Smart Speech Detection Technique for Behaviour Analysis

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Abstract: *The integration of speech recognition with artificial intelligence (AI) has transformed how humans interact with technology. This paper presents the development and implementation of a Smart Speech Recognition System using a mobile-based approach built on the Flutter framework.*

The system is divided into three primary modules: (1) real-time speech-to-text conversion, (2) emotion identification from the spoken input, and (3) AI-powered conversational responses using Google's Gemini API.

The project aims to deliver a smart, intuitive, and emotionally aware interface where user voice commands are not only understood but also responded to with contextual and emotionally relevant answers. With a focus on enhancing user interaction, this system serves as a foundational model for future emotionally intelligent virtual assistants and AI-driven human-computer interfaces.

This project focuses on the development of an Android application using Flutter, designed to convert speech into text, integrate with Gemine AI for advanced text analysis, and detect emotions within the converted speech or text. The application aims to provide users with a seamless and intelligent interface to transcribe spoken words, analyze them using natural language processing (NLP), and determine the underlying emotional tone. The core functionalities include real-time speech-to-text conversion, enhanced by Gemine AI's ability to extract meaningful insights, along with emotion detection that can assess sentiments such as happiness, sadness, anger, or neutrality.

The app leverages Flutter's cross-platform framework, ensuring an efficient and responsive user experience on Android devices. With the speech-to-text functionality, users can generate accurate text from their spoken input, making it useful for communication, transcription, and productivity purposes. Gemine AI is integrated to perform advanced analysis, offering features such as summarization, content recommendations, and predictive analytics. Emotion detection adds another layer of intelligence, providing feedback on the emotional context of conversations.

This application has broad potential use cases, from mental health monitoring and customer service to personal communication tools and educational resources. It represents a blend of mobile development, AI-driven natural language processing, and emotion analysis, contributing to the growing demand for emotionally aware AI systems and enhancing user interaction through innovative technology.

Keywords: Smart Speech Detection Technique, Emotion Identification, Speech-to-text conversion, AI-powered Conversational responses