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# Heart Disease Prediction Using Enhanced Whale Optimization Algorithm Based Feature Selection With Machine Learning Techniques

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**Abstract:**
Cardiovascular disease, a type of heart disease, is the leading cause of death worldwide. Early detection of heart disease can help get proper treatment and save lives. Machine Learning (ML) models are becoming increasingly popular for use in a wide range of clinical diagnostic tasks. Making accurate predictions is essential for such tasks because the results can have a big impact on patients and reduce mortality. ML algorithms for efficient identification of heart disease plays an important role in healthcare, especially in cardiology. Initially, the Framingham heart disease dataset was collected from a Kaggle website for analyzing heart disease prediction. The preprocessing stage is applied to manage and remove the inappropriate data from the dataset. Then, an Enhance Whale Optimization Algorithm - based feature selection technique applied to the dataset to select the most relevant features (best-reduced feature divisions) for the detection of heart disease. Finally, machine learning classification algorithms, both conventional and hybrid methods, were implemented on the reduced feature dataset. The trained classifiers were evaluated in terms of accuracy, precision, recall and F1-score.

## ☰ Contents

### I. Introduction

Cardiovascular disease is the leading cause of death worldwide today. According to the recent statistics World Health Organization (WHO), heart disease is the most dangerous disease. Billions of people worldwide suffer from heart disease, and 12 million people die from these diseases every year. Many people experience symptoms that were previously recognized or overlooked before death. Heart disease has several major causes. Some of these can be high cholesterol levels, blood pressure and smoking, alcohol consumption, high sugar and physical inactivity, and hypertensive heart [1].
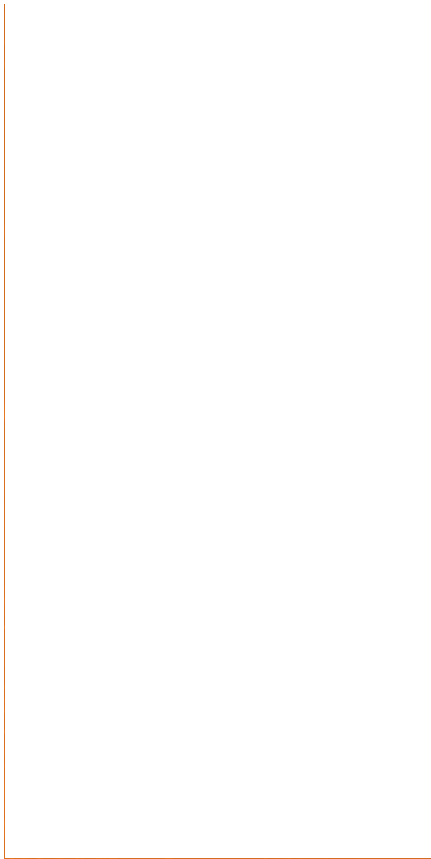
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