PEAS (Performance measure, Environment, Actuators, Sensors)

Performance measure:

The performance measure of our machine learning model is its accuracy in correctly classifying heart sound recordings as containing a heart murmur or not. Specifically, we will use metrics such as precision, recall, F1 score, and accuracy to evaluate the performance of our model on a held-out test set of heart sound recordings.

Environment:

The environment for our machine learning model is the clinical setting in which doctors need to diagnose patients with heart murmurs. The input to our model is a heart sound recording, which may contain various noises and artifacts. The output is a binary classification indicating whether a heart murmur is present or absent in the recording.

Actuators:

The actuators for our machine learning model are the layers of the deep neural network that process the input heart sound recording and generate a binary classification output indicating the presence or absence of a heart murmur.

Sensors:

The sensors for our machine learning model are the input heart sound recordings, which are processed by the deep neural network to generate a binary classification output indicating the presence or absence of a heart murmur. The input heart sound recordings may be of varying lengths, and may contain one or more heart cycles.

Overall, our machine learning model is designed to be an automated agent that can assist doctors in diagnosing patients with heart murmurs by accurately classifying heart sound recordings as either containing a heart murmur or not. The performance of the model will be evaluated using various metrics, and its accuracy will be the primary measure of its effectiveness.

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.

**Taxi driver agent:**

* O ( partial )

Partial observable

* D (deterministic )

Stochastic

* E ( episodic )

Sequential

* S ( dynamic )

Dynamic

* A ( Multi-agent )

Multi-agent