SYNOPSIS

AI-Powered Heart Disease Predictor

An AI-based medical application predicts heart disease risk by analyzing clinical data,wearable metrics,and lifestyle patterns. It provides early warnings, personalized recommendations, and actionable insights for both patients and clinicians while ensuring data privacy and regulatory compliance.

The system continuously monitors vital signs, including ECG, heart rate variability, blood pressure, cholesterol, glucose, and BMI, combining this with lifestyle and medical history data. By leveraging machine learning algorithms and predictive analytics, it can identify high-risk patterns early, offer personalized preventive strategies, and provide clinicians with detailed dashboards and reports for informed decision-making.

Additionally, the application continuously learns from aggregated patient data to improve prediction accuracy, enabling proactive interventions and enhanced overall patient care.

Modules:

1. User Registration & Authentication – Allows users to securely create accounts
2. Multi-factor Authentication – Adds extra security layer for account access
3. Role-based Access Control – Restricts access based on user roles
4. Manual Clinical Data Entry – Enables input of patient health data manually
5. Wearable Device Integration – Collects real-time data from connected devices
6. Cardiovascular Risk Prediction – Calculates risk score based on collected data
7. ECG & Signal Processing – Analyzes ECG signals for abnormalities
8. Explainable AI – Provides understandable insights behind predictions
9. Predictive Analytics – Uses historical data for early risk detection
10. Personalized Lifestyle Recommendations – Suggests lifestyle changes
11. Medication & Treatment Tracking – Records medications and adherence

12. Alerts & Notifications – Sends real-time alerts for abnormal readings
13. Telemedicine Integration – Enables virtual consultations with doctors
14. Health Data Visualization Dashboard – Displays interactive health trends
15. Genetic & Family History Analysis – Considers genetic and family risk factors
16. Symptom Logging & Tracking – Tracks user-reported symptoms
17. Goal Setting & Progress Tracking – Helps set and monitor health goals
18. AI-driven Predictive Simulations – Simulates lifestyle changes' impact on risk
19. EHR Integration – Syncs with electronic health records for comprehensive data
20. Community & Support Modules – Provides forums and patient support
21. Mental Health & Stress Monitoring – Tracks stress and sleep patterns
22. Emergency Response Module – Alerts emergency contacts for critical events
23. Data Analytics & Research Portal – Aggregates anonymized data for insights
24. Regulatory Compliance & Audit Logging – Ensures HIPAA/GDPR compliance
25. Multi-language & Accessibility Support – Supports multiple languages and accessibility options

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