

Programming Language: Python 3.11

Python 3.11 is used as the programming language since there are many libraries for data science and machine learning, web development, deployment, testing and similar operations. It is easy to read, and very flexible making it applicable for backend and machine learning alike.

Machine Learning Frameworks and Libraries:

Scikit-Learn: Scikit-Learn implements necessary machine learning algorithms and utilities including the Random Forest model for predicting stock prices. It provides a variety of capabilities aimed towards model training, evaluation and validation. This makes it a basic toolkit for constructing predictive models.

Pandas: Pandas makes fast data manipulation possible which allows the system to operate on large datasets and carry out the required alterations. Its Data frame structure is well placed to handle and clean stock data efficiently.

NumPy: NumPy allows computation and is widely considered the building block for scientific computing with python, as well as allowing basic numerical tasks to be performed on arrays of data. It allows computing that is efficient and is required in the processes of data processing and engineering of features.

Data Collection Tools: Yahoo Finance API (yfinance), OpenStreetMap Api:

The Yahoo Finance API is one of the main data endpoints where both real time and historical stock data is available for analysis or prediction. This API is useful in acquiring stock prices as well company's information and other finance related data that is essential in the operations of the advisory system.

The OpenStreetMap API is used to fetch real estate data This is the main API used by editors to modify the map data. It's not ideal for large-scale data retrieval due to its limitations on the size of areas that can be retrieved at once.

Data Visualization Tools:

Plotly: Plotly is an interactive plotting library which is very easy to use and thus very useful in creation of visual representations on the web. It includes such charts as the candlestick chart, bar and line graphs and allows easier and more interactive data analysis using its capabilities.

Matplotlib: Matplotlib is employed for the generation of static plots that is mainly during the exploratory data analysis and model validation stages. It works well together with Plotly as it provides customizations that would enhance the levels of analysis of the project's visualizations.

Web Framework and Development Tools:

Flask: This web framework is simple and very useful in implementing the backend of the project and also connects the machine learning models with the web app. It has inbuilt support for routing, processes like making and responding to HTTP requests and designing templates allowing for dynamic websites creation.

HTML/CSS and JavaScript: The structure and design of the web interface are built using HTML and CSS. While, within the application, JavaScript is used for interactivity.