HEART-BEAT DETECTOR

GUIDE:

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OBJECTIVE

Objective:

The objective of this system is to guide the user to maintain their fitness , functionality of the heart .

Scope:

- User friendly
- To maintain the fitness
- Remind the user about their physical activities.

ABSTRACT

HeartBeat Buddy is an innovative chatbot that detects heartbeats in real-time using photoplethysmography (PPG) or electrocardiography (ECG) sensors. This conversational AI-powered chatbot provides users with an engaging and interactive experience, monitoring cardiovascular health and offering personalized insights. Users can interact with HeartBeat Buddy through voice or text commands, receiving:

1. Real-time heartbeat detection
2. Heart rate calculation (bpm)
3. Abnormal rhythm detection (arrhythmia)
4. Cardiovascular health analytics
5. Personalized recommendations for improvement

EXISTING SYSTEM

The existing systems demonstrate various approaches to heartbeat detection, but there's still room for improvement and innovation.

1.HealthTap (medical consultation)

2.Ada Health (medical diagnosis)

3.Woebot (mental health)

4.Florence (health and wellness)

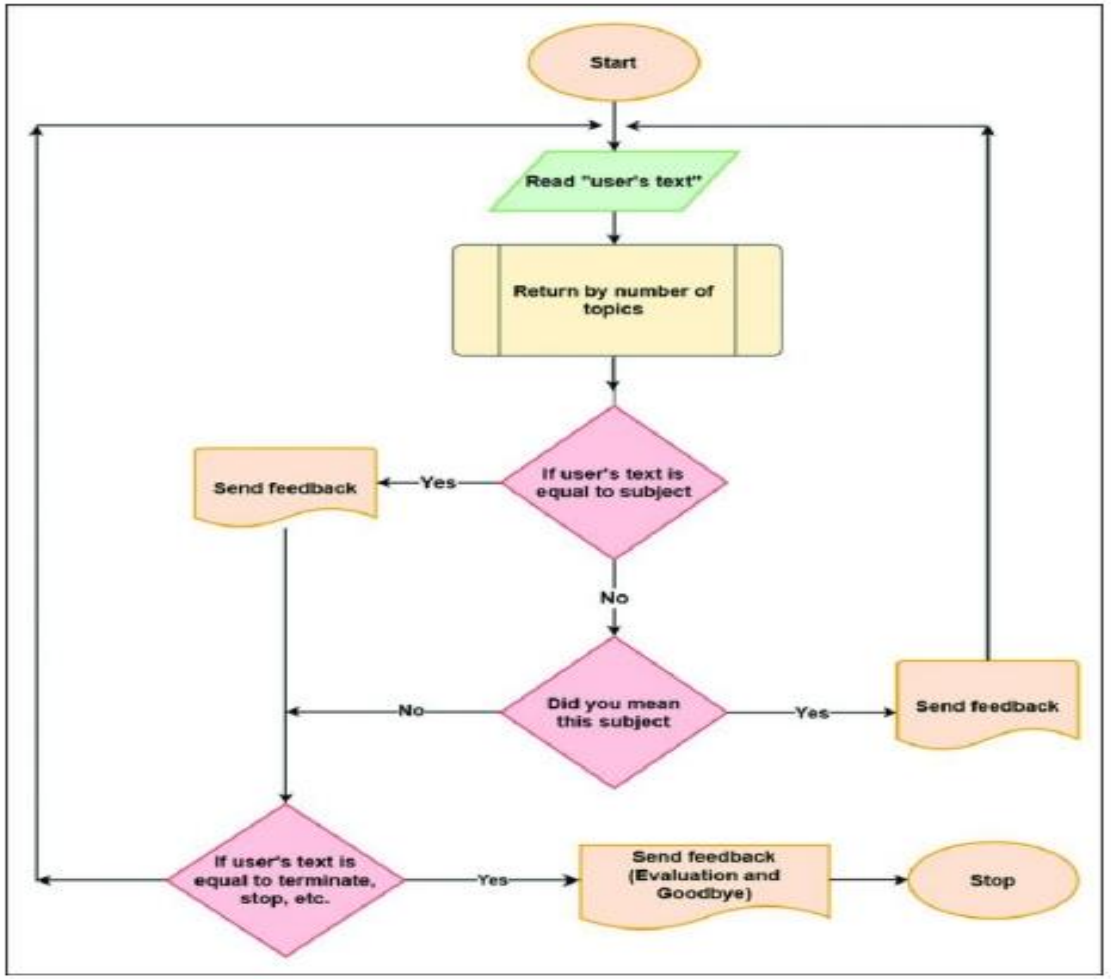
PROPOSED SYSTEM

1. User Interaction:
   - User inputs voice/text commands
   - Chatbot responds with heartbeat data and insights
2. Data Collection:
   - PPG/ECG sensor captures heartbeat data
   - Data transmitted to cloud for processing and storage
3. Data Processing:
   - Machine learning algorithms analyze heartbeat data
   - Insights and recommendations generated
4. Data Visualization:
   - Real-time heartbeat data visualization
   - Historical data analysis and trends

MODULES

- Camera Input and Signal Acquisition Module
- Pre-processing Module
- Remote Photoplethysmography (rPPG) Extraction Module
- Motion Detection and Compensation Module
- Heart Rate Estimation and Signal Processing Module
- Post-processing and Calibration Module
- User Interface (UI) and Feedback Module
- Data Storage and Connectivity Module
- Machine Learning and Adaptive Algorithms Module
- Error Handling and System Calibration Module

FlOWCHART


Start
Read "user's text"
Return by number of topics
If user's text is equal to subject
Yes
Send feedback
No
Did you mean this subject
No
Yes
Send feedback
If user's text is equal to terminate, stop, etc.
Yes
Send feedback (Evaluation and Goodbye)
Stop

SOFTWARE REQUIREMENTS

- **Frontend Development :** HTML, CSS, JavaScript
- **Database :** MongoDB
- **Language :** Python

CONCLUSION

- Heart rate measurement using camera-based techniques presents a promising and non-invasive alternative to traditional contact methods, providing an accessible and convenient solution for real-time heart rate tracking.
- Its potential applications in telemedicine, fitness monitoring, and early health diagnosis make it an appealing tool for both medical and personal use.
- However, for widespread adoption, challenges such as sensitivity to lighting conditions, skin tone variations, and motion artifacts must be addressed.
- Continued advancements in signal processing and computer vision algorithms are essential to improve the accuracy and reliability of this technology.

THANK YOU