

# Sector-wise Stock Price Segmentation & Forecasting to uncover Investment Opportunities

EAS 509 – Group#18 (Gaurav Kumar Jha | Abhinav Nehra | Kumar Utkarsh)

## I. INTRODUCTION

### MOTIVATION

With the stock market's complexities and continual evolution, investors and analysts require robust tools for navigating potential investments, particularly within specific industry sectors.

### SIGNIFICANCE

The project attempts to enhance investment strategy through detailed, sector-specific market trend analysis and predictive insights.

### PROBLEM STATEMENT

The project aims to segment stocks by industry sectors using clustering, analyze feature importance, and forecast future trends with ARIMA.

## II. METHODS USED

The project utilizes a comprehensive approach initializing with data preprocessing—including date column conversion and scaling. Employing K-means clustering, stocks are segmented by industry sectors, and feature importance is determined using XGBoost. Future stock prices are forecasted utilizing the ARIMA model, focusing on prominent industry players like Apple to illustrate potential applications.

### CHART DATA - Cluster-wise segmentation of each industry

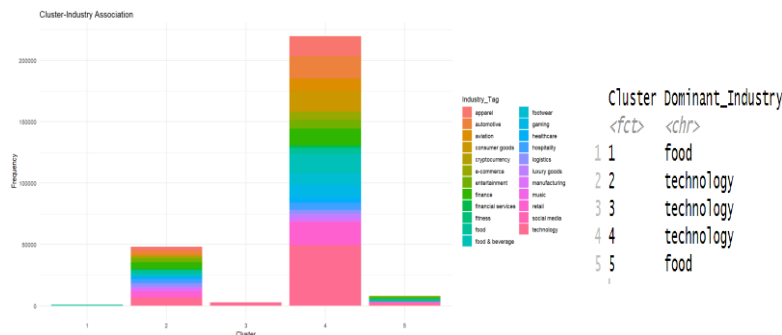


Fig. Plot of the dominant industry prevalent in each cluster

The above chart visually summarizes the dominant industries within each cluster, effectively showing the segmentation achieved through the project's methodology.

## III. RESULTS

Initial analyses highlighted technology companies, like Apple, commanding higher stock valuations. Clustering signified a discernible segmentation across five industry sectors, facilitating targeted investment strategies. Feature importance analysis proved that stock prices' open, high, and low values critically affect sector performance.

## IV. CONCLUSION

The integration of multiple analytical techniques enabled the effective segmentation of stocks within industry sectors and highlighted significant investment pathways. This analysis aids investors tailored strategies, especially valuable in sectors dominated by technology and food industries, identified as growth-oriented and stable investment opportunities, respectively.