Heart Attack Prediction

This presentation outlines a machine learning model designed to predict the risk of heart attacks. The model leverages historical patient data and advanced algorithms to identify individuals at risk.

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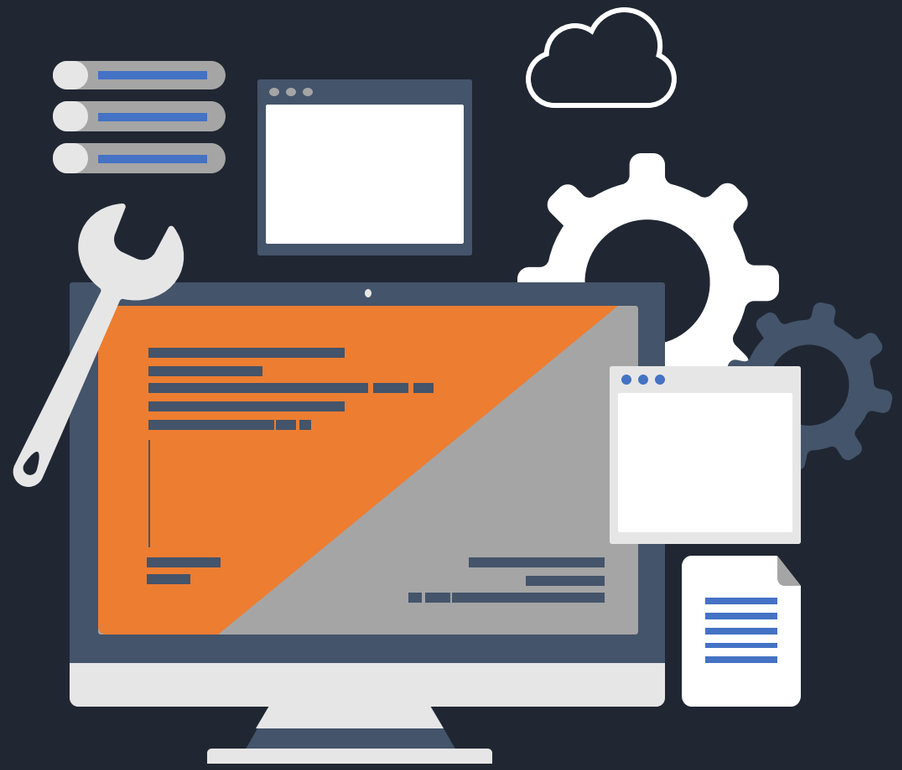
Introduction

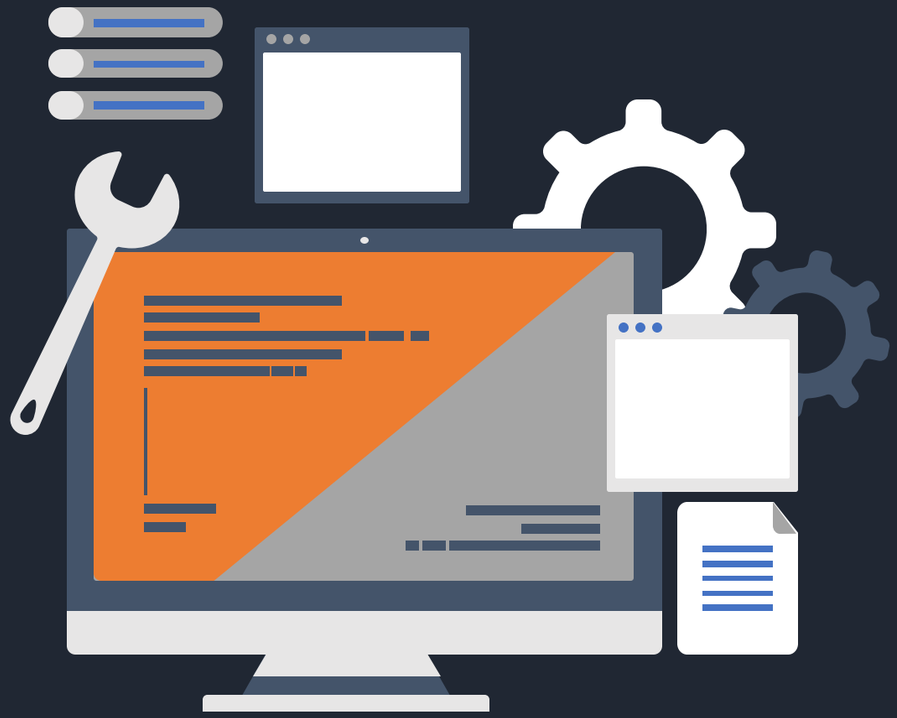


Introduction :

