

Problem Formulation:

The problem formulation of Electrocardiogram (ECG) is to record and analyze the electrical activity of the heart to diagnose and monitor various cardiac conditions, such as arrhythmias, ischemia, and myocardial infarction. The ECG signal is obtained by placing electrodes on the skin surface of the chest, arms, and legs, which detect the electrical impulses generated by the heart muscle during each heartbeat. The main challenge in ECG analysis is to accurately identify and interpret the different waveforms and intervals in the signal, which reflect the timing and strength of various cardiac events. This requires advanced signal processing techniques, such as filtering, feature extraction, classification, and visualization, as well as clinical expertise to interpret the results in a meaningful way for diagnosis and treatment planning.

involves developing algorithms that can accurately classify ECG signals into different categories such as normal, abnormal, or indicative of a specific heart condition. This involves preprocessing the ECG signal to remove noise and artifacts, extracting relevant features from the signal, and training a machine learning model to classify the signal based on these features. heart conditions from ECG signals with high sensitivity and specificity.