|  |  |
| --- | --- |
| Use case ID: | UC001 |
| Use case Name: | Search Stock Ticker |
| Description: | User searches for a specific stock ticker symbol in the application's search bar |
| Primary Actor: | User |
| Secondary Actor: | FastAPI Server |
| Preconditions: | - Application is running  - User has internet connection  - User knows the stock ticker symbol |
| Postconditions: | - Ticker symbol is validated  - Historical stock data is retrieved  - Prediction process is initiated |

|  |  |
| --- | --- |
| Use case ID: | UC002 |
| Use case Name: | Predict Stock Price |
| Description: | Generate future stock price predictions using LSTM machine learning model |
| Primary Actor: | LSTM Model |
| Secondary Actor: | None |
| Preconditions: | - Historical stock price data is preprocessed  - LSTM model is trained and loaded |
| Postconditions: | - Price predictions are generated  - Prediction confidence is calculated  - Error metrics are computed |

|  |  |
| --- | --- |
| Use case ID: | UC003 |
| Use case Name: | Return Prediction Results |
| Description: | Transfer prediction data and error metrics from server to frontend |
| Primary Actor: | FastAPI Server |
| Secondary Actor: | Frontend Application |
| Preconditions: | - Predictions and error metrics are generated  - Server connection is established |
| Postconditions: | - Prediction data is packaged into JSON  - Response is sent to frontend  - Frontend is ready to visualize results |

|  |  |
| --- | --- |
| Use case ID: | UC004 |
| Use case Name: | Visualize Results |
| Description: | Display stock price predictions and performance metrics in user interface |
| Primary Actor: | User |
| Secondary Actor: | Frontend Application |
| Preconditions: | - Prediction data received from server  - Visualization components are loaded |
| Postconditions: | - Price prediction chart is rendered  - Error metrics are displayed  - User can interact with visualization |

|  |  |
| --- | --- |
| Use case ID: | UC005 |
| Use case Name: | View Previous Predictions |
| Description: | Display Previous price predictions made by user |
| Primary Actor: | User |
| Secondary Actor: | Frontend Application |
| Preconditions: | - User should predict prices  - Prediction data received from server |
| Postconditions: | - Use should be able to see previous predictions made by them |