The goal of this project is to develop a machine learning model that can predict the risk of a heart attack in individuals using historical patient data. The data typically includes features such as age, gender, cholesterol levels, blood pressure, and other relevant medical conditions (e.g., diabetes, smoking habits)

Machine learning (ML) has emerged as a powerful tool to enhance heart attack prediction by analyzing vast amounts of medical data and identifying hidden patterns that may go unnoticed by traditional techniques. ML algorithms can process patient data such as age, cholesterol levels, blood pressure, and medical history, and use this information to predict the likelihood of a heart attack

Problem Statement



Problem Statement

Heart attacks are a leading cause of death worldwide. Early detection and intervention are crucial for improving patient outcomes.

1 Accurate Prediction

The goal is to develop a model that can accurately predict the likelihood of a heart attack.

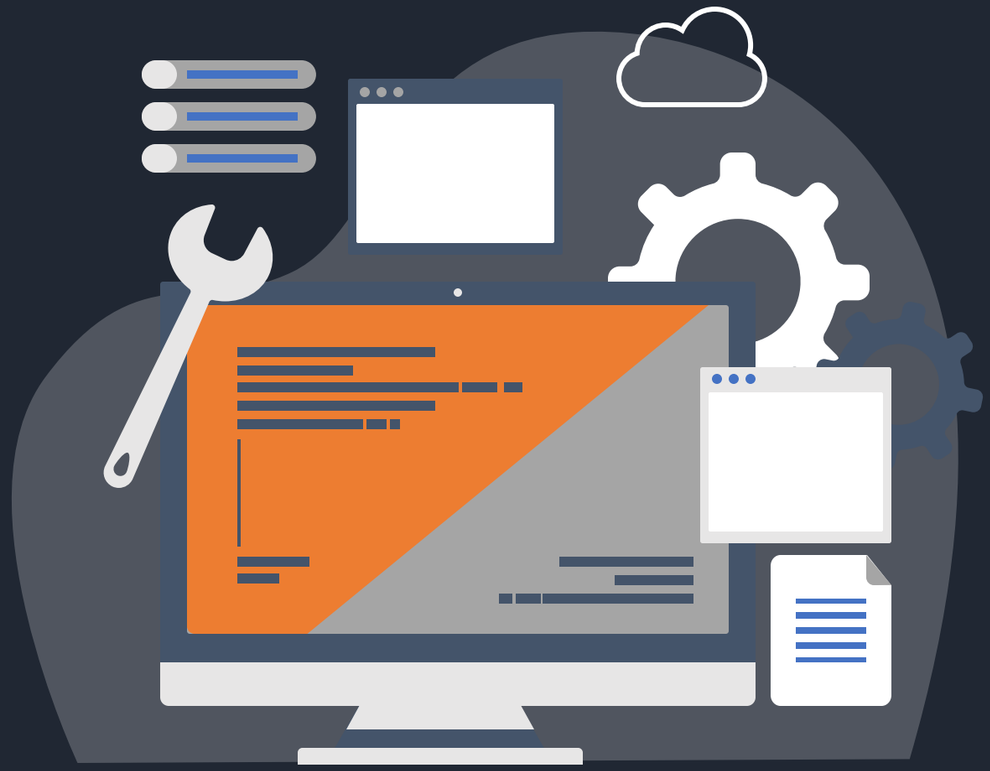
2 Early Intervention

The model aims to enable timely interventions and potentially save lives.

3 Improved Healthcare

This project aims to contribute to improved healthcare by empowering medical professionals with data-driven insights.

Models



Models

A supervised machine learning model, a Random Forest classifier, Logistic Regression, EXtreme Gradient Boost and Support Vector Machine (SVM).

