| **Library** | **Used For** |
| --- | --- |
| yfinance | Downloading historical stock market data from Yahoo Finance |
| numpy | Numerical computations and array manipulation |
| pandas | Handling and preprocessing time series financial data |
| scikit-learn | Data scaling (MinMaxScaler) and evaluation metrics (e.g., MSE) |
| matplotlib | Plotting actual vs predicted stock prices, and visualization in GUI |
| torch (PyTorch) | Building and training the CNN-LSTM deep learning model |
| deap | Implementing the Genetic Algorithm (GA) for hyperparameter optimization |
| tkinter | Building the Graphical User Interface (GUI) for stock prediction |
| random | Random number generation for GA |

IMPORTED FROM PYTHON STANDARD LIBRARY

| **Module** | **Used For** |
| --- | --- |
| tkinter.ttk | Enhanced widgets in Tkinter GUI |
| matplotlib.backends.backend\_tkagg | Embedding plots in GUI |
| datetime | (optional) Used if working with time ranges or labeling |