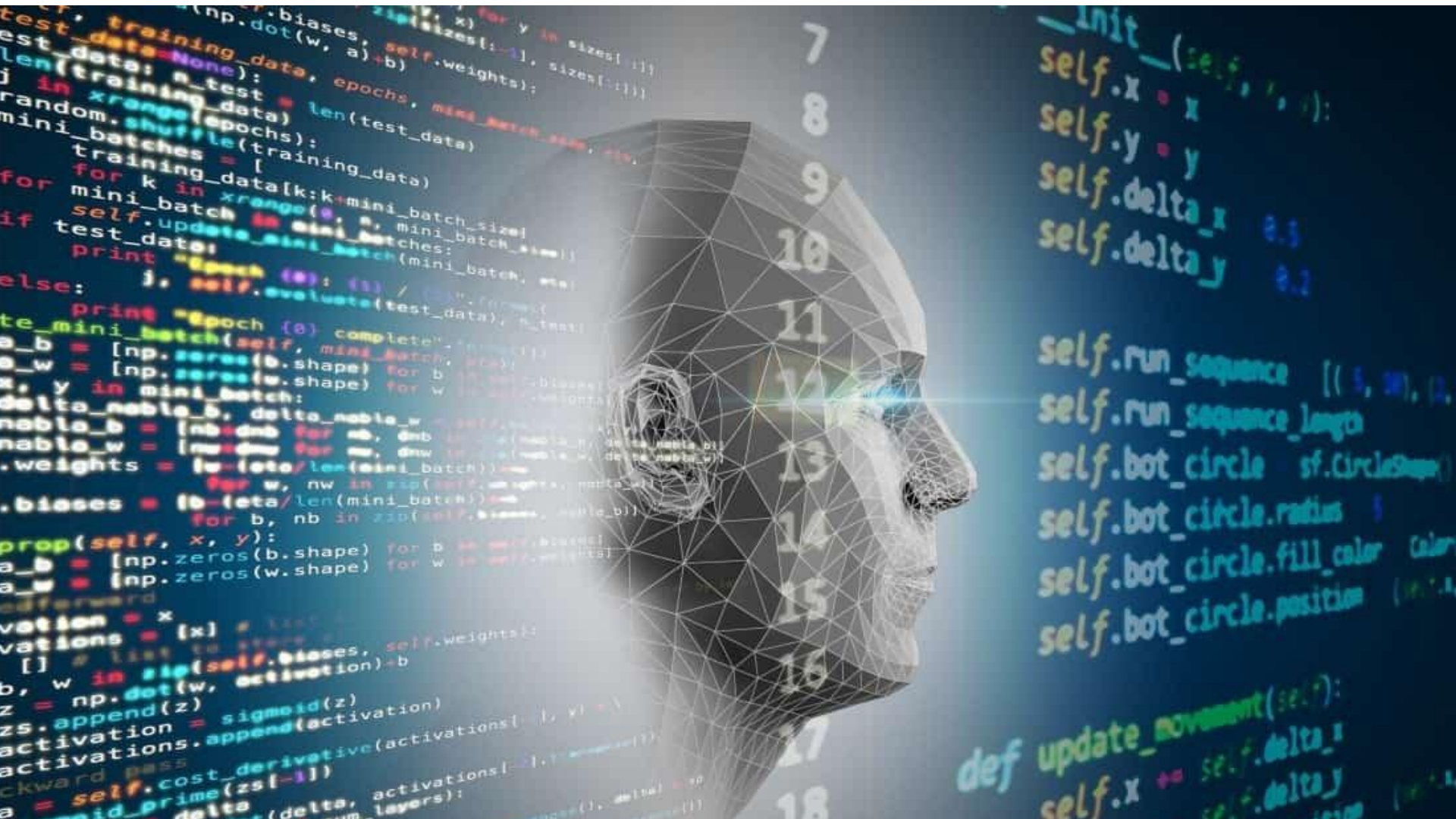


Machine Learning Integration

By Wine Enthusiasts

Joby Augustine
Rudy Duvnjak
Prince Emenalo
Alex Lorin

Joby : “Hey guys, I heard drinking wine is good for your heart”

Prince: “ Not sure about that. Depends on the quality of the wine”

Alex: “ C’mon, who has the time to check the quality of the wine? Red or white, I am good”

Rudy: “ There are many factors which contribute to the quality of wine. May be in our next group meeting, we can see if we can apply ML strategies to find it :) ”

