**ABSTRACT**

**TITLE:MULTI MODAL DEPRESSION DETECTION USING AUDIO & VIDEO ANALYSIS WITH FASTAPI**

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Depression is a prevalent mental health issue, affecting millions worldwide and often leading to severe health consequences if left untreated. Traditional depression diagnosis relies heavily on self-reporting and clinical interviews, which can be subjective and inconsistent. The advent of machine learning and multimodal data analysis offers promising solutions for more objective and automated depression detection. This paper explores a multimodal approach for depression detection by analysing both audio and video data. Leveraging Fast API, a modern and efficient web framework, we designed and implemented a system that

processes audiovisual inputs to assess mental health conditions with high accuracy and efficiency.

The proposed system integrates audio and video modalities to capture subtle cues in speech and facial expressions, two critical indicators of emotional and psychological states. Audio features are extracted to reveal underlying emotional distress or irregularities associated with depression. Concurrently, video analysis focuses on facial expressions, eye movement, and micro-expressions that could signify depressive symptoms. The combination of these multimodal inputs enables a more comprehensive assessment of the user’s mental state compared to single-modality approaches.

Using Fast API allows for rapid deployment and scalability of the depression detection system. It handles asynchronous data processing, allowing real-time analysis without sacrificing performance. This paper discusses the preprocessing and feature extraction techniques employed for audio and video, as well as the machine learning models trained for classification. Additionally, we evaluate the system’s performance on publicly available datasets and compare it to existing methods in depression detection. The results demonstrate that our approach can effectively identify depression indicators, making it a valuable tool for mental health professionals and a promising direction for remote mental health monitoring.

In summary, this research highlights the potential of multimodal analysis combined with fast and efficient web frameworks like Fast API for scalable, accurate, and non-intrusive depression detection. Future work will aim at enhancing model robustness and interpretability, expanding dataset diversity, and exploring other modalities for even greater diagnostic accuracy.