

# Research Diary

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## **Cardio-Sense**

There is an exponential increment in human mortality rate, caused due to the lack of proper distribution of health care facilities and prognosis centres in the vicinity, prognosis centres or maybe because of delayed diagnosis of a disease. Doctors diagnose several CVDs by analyzing the Electrocardiogram (ECG) signal from the heart. This process of diagnosis of patients for CVDs is in the stage of transformation from traditional hospitalized approach to automated health monitoring remotely by battery-powered mobile devices to avoid premature deaths due to CVDs and also to reduce the burden on Cardiologists which occurred due to excessive patients. There is an utmost necessity to classify even the minute abnormalities of the heartbeat in the current scenario. There is a need for a robust automated method for the early detection of the vital abnormal ECG signals in chronic CVD patients.

Hence, to help mitigate the pandemic situation as well as to address the consequences of CVD in healthcare infrastructure, there is a tremendous necessity of developing a personalized CVD monitoring device powered by battery backup and with a very low form factor to achieve unobtrusiveness that works under the emerging cyber-physical system setup.

These battery-powered devices stand in need for low complex methodologies on-chip like ECG signal feature extraction and ECG signal classification. Accounting this we are presenting our new smart ECG product "Cardio-Sense".



Cardio-Sense is our smartest ECG technology! It can detect ECG changes suggestive of cardiovascular disease in real-time. It is a personal ECG heart monitor which provides its users with analytic results for physicians that allows them to supervise remotely their patient's heart rate variability (HRV) via this device. This pocket-sized ECG device lets clinicians widen their practices and enables effective diagnosis of cardiac conditions daily.

Cardio-Sense is your one-stop solution for all your cardiac needs.

### **This tiny device works in: -**

- Ambulance
- Hospital (bed-side)
- Home-care (user-friendly) - Holter

### **What we offer:**

**1) Complete Data:** Cardio-Sense constantly captures 12/3 Lead data and stores in the cloud. Only the specified user/doctors have secure access of ECG recordings on any device, accessible anytime, anywhere. It can easily switchable between Holter and standard 12 lead ECG machine. Also, the user can easily interact with this device using a Mobile App that we offer.

**2) Complete Analysis:** Cardio-Sense's proprietary algorithms run full statistical analyses based on the complete data set. It includes boundary detection, all fiducial points, intervals extractions and HRV. Apart from these, Cardio-Sense's predictive analysis, which will evaluate the patient's health condition regularly will be done based on the ECG recordings that present in the cloud. All these analyses will be done in the cloud in a secure environment.

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**3) Complete Reporting:** Cardio-Sense is a unique monitoring type technology that gives the quantitative analysis of ECG signal and provides easy-to-read graphical charts and full data sets to create a complete picture of the patient's heart rhythm. All these reporting will be done in a Mobile App that we offer. Doctors can monitor the patients' health condition via the Mobile App that we offer. Also, Cardio-Sense's predictive analysis and reporting will make the doctor's job easier to assess the patients' health condition.

### Salient features of Cardio-Sense:

- Small pocket-sized, portable and user friendly
- No of Leads: 12 / 3 reconfigurable
- Reconfigurable recording time
- Leadoff indication
- Battery operated: Rechargeable battery and raw power supply
- Wirelessly connected to a smartphone (via Wi-Fi/Bluetooth)
- Analytics part running in cloud and report generation
- Mobile App to configure the device
- Memory card access to store the data locally

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**Dr. Amit Acharyya**  
Associate Professor,  
Department of Electrical Engineering