Objectives:

1) Gather information on different kind of wines

2) Find a model that can be used to predict quality of wine

3) Create visual website and deploy it using Heroku

Data Source

https://archive.ics.uci.edu/ml/datasets/wine+quality

The data source consists of two data files for :

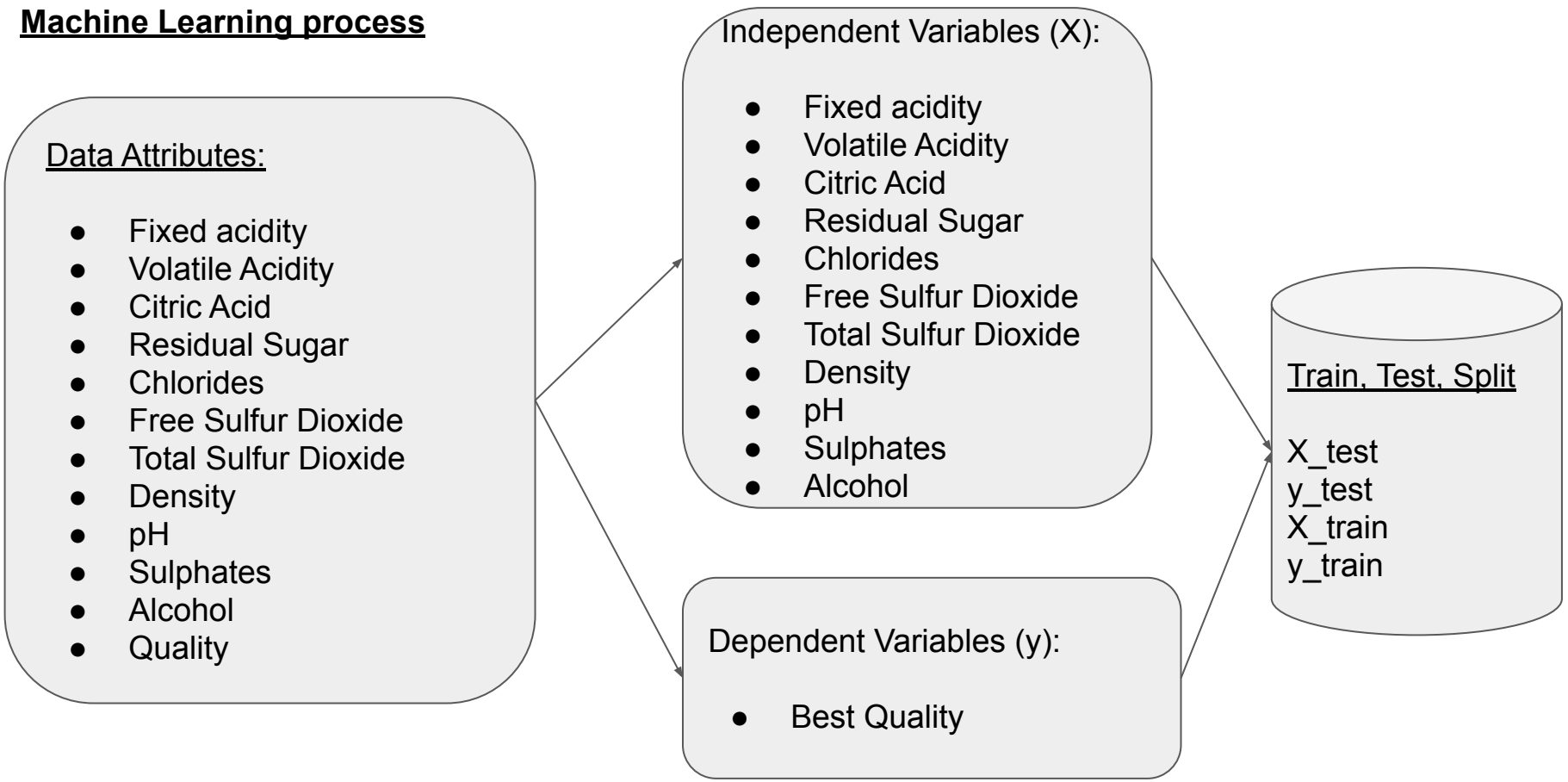
1) Red Wine
2) White Wine

Each wine type (Red and White) has 11 features/attributes contributing to the quality of the wine.