Random Forest

Accuracy 88.52

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EXtreme Gradient Boost

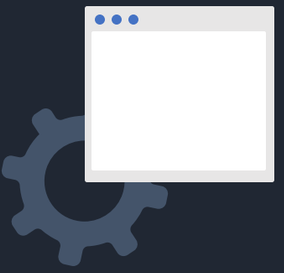
Accuracy 81.96

Logistic Regression

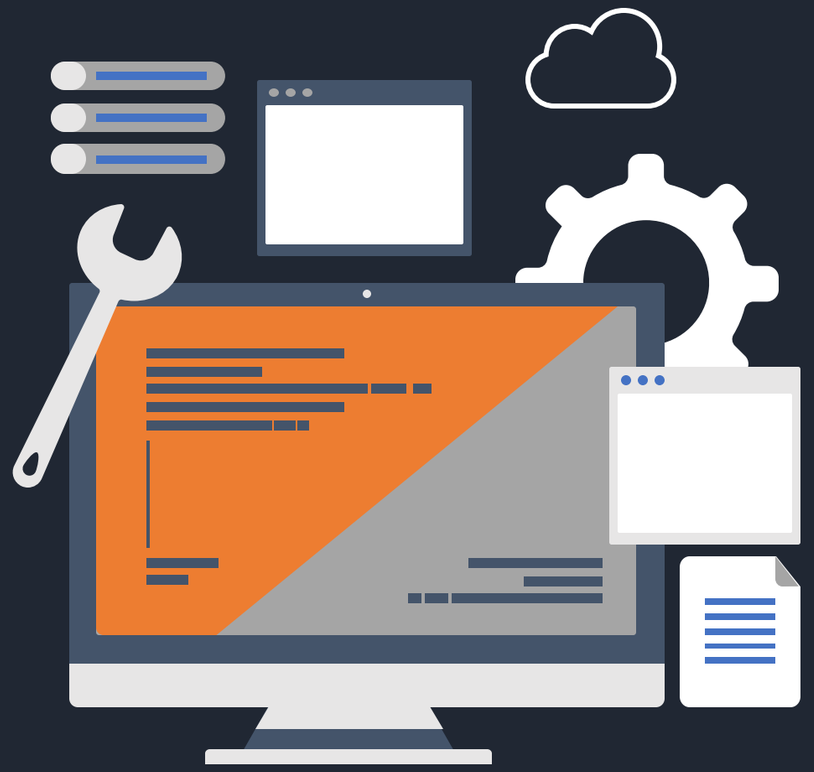
Accuracy 86.88

Support Vector Machine (SVM)

Accuracy 85.24



Methodology



Methodology

The chosen methodology involves a combination of machine learning techniques and data analysis.

1. **Data Acquisition**

   Gathering relevant patient data from various sources, ensuring data quality and completeness.

2. **Data Preprocessing**

   Cleaning, transforming, and preparing the data for model training, addressing missing values and inconsistencies.

3. **Model Selection**

   Choosing the most appropriate machine learning algorithm based on the data characteristics and prediction goals.

