Heart Failure Prediction (KNN)

Using KNN to predict whether or not a patient has heart failure

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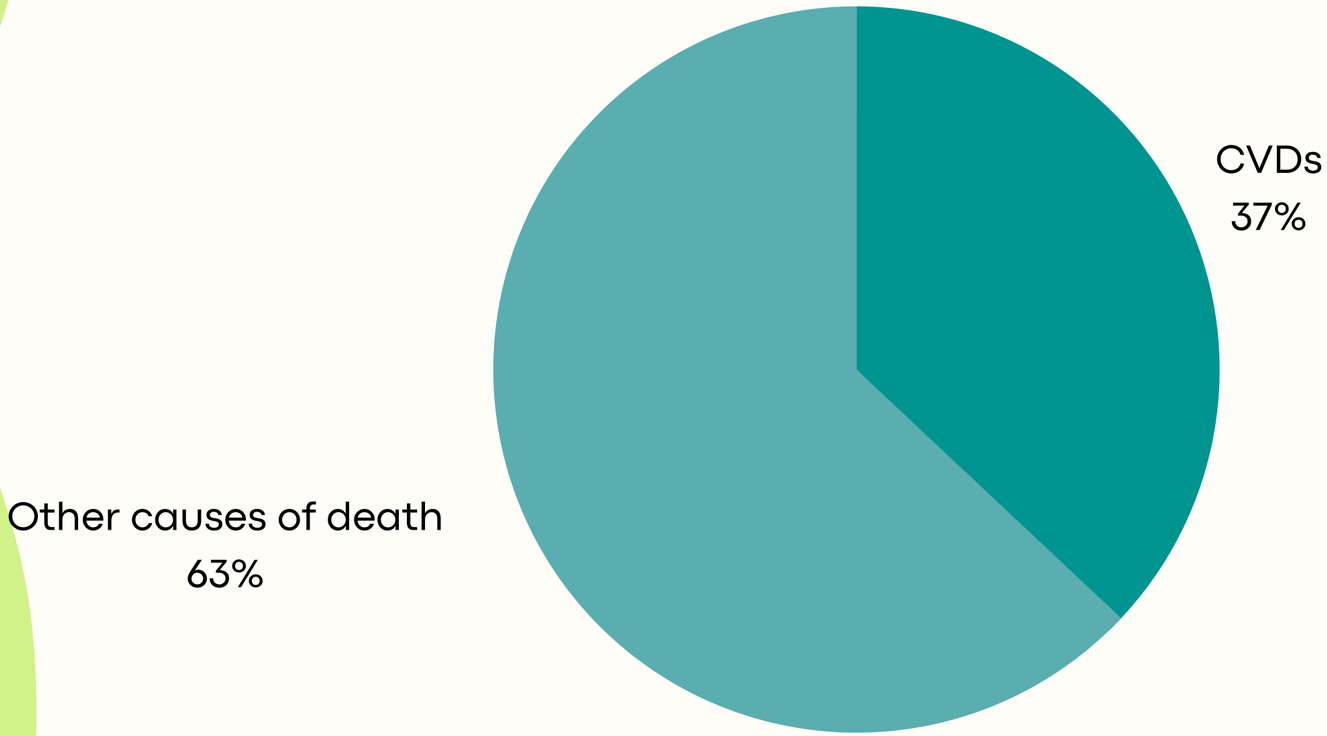
Cardiovascular Diseases (CVD)

The leading cause of death in Indonesia

Modifiable risk factors (high blood pressure, high cholesterol, diabetes, obesity, and tobacco) are the main contributing factors of cardiovascular disease in Indonesia.



Examples of CVDs

- **Stroke**
- **Coronary heart disease**
- **Heart attack**
- **Heart failure**
- **Valve disease**

Our Dataset

Dataset related to CVD/Heart Disease

Our dataset is taken from:
https://www.kaggle.com/datasets/fedesoriano/heart-failure-prediction

The dataset contains 12 columns (age, sex, chest pain type, resting blood pressure, etc.) and 918 rows.

KDD Process

Knowledge Discovery Process

The KDD Process consists of 5 steps which are:

- Data Collection Method
- Data Preprocessing
- Data Mining
- Post Processing
- Pattern Information Knowledge

Data Collection Method

The dataset imported is named Heart Failure Prediction Dataset by fedesoriano from Kaggle. The dataset consists of 12 columns and 918 rows.

Data Preprocessing

Handling categorical data (cat code)
Removing attributes with low correlation
Applying StandardScaler to continuous data

Data Mining

Using 70% of the dataset as training data and 30% of the dataset as testing data. Set the random_state value to 42. Using KNeighborsClassifier from sklearn.neighbors to build the model. Finding the best K value trhough looping and apply it to the model.

