

(54) Title of the invention : Smart Wearable Device for Real-Time Biomedical and Environmental Monitoring

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(57) Abstract :
Abstract The invention discloses a smart wearable device configured for real-time monitoring of both biomedical and environmental parameters. Housed in a compact, ergonomically designed form factor, the device integrates a plurality of biomedical sensors—including photoplethysmography (PPG), skin temperature, galvanic skin response (GSR), and inertial measurement sensors—with environmental sensors capable of detecting volatile organic compounds (VOCs), ultraviolet radiation, temperature, humidity, and barometric pressure. A microcontroller unit (MCU) processes and correlates sensor data to generate contextual health insights and trigger alerts when thresholds are exceeded. The system includes wireless communication for data transmission to a companion mobile application, where users can visualize trends and receive personalized recommendations. The invention supports real-time analytics, machine learning-based anomaly detection, and secure data synchronization to cloud or clinical systems. Designed for both personal wellness and professional use, the device offers a comprehensive, portable solution for continuous health and environmental monitoring.

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Application Details

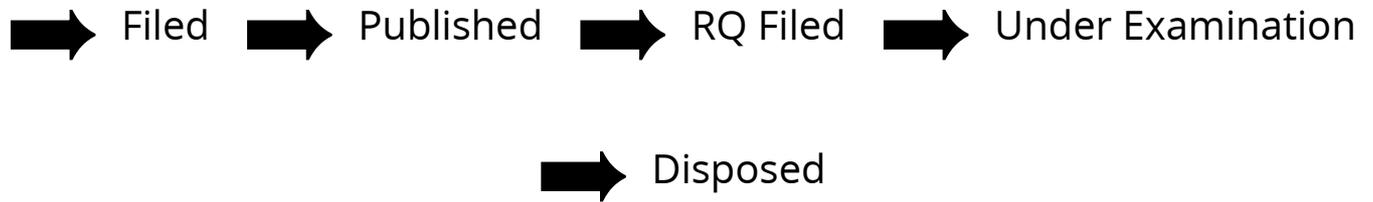
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