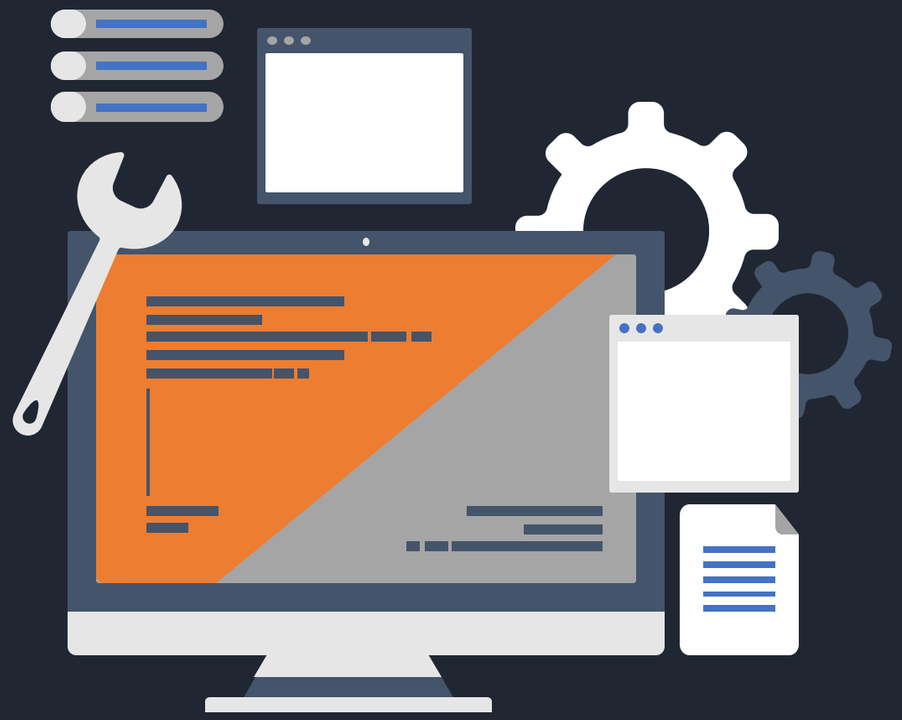
4. **Model Training**

   Training the selected model on the prepared data, fine-tuning parameters for optimal performance.

5. **Model Evaluation**

   Evaluating the model's accuracy, precision, and other performance metrics to ensure its reliability.

Deployment, Result & Impact



Development

The model was developed using Python, leveraging popular libraries like scikit-learn for machine learning algorithms and pandas for data manipulation.

1

Data Preparation

Loading, cleaning, and transforming the collected data into a format suitable for model training.

