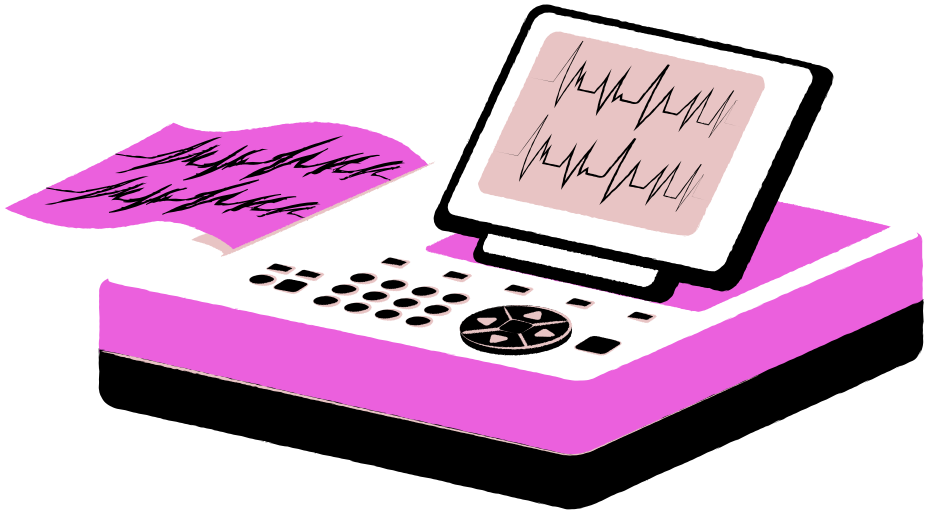
AI-Enabled Image Processing:

Screening Cardiovascular diseases using Electrocardiogram (ECG) traces



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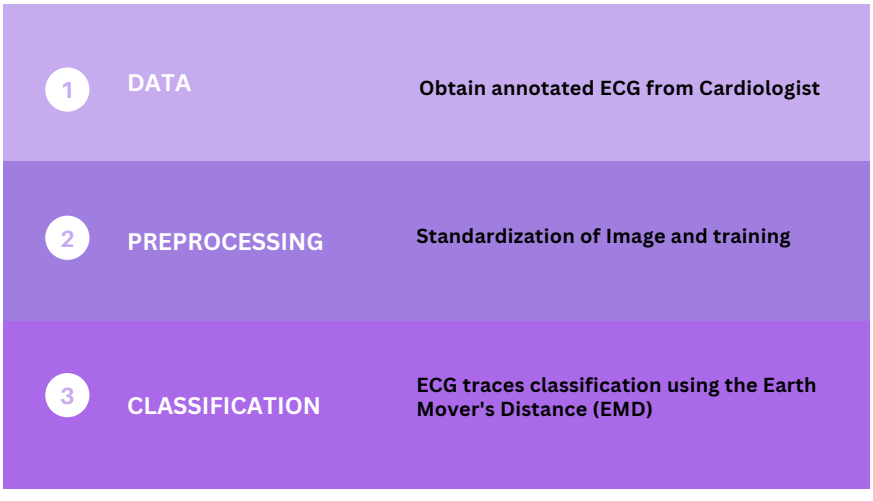
The epitome inception of locating and detecting a cardiovascular abnormality—a serious emerging and evolving issue that requires attention—is the Electrocardiogram (ECG). An ECG visually represents the heart's electrical activity over time. Manually processing ECG data alone is a tedious task. AI-enabled ECG data interpretation, although promising, is fraught with ethical and data protection concerns that foresee further complications, such as a lack of databases available for the verification and validation of its conclusions.

The creation of 3D computer simulations fueled by AI has much potential as a strong tool to tackle the aforementioned issues. It may be able to understand ECG signals using ECG-dependent simulations, which would make it simpler to produce artificial training data to assist cardiovascular disease grading from ECG.

What can we turn to? **ECG TAGGING**

ECG TAGGING provides a robust automated segregation of the EGC traces to tag them based on their traces into either normal sinus rhythms (NSRs) or a Cardiovascular disorder, aiming for rapid and accurate Cardiovascular disease monitoring.

The Stages of ECG TAGGING:



SCALING: Normal or Diseased?

The ECG scale ranges from 0 to n, with 0 signifying an exact match that results in the output of matched images for cardiac anomalies including arrhythmia, bradycardia, tachycardia, or any other. Even after comparing and matching all of the ECG digital images that were previously saved in the library data sets, if the EMD result is not 0, it indicates that there was no exact match. The software then locates the EMD value that is closest to 0 and compares it to the output indicating the image category from the library. If the EMD value is not zero, the searching and sorting process locates the closest EMD value that is greater than zero and displays the ECG category in accordance with the EMD value determined via analysis.

This Whitepaper is an extraction from the paper "Earth Mover's Distance-Based Automated Disease Tagging of Indian ECGs".

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