Post Processing

After we find out the best value for K, we will use it when we are creating our model.

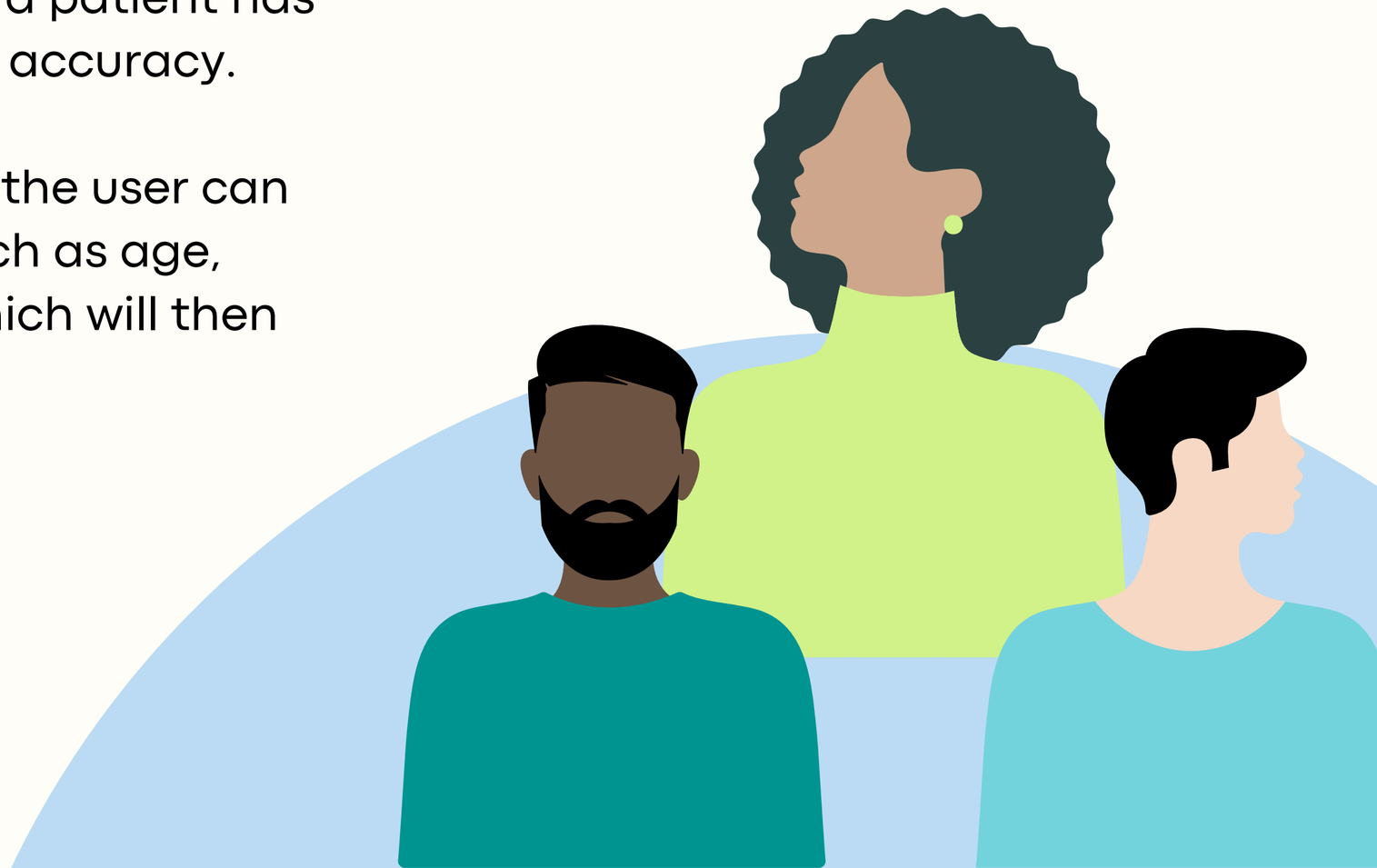
Pattern Information Knowledge

After the model has predicted the result of the testing data, we can evaluate its performance from its confusion matrix and classification report.

Result

Through the data mining process, we have created a model to predict whether a patient has a heart disease using KNN with 86% accuracy.

We use the model to our app where the user can input the value of the attributes (such as age, age, resting blood pressure, etc.) which will then be predicted by the model.



Application Demo

It is time to show our application in predicting Heart Disease!

Thankyou!

Any Questions or Suggestions?