AI - VERSE 2025

AUGMENT.AI

TITLE : AI-Driven Real-Time Emotion Detection for Mental Health Support

TEAM NAME: Quamplifiers

TEAM MEMBERS and USN:

K Karthik	1BM23AI078
Gnanendra Naidu N	1RV23AI035
Aditya Ranjan.	1RV23AI008
Varun Y R	1JT23IS061

AI-Powered Real-Time Emotion Detection for Mental Health Monitoring

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We propose an AI-driven emotion monitoring system that analyzes voice signals in real-time to detect emotions, aiming to support mental health monitoring by identifying emotional states such as happy, sad, neutral, and angry based on speech patterns. The system utilizes pre-trained models to extract vocal features and classify emotions, while also incorporating facial expression analysis through camera input to enhance accuracy. Additionally, instead of relying on wearable devices, the system estimates average heart rates. This comprehensive approach provides users with a real-time emotion dashboard, enabling context-aware AI chat interventions that offer supportive responses and flag prolonged negative emotional states for further follow-up.

TECHNICAL APPROACH

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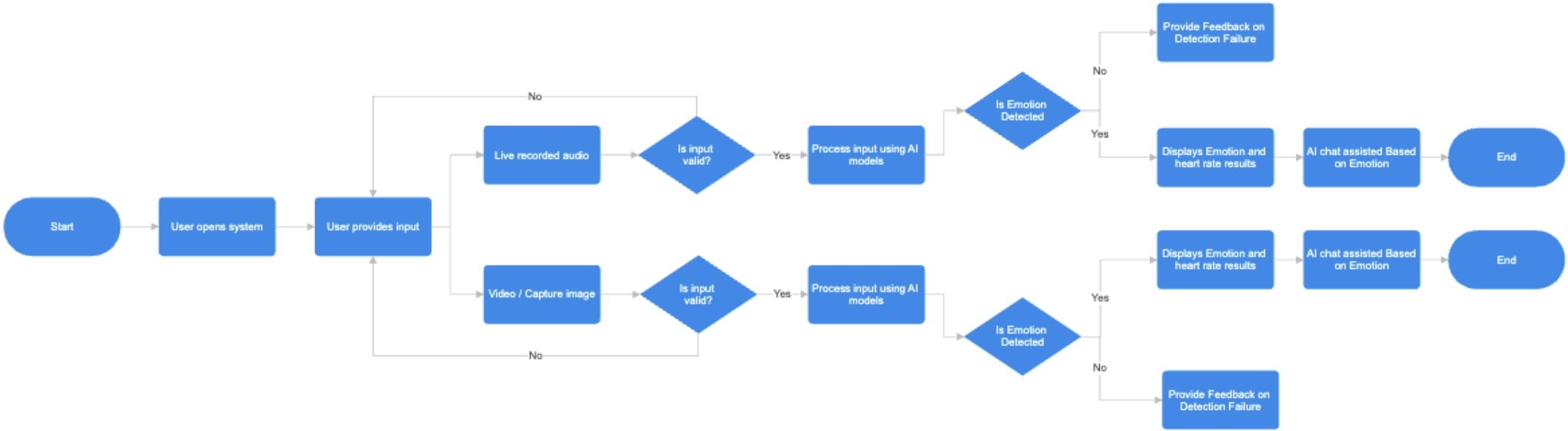

TECHNOLOGY STACK

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Component	Technology Used
Frontend	Streamlit (Python)
Face Detection	Haar Cascade (haarcascade_frontalface_default.xml)
Facial Emotion Recognition	Fine-tuned ResNet model (ResNet50_Transfer_Learning.keras)
Speech-to-Text (STT)	Whisper (initially for English), Sarvam (multilingual)
Text-based Sentiment Analysis	`SamLowe/roberta-base-go_emotions` (Hugging Face)
Text-to-Speech (TTS)	Sarvam (multilingual)
AI Chatbot	ChatGPT
Emotion Detection (Text-based)	Fine-tuned RoBERTa model
Medical and Psychological Chat Model	Llama3-Med42-8B (fine-tuned)

FEASIBILITY AND VIABILITY

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- Utilised Fine-tuned RoBERTa model for fast and accurate emotion detection from voice signals
- Successfully deployed on a cloud platform, allowing real-time emotion analysis and Accessibility from any device.
- Instantly processes audio files and displays results in real-time.
- Supports increased user traffic and integration with APIs like Sarvam for multilingual inputs
- Supports additional emotions, languages, and live-streaming input for future expansion.
- Easily integrates with backend systems if needed and can comply with GDPR-like user Control policies.
- Designed for mental health professionals, educators and customer support teams.
- Provides quick, accessible emotion analysis for well-being monitoring and mental Health support.

IMPACTS AND BENEFITS

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1. Mental Health Support & Early Intervention

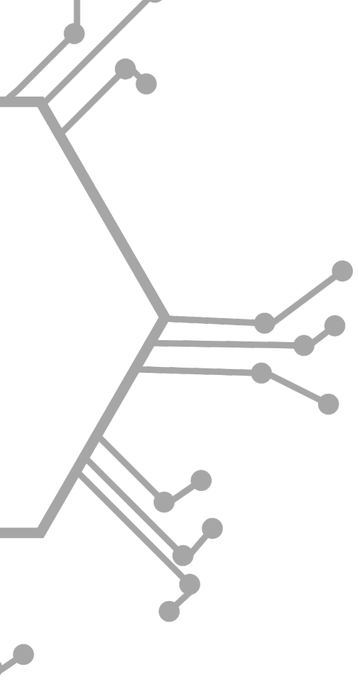
- Monitors emotional well-being using voice cues.
- Enables early detection of distress (e.g., anxiety, depression)
- Could be integrated into **teletherapy platforms** for enhanced patient monitoring

2. AI-Human Interaction

- Improves AI assistants and chatbots by detecting and responding to emotions.
- Enables personalised and empathetic user experiences.

4. Educational Applications

- Gauges student engagement via emotional responses in e-learning platforms.
- Supports adaptive learning for improved outcomes.



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https://github.com/gnanendranaidun/Sentiment-analysis---AI-Verse