problem formulation

Problem:

The problem is to build a machine learning model that can accurately classify heart murmurs as either absent or present based on a given heart sound recording.

Inputs:

The input to our model is a heart sound recording, which may contain various noises and artifacts. The recording may be of varying lengths, and may contain one or more heart cycles.

Outputs:

The output of our model is a binary classification, indicating whether a heart murmur is present or absent in the given heart sound recording.

Training data:

We will train our model using a dataset of heart sound recordings that have been labeled by experts as either containing a heart murmur or not. The dataset should be sufficiently large and diverse to ensure that the model can learn the relevant features that distinguish between the two classes.

Evaluation:

We will evaluate the performance of our model using various metrics, such as accuracy, precision, recall, and F1 score, on a held-out test set of heart sound recordings. We will also generate a confusion matrix to visualize the model's performance and identify any potential areas for improvement.

Objective:

Our objective is to build a machine learning model that can accurately classify heart murmurs as either absent or present with a high degree of accuracy. This could be useful in a clinical setting where doctors need to quickly diagnose patients with heart murmurs and begin treatment.