SmartPredict

ML-Powered Forecasting & Insights for Stock Performance During Earnings Season

SmartPredict for Move Tickers

Tailored Insights for a Data-Heavy Trading Season

- Move Tickers: financial analytics firm —> Smarter Trade
- Earnings Season: fast, accurate market insights.

- **Solution: Predictive dashboard powered by machine learning.**

Problem Statement

Challenges:

- Overwhelming data
- Complex, time-consuming reports
- EPS surprises often misinterpreted
- Lack of quick, visual tools to help decisions

Solution Overview

SmartPredict: Fast, Intuitive, Actionable

- AI-powered dashboard forecasts stock reaction to earnings
- Visual insights tailored for different users
- Real-time interpretation of EPS surprises and market trends

Tickers we support

AAPL (Apple Inc.)
– Global tech giant, key player

GOOG (Alphabet/Google)
– Major Android ecosystem stakeholder

QCOM (Qualcomm)
– Leading semiconductor producer

Why These Companies?

These tickers are deeply associated with the consumer smartphone industry, with hardware (AAPL), software (GOOG), and semiconductors (QCOM). They are sensitive to innovation cycles and consumer demand, making them ideal for earning-based forecasting.

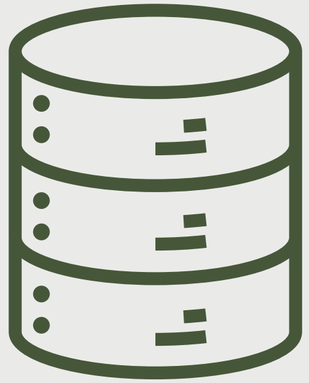
Legal, ethical aspects

- Compliance with GDPR & AI law
- Transparent & informative
- Secure & anonymized data

Data Sources & Types

Data Sources:

- Yahoo Finance API via yfinance
- Move Tickers DB for macroeconomic indicators



Data Scale, Quality

- ~10 years of stock data per ticker
- Labelled for ML: post-earnings movement (up/down)

Data Types:

- Time Series:

Daily stock prices, Minute stock prices, EPS history

- Tabular:

Analyst EPS estimates, reported EPS, surprise %

Feature engineering

Statistical features

- Lag: Previous day’s closing price
- Mean 10 days: 10 day moving average of closing price
- Mean 30 days: 30 day moving average of closing price
- Max 10 days: Maximum closing price in past 10 days
- Max 30 days: Maximum closing price in past 10 days
- Standard deviation 10 days: 10 day rolling standard deviation
- Standard deviation 30 days: 30 day rolling standard deviation

Technical features

- EMA 10 days: 10 day exponential moving average of closing price
- EMA 30 days: 30 day exponential moving average of closing price
- Bollinger Bands:
  - Upper band over 20 days
  - Lower band over 20 days
  - Middle band over 20 days
  - Upper band over 50 days
  - Lower band over 50 days
  - Middle band over 50 days

