

Flexible Wearable Heart Monitor with Wireless Connection



Health & Wellness

Computer/AI/Data Processing and Information Technology

Consumer Electronics

Opportunity

Current ECG monitoring practices offer a basic monitoring level, particularly using single-lead ECG devices that are widely accessible and user-friendly. These devices, often integrated into fitness trackers and smartwatches, offer basic heart-rate monitoring which can be crucial for detecting potential CVD issues. However, their diagnostic capability is limited, and the data can be inaccurate or uninterpretable, particularly for more complex conditions like myocardial infarction or arrhythmias. Multi-lead ECG devices offer more sophisticated and accurate diagnosing capabilities but are rigid, less user-friendly and often require stable performing conditions. Integrating machine-learning-based diagnosis is also promising but has challenges in realization. There is a definite need for a user-friendly, high-accuracy ECG monitoring system that can allow long-term usage and disease diagnosis.

Technology

This invention presents a multi-leads ECG monitoring apparatus, capable of sophisticated, accurate, and continuous monitoring. The apparatus includes a stretchable and flexible main patch that can adhere to the user's skin. The primary circuitry in the main patch collects ECG signals through multiple flexible leads connected to ECG electrode patches located at different body parts. This allows for a high level of data diversity and accurate signal data. The collected ECG signals are processed and transmitted to a computing device, making them ready for machine learning-based diagnosis. This technology appears to bridge the gap between single-lead and multi-lead ECG devices, offering superior convenience to the user while delivering highly accurate ECG monitoring and diagnosis.

Advantages

- High diagnostic accuracy due to multi-lead ECG signal processing.
- User-friendly and comfortable for extended wear due to its stretchability and flexibility.
- Compatible with machine-learning based diagnosis for advanced health insights.
- Real-time data transmission to a computing device allows for immediate action in case of irregularities.

IP Status
Patent filed



Technology Readiness
Level (TRL) ?

7

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Develop
Concept

Proof
Concept

Follow-on

Build Value

- Offers a combination of advantages from both single-lead and multi-lead ECG devices.

Applications

- Wearable healthcare monitoring devices for consumers.
- Real-time health monitoring in clinical and hospital settings.
- Integration into fitness trackers products for healthier lifestyle encouragement.
- Military or astronaut health monitoring in remote or extreme environments.
- Advanced cardiac research, especially on wearable ECG devices' effectiveness.

