:

1. **Feedback**: The platform successfully provided feedback by the detailed breakdown of scores and personalized improvement suggestions.

2. **Accurate Scoring**: The AI models (Groq, Sentence-BERT, and emotion classifiers) delivered accurate and meaningful evaluations.

3. **User Engagement**: The interactive dashboard, powered by D3.js, enhanced user engagement by visualizing scores and maintaining user progress and highlighting areas for improvement.

Recommendations:

1. **Enhance Emotion Detection**: Implement more advanced emotion detection models to provide nuanced feedback on vocal tone and mood matching.

2. **Expand Language Support**: Add multi-language support to make the platform accessible to a broader audience.

3. **Gamification**: Introduce gamification elements, such as badges, leaderboards, and challenges, to increase user motivation and engagement.

Conclusion:

This project offers a public speaking training experience by effectively fusing AI, speech processing, and interactive visualization. With the use of AI models, the platform's grading process generates precise and useful feedback. Future improvements like gamification and advanced speech processing will increase the platform's efficacy and user engagement even more.