Target Users

Move Tickers customers

Want digestible insights

Content Creators

Use insights for videos, posts

Financial Advisors

Need quick, AI-backed insights

Analysts

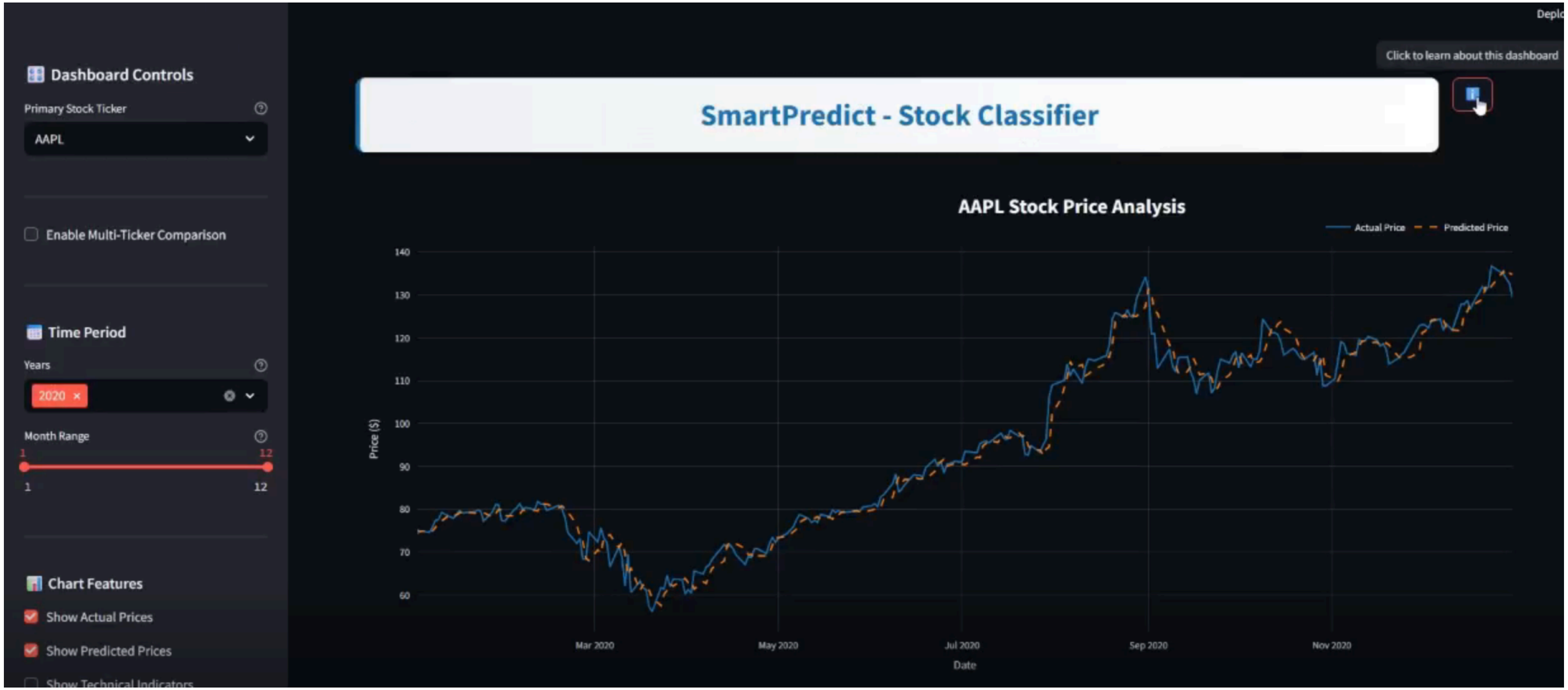
Reduce manual data crunching

SmartPredict dashboard

Version A

SmartPredict dashboard

Version B



Regression

Goal: Predict the actual future stock price after earnings.

Models Used:
Linear Regression – Main model selected for deployment.

XGBoost Regression

Random Forest Regression

Each company had its own dedicated regression pipeline with scaling, training, and evaluation using R^2 scores and backtesting.

Classification

Goal: Predict whether the stock price will go up or down after earnings.

Models Used:

- **Logistic Regression –** Simple, interpretable, good for benchmarking.
- **Random Forest –** Ensemble model that captures nonlinearities.
- **XGBoost –** Advanced boosting model, used for fine-tuned classification.

We trained separate models for AAPL, GOOG, and QCOM, using engineered features like EPS surprise, moving averages, volatility, and price bands.

Results

Company Model Mean Accuracy Mean F1 Score
AAPL XGBoost (Final) 0.512 0.584
GOOG XGBoost (Final) 0.510 0.476
QCOM XGBoost (Final) 0.502 0.486

All models outperformed the baseline, especially in backtest windows with higher volatility.

Regression Evaluation (R^2 on test set)
Company Model R^2 Score Notes
AAPL Linear Regression 0.959 Excellent fit, very stable
GOOG Linear Regression -5.649 Model struggled, likely nonlinear
QCOM Linear Regression 0.877 Reliable performance

We found Linear Regression to be the most consistent and stable model across stocks hence selected for deployment.

