MLDS Project Proposal

Heart Failure Prediction

Mentors:

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Possible Guidance: Cardiology Department, Beilinson Hospital

Background

Heart failure is a common cardiovascular condition that affects millions of people worldwide. It occurs when the heart is unable to pump enough blood to meet the body's demands, leading to a variety of symptoms such as shortness of breath, fatigue, and swelling in the legs and ankles. Heart failure can be caused by a variety of factors, including coronary artery disease, high blood pressure, and heart valve disease.

Diagnosing heart failure typically involves a combination of physical exams, medical history, and various diagnostic tests such as electrocardiograms (ECGs), echocardiograms, and blood tests. Accurately predicting the risk of heart failure can be challenging, and there is a need for more accurate tools to help clinicians identify patients who are at high risk of developing this condition.

The dataset used for this project is a large and comprehensive dataset consisting of 918 observations, which is created by combining 5 different heart disease datasets. It contains a wide range of clinical variables that have been collected from patients with heart disease, including age, sex, chest pain type, resting blood pressure, serum cholesterol levels, fasting blood sugar levels, electrocardiogram results, maximum heart rate achieved, exercise-induced angina, old peak ST depression, the slope of the peak exercise ST segment, and output class indicating the presence or absence of heart disease.

Objectives

The objective of this project is to develop an artificial intelligence (AI) model that can accurately predict the risk of heart failure in patients using clinical data. This AI model could help clinicians

identify high-risk patients and develop more effective treatment plans to prevent or manage this condition.

Resources

The students will have access to a secured cloud environment (as well as to cloud computing resources) for model training.

Data Link

https://www.kaggle.com/datasets/fedesoriano/heart-failure-prediction