

# Web Scraping & Stock Data Visualization

## (Tesla & NVIDIA)

**Project Link:** <https://github.com/ommishra03/WebScraping-Stock-Data-and-Visualization>

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**Domain:** Data Analytics | Financial & Market Analysis

### 1. Project Objective

The objective of this project is to perform an end-to-end financial data analysis of two publicly traded companies—**Tesla and NVIDIA**—by combining market data and business fundamentals. The project focuses on extracting real-world data, validating its quality, analyzing trends and risk, and presenting insights in a structured, decision-oriented manner.

In addition to exploratory analysis, the project emphasizes **analytical discipline**, ensuring that insights are derived from clean, validated data rather than surface-level visualizations. The overall aim is to simulate how analysts approach equity analysis in real-world business and financial environments.

### 2. Data Sources & Methodology

- **Stock Price Data:** Extracted using the yfinance API to obtain historical daily price and volume information, ensuring consistency and reproducibility.
- **Revenue Data:** Collected via structured web scraping from Macrotrends, addressing real-world data accessibility and formatting challenges.
- **Data Validation:** Automated data profiling (ydata-profiling) used to assess completeness, distributions, anomalies, and potential data quality risks prior to analysis.
- **Analysis Approach:** Time-series analysis, trend smoothing, volatility measurement, and risk-adjusted performance evaluation were applied to support reliable comparison and interpretation.

### 3. Key Analytical Components

- Stock price trend analysis and visualization
- 50-day and 200-day moving averages for trend identification
- Revenue vs stock price comparison to assess fundamental alignment
- Daily returns and rolling volatility for risk assessment
- Normalized performance comparison for fair cross-company evaluation
- Sharpe Ratio calculation to measure risk-adjusted returns

## 4. Key Insights

- NVIDIA demonstrates stronger risk-adjusted performance, supported by accelerating and consistent revenue growth.
- Tesla exhibits higher volatility, indicating a higher risk-reward profile influenced by market sentiment and growth expectations.
- Revenue analysis helps differentiate fundamental-driven price movements from sentiment-driven fluctuations, improving interpretability of market behavior.

## 5. Business & Strategic Relevance

- Highlights how integrating market data with business fundamentals leads to more reliable and defensible investment insights.
- Demonstrates the importance of **risk-aware analysis**, moving beyond headline returns to evaluate performance efficiency.
- Reflects real-world analyst workflows commonly used in **financial analytics, consulting, and business intelligence** roles, where clarity and validation are critical.

## 6. Tools & Technologies

- Python (Pandas, NumPy)
- yfinance (market data extraction)
- Requests & BeautifulSoup (web scraping)
- Matplotlib (visualization)
- ydata-profiling (automated data diagnostics)
- Git & GitHub (version control and documentation)

## 7. Conclusion

This project demonstrates a structured, industry-aligned approach to financial data analysis by integrating data extraction, validation, analytical modeling, and executive-style interpretation. By combining technical analysis with business context and risk evaluation, the project showcases the ability to translate raw financial data into **actionable, decision-ready insights**.

Overall, it reflects analytical maturity suitable for **entry-level roles in Data Analytics and Business Intelligence**, while following practices aligned with real-world professional environments.