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Ambient Noise Based Volume Adjuster Android Application

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Abstract: *This project focuses on developing an Ambient Noise-Based Volume Adjuster, an intelligent Android application that automatically adjusts the device's audio level based on surrounding environmental noise. The primary objective of this system is to enhance user experience by maintaining optimal sound levels without requiring manual adjustments.*

The application utilizes the smartphone's microphone to continuously monitor ambient noise levels in real time. Based on the intensity of the surrounding noise, the system dynamically increases or decreases the media volume. For instance, in noisy environments, the volume is increased to ensure clear audibility, whereas in quieter environments, the volume is reduced to provide a comfortable listening experience and prevent unnecessary loudness.

The project is developed using modern Android technologies, mainly Kotlin, and incorporates background services for continuous monitoring of environmental sound. Basic signal processing techniques are applied to analyze noise levels and convert them into actionable data that controls volume adjustments.

The system follows a structured workflow that includes data collection (capturing environmental noise), processing (analyzing sound intensity levels), and decision-making (adjusting the device volume accordingly). The application is designed to be efficient, responsive, and user-friendly while minimizing battery consumption..

Keywords: *Ambient Noise-Based Volume Adjuster*

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