Python Project

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Purpose:

It is a Streamlit-based web interface designed to present the trained machine learning model to the user and to predict heart attack risk.

We developed a user interface that can predict heart attack risk using a machine learning model that we previously trained and recorded. We created the interface with the Streamlit library and designed it to receive numerical values such as age, blood pressure, cholesterol, as well as categorical information such as gender, chest pain type, and ECG results from the user. The entered data is first converted to a suitable format and scaled, then the model makes predictions. According to the result, the user is given feedback as "High risk" or "Low risk" and a pie chart visualization is provided to support this. Thus, the user can evaluate their own heart attack risk through an easy-to-use interface.
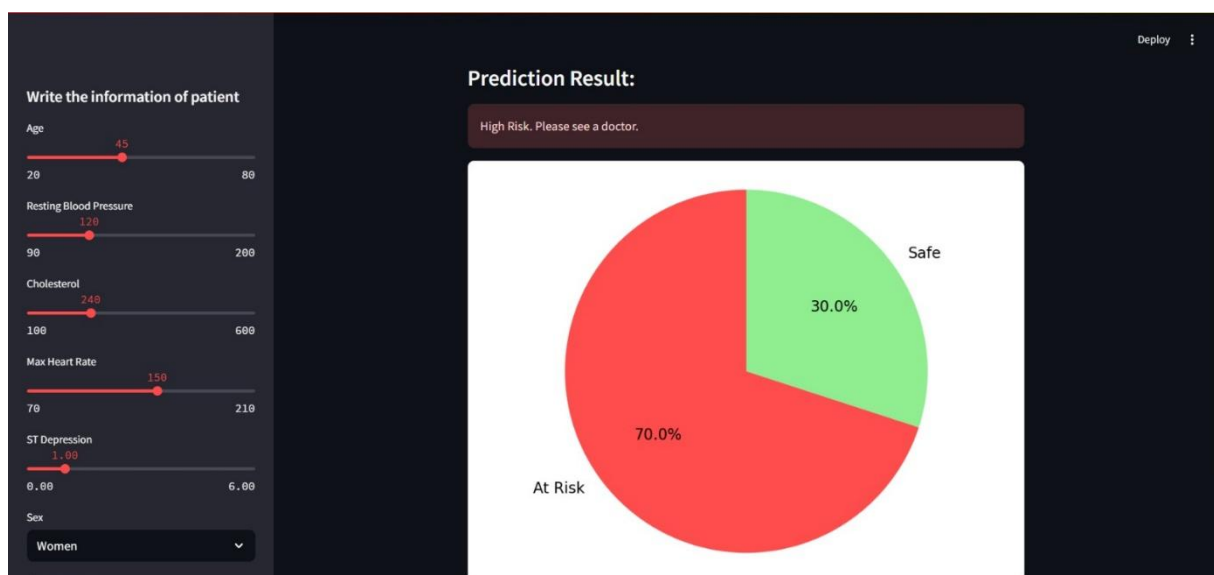
Heart Attack Data Set

The dataset we used includes various medical information related to heart attack risk. In addition to numerical variables such as age, gender, cholesterol, blood pressure, heart rate, the dataset also includes categorical features such as chest pain type, ECG result, and exercise-induced angina. All of these variables provide information that will help determine whether individuals have heart disease.

When we examined the data, we saw that there was no missing data and that there were different numbers of unique values in the columns. Thanks to correlation analyses, we noticed the relationship of variables such as maximum heart rate (thalach) and ST depression (oldpeak) with the target class. Apart from this, there were some outliers in the data, and since we thought that these values could negatively affect the accuracy of the model, we applied the IQR method to clean it.

This dataset was the main source for training and testing the models throughout the project. It also allowed us to practice understanding, visualizing, and preparing the data correctly before modeling. As a result, this dataset was quite suitable and instructive for a machine learning project that could predict the risk of heart attack.

Prediction Result:

It shows the prediction made according to the patient information entered into the model. In the visual, when the data of a 45-year-old female patient was analyzed, the model determined that the person's risk of having a heart attack was high and gave the warning "High Risk. Please see a doctor." In addition, this situation was graphically visualized with a pie chart as 70% "At

Risk" and 30% "Safe". This result emphasizes that the model can effectively predict risk based on personal health data and that early precautions should be taken.