Project Initialization and Planning Phase

Date	19 June 2025
Project Name	Classification of Arrhythmia by Using Deep Learning with 2-D ECG Spectral Image
Maximum Marks	3 Marks

Define Problem Statements:

The current process of arrhythmia diagnosis using ECG signals presents significant challenges for both healthcare providers and patients, impacting the speed and reliability of clinical decision-making. Physicians, especially those working in busy or resource-limited settings, are required to manually review ECG signals to identify arrhythmias, which is time-consuming and susceptible to human error. This manual approach can delay timely intervention for patients experiencing abnormal heart rhythms, potentially compromising patient outcomes and increasing the risk of complications. Because accurate and rapid detection of arrhythmias is critical for effective treatment, there is a pressing need for an automated, robust, and scalable solution that leverages deep learning to classify arrhythmias from ECG data. The absence of such a system makes healthcare providers feel overburdened and patients feel anxious about delayed or missed diagnoses.

Problem Statement (PS)	I am	I'm trying to	But	Because	Which makes me feel
PS-1	**Healthcare Provider**	Detect arrhythmia automatically from ECG data	Manual review is slow and error-prone	Timely and accurate diagnosis is critical for patient outcomes	Overburdened and concerned about delayed/missed diagnoses
PS-2	**Patient**	Get quick and accurate diagnosis of arrhythmia	Manual review is slow and error-prone	Early detection is crucial for health and treatment	Anxious and worried about delayed or incorrect diagnosis