Success Metrics

MAE

- Tracks how close the model's forecast is to actual reported earnings
- Goal: Low MAE = high trust in prediction reliability

Directional Accuracy of Stock Movement

- Measures whether the predicted post-earnings move (up/down) matches the real market reaction
- Crucial for user decision-making

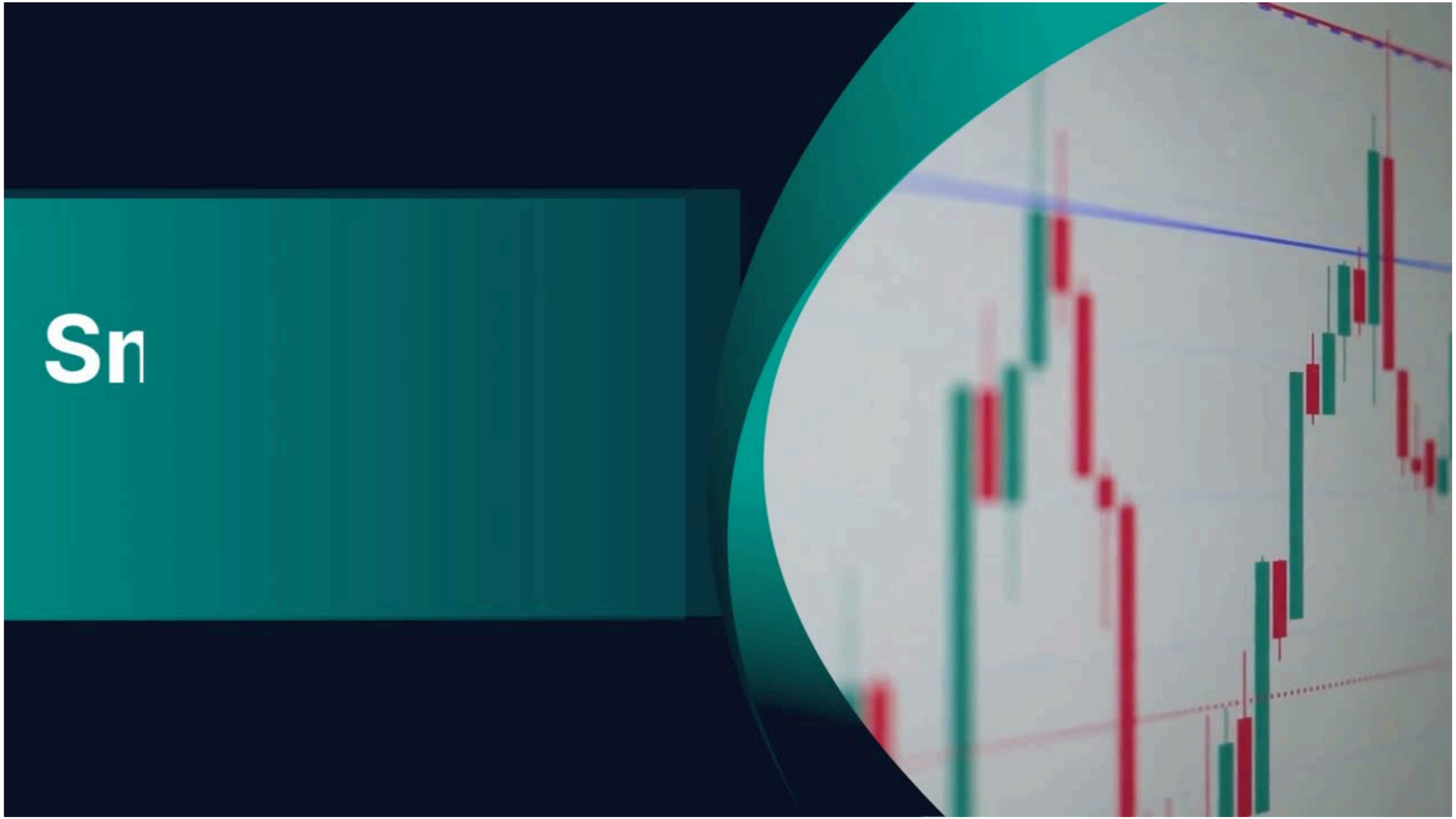
User Engagement

- Users actively explore predictions through the SmartPredict dashboard.
- High interaction during earnings season reflects trust in model outputs.
- Repeat usage and company comparisons suggest valuable user experience.

Time Saved

- Reduction in hours spent manually reviewing reports
- Especially critical for financial advisors and content creators

Demo video



THANK YOU