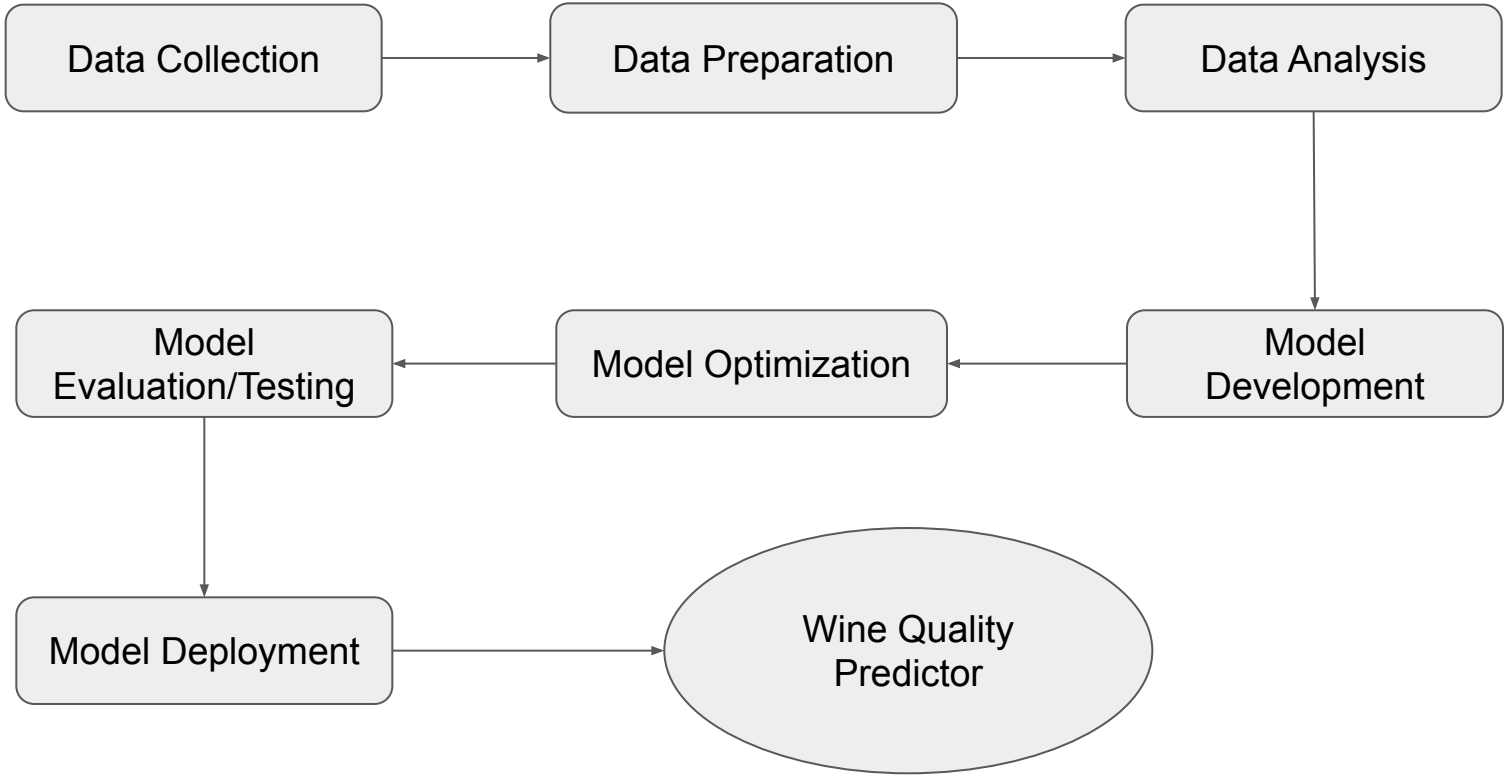
What is Wine Made Up of?

- Alcohol
- Acids
  - Volatile
  - Fixed
- Sugar
- Sulphur compounds
  - Sulphur dioxide (fixed)
  - Sulphur dioxide (free)
  - Sulphates
- Other compounds
  - chlorides
  - others

Machine Learning process



Steps for Wine Prediction:



Tools/Libraries used:

