

ThoraCare: A non-invasive easy to use early stage heart and lung abnormalities screening device



Applications

Non-invasive, early stage, portable device for advance screening of Heart and Lung using two step detection procedure.

Step 1. Beat-to-beat Heart signal acquisition done by recording ECG (Electrocardiogram), PCG (Phonocardiogram) and Heart-sound auscultation for detection of any abnormal impulse or ECG related abnormalities.

Step 2. Respiratory signal acquisition by recording bronchial and Vesicular breath sounds for detection of any abnormal lung conditions.

Inventor

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Categories of this invention

- ▶ Medical Devices (Diagnostics)
- ▶ Computer Science and IT (Artificial Intelligence - Machine Learning)
- ▶ Electronic circuits (Semiconductors & Integrated circuits)

Problem Addressed

Cardiovascular diseases (CVDs) and Lung diseases are the leading cause of deaths globally with an estimated 17.3 million and 3.2 million annual deaths respectively. CVDs are expected to reach over 23 million by 2030 and COPD has grown at 11.6 % in the last 25 years. India contributes to 20 – 35 % of the global mortality rate for the cardiovascular and pulmonary diseases. To further add to the issues of high mortality rate, a recent study published in British Medical Journal found that the doctor to patient ratio in India is 1:1278 with about 70% of the rural population having minimal access to healthcare professionals.

The number of villages that doesn't have presence of doctors is reported to be around 43.5 %. Physicians are responsible for the treatment, it is often the nurses who are the primary users of such medical devices. In these environments, devices should be designed in a way that they can be used by untrained and low-skilled users.

Technology

- ThoraCare is a portable device that replaces several distinct elements of a traditional ECG and Stethoscope setup.
- A novel AI algorithm which diagnose early stage real-time heart impulse and valvular disease for futuristic predictive analysis.
- The device provides comprehensive heart and lung condition screening report within 30 seconds and this report can also be examined by a low skilled person.
- Model Available – Desktop

Intellectual Property

Copyright Registered

A Novel acoustics based screening device for cardiac abnormalities

Registration No: L-92172/2020

Advantages

- Non-invasive
- Portable and standalone
- User-friendly & can be used by low skill setting areas/personnel
- Point-of-Care Testing
- Self-monitoring healthcare

Potential Value

- 1 The potential market size for respiratory testing is \$ 11 Billion and to have a CAGR of 9% from 2020 – 2028.
- 2 The market size of CVD testing is \$ 3 Billion at present and to grow \$ 4.5 Billion by 2025 with CAGR of 8.9% from 2020 – 2025
- 3 ThoraCare shall make healthcare affordable and available to the masses as this is a portable, easy to use device which will bring preventive screening in mainstream than its pain based counterparts.

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