



Predicting Analyst Consensus in the Stock Market

A Flatiron School Capstone Project by Chuck Nadel



Agenda

1. Introduction/Business Problem
2. Data Overview
3. Data Preparation
4. Classification Algorithms
5. Regression Analysis
6. Insights and Next Steps



The Business Problem

Problem: Can fundamentals alone determine the value and trajectory of a company?

Task: Use fundamental analysis to predict whether a stock will beat or lose to the market

Goal: Create a model to determine the expected growth rate of a company

Data Overview



Yahoo Finance Data

- Utilized YahooQuery API to assist in scraping
- Scraped Fundamentals of all stocks in the S&P 500 and NASDAQ

TipRanks Data

- Scraped TipRanks to determine analyst consensus of companies
- Used median price target to determine analyst consensus



Data Preparation

Dropped rows with:

- Less than 4 analyst ratings
- Missing fundamental data
- Outliers in any columns

Final Dataset:

- 2000+ Publicly Traded Companies
- Columns related to Revenue, Cash Flow, and Return on Assets



Original Plan: Classification Algorithms

- Predicted on whether or not the average analyst price target is greater than 10%
- Used Random Forest Model, Convolutional Neural Network
- Both models performed worse than naive model



What Went Wrong?

- Mapping continuous values to discrete variables gets rid of meaningful information
- Predicting on another person's prediction is less than ideal
- Enormous Class Imbalance- SMOTE ineffective



Predicting Expected Growth Rate in the Stock Market

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New Plan: Regression Algorithms

First Model: Linear Regression

Second Model: Feed Forward
Neural Network

Predicting For:

Median Expected Growth Rate