Data Preparation and Data Analysis

Python
Pandas
Jupyter Notebook

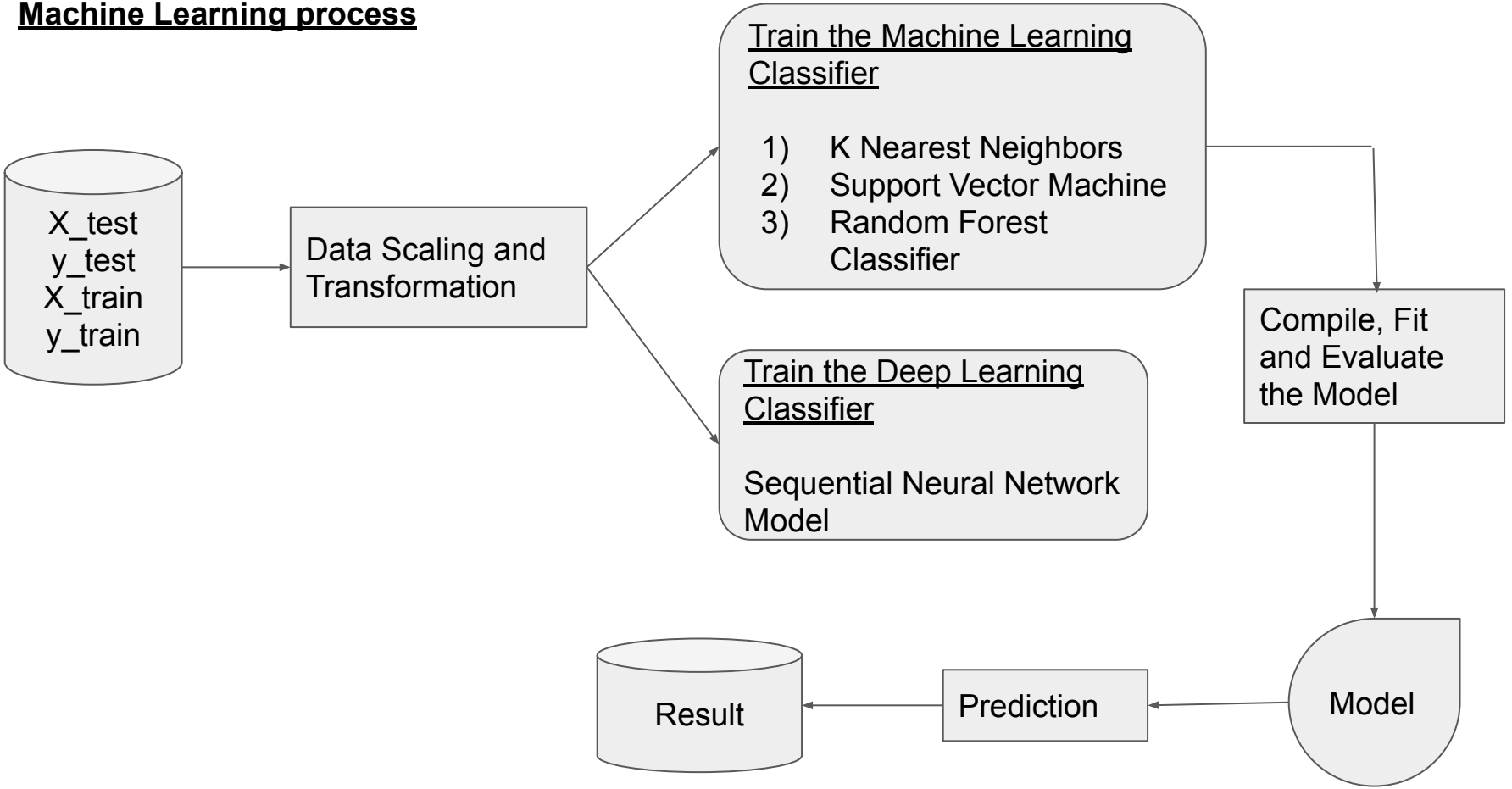
Model Development

Scikit Learn (K Nearest Neighbors)
Scikit Learn (Support Vector Machines)
Scikit Learn (Random Forest)
Tensorflow (Neural Network model)

Model Deployment

FLASK
HTML/CSS
SQLAlchemy
Heroku

Machine Learning process



- Model is trained to predict the quality of the wine as Good (1) or Bad (0).
- Red and White wines with quality greater than 6 are considered as Good.
- Those with lower values are classified as Bad Wines.

Features are given to the developed Random Forest model for prediction

Conclusion:

- Many features contribute to the quality of the wine.
- Different models were tested to predict the quality. The model with highest accuracy was Random Forest Model.
- With the “Wine Quality Predictor”, we can differentiate between the good and the bad wines with 80% accuracy.