2

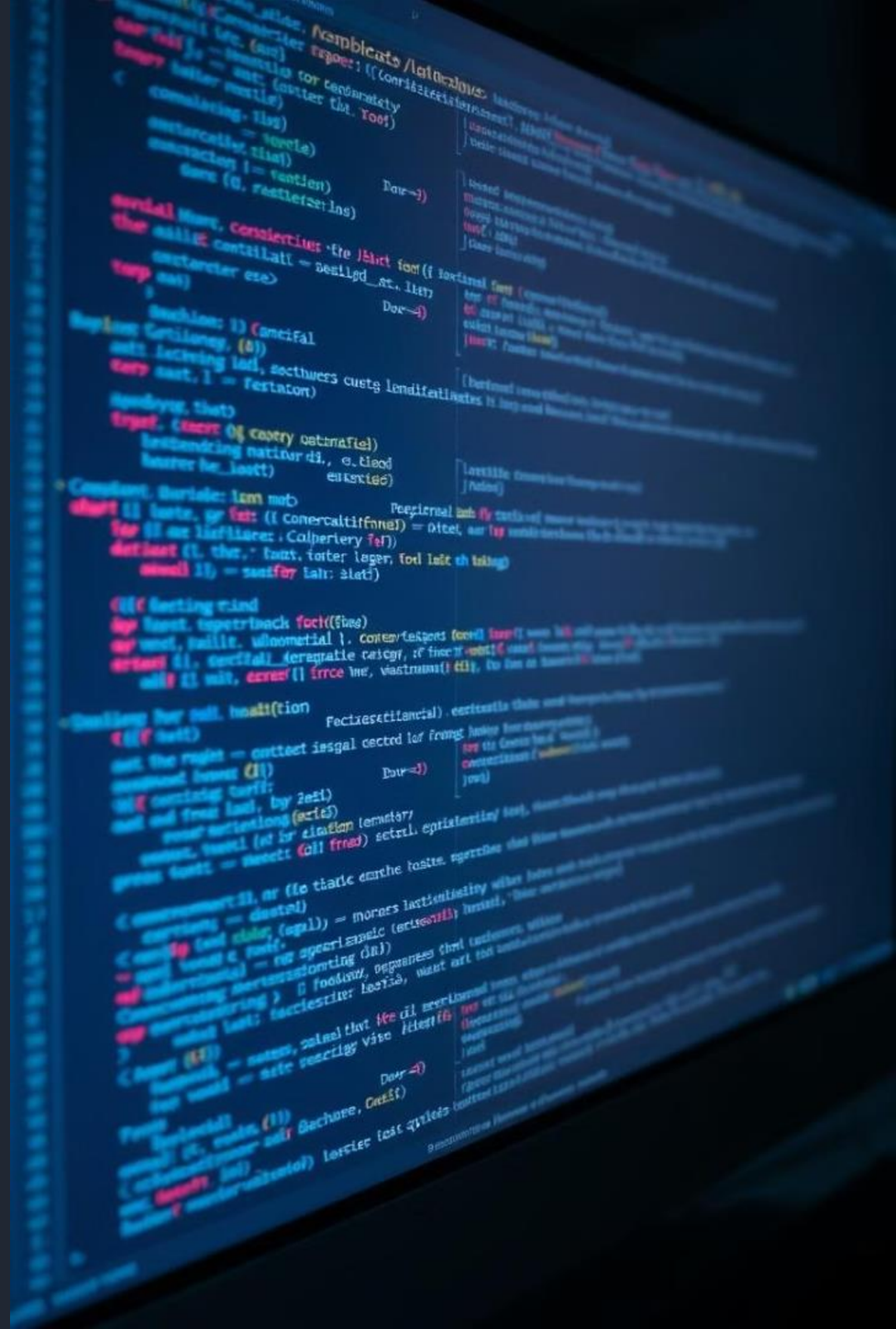
Model Training

Training the Random Forest classifier on the prepared dataset, adjusting hyperparameters for optimal performance.

3

Model EValuation

Evaluating the trained model on a separate validation dataset to assess its generalization performance.



Result and Impact

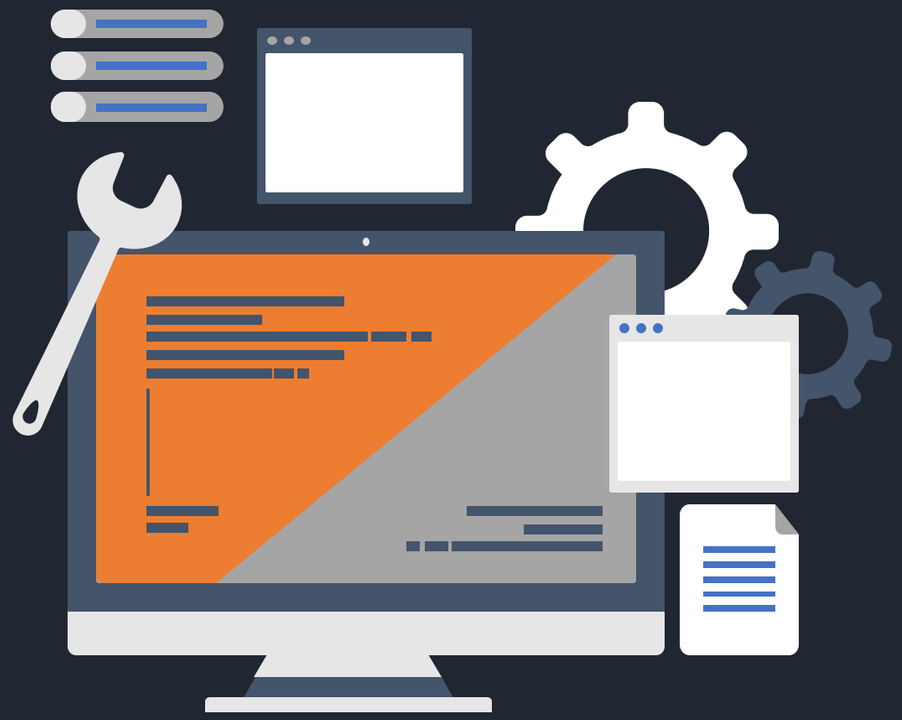
High Accuracy

The model accurately predicted heart attacks in a significant portion of cases, providing valuable insights for medical professionals.

Early detection and timely intervention can lead to improved patient outcomes and potentially save lives.

The model provides data-driven insights to help medical professionals make informed decisions regarding patient care.

Future Direction



Future Directions

Future work will focus on expanding the dataset, incorporating additional features, and exploring more advanced machine learning techniques.

1 Feature Engineering

Exploring new features and combinations of existing features to potentially improve the model's predictive power.

2 Model Enhancements

Investigating advanced machine learning techniques, such as deep learning, to potentially achieve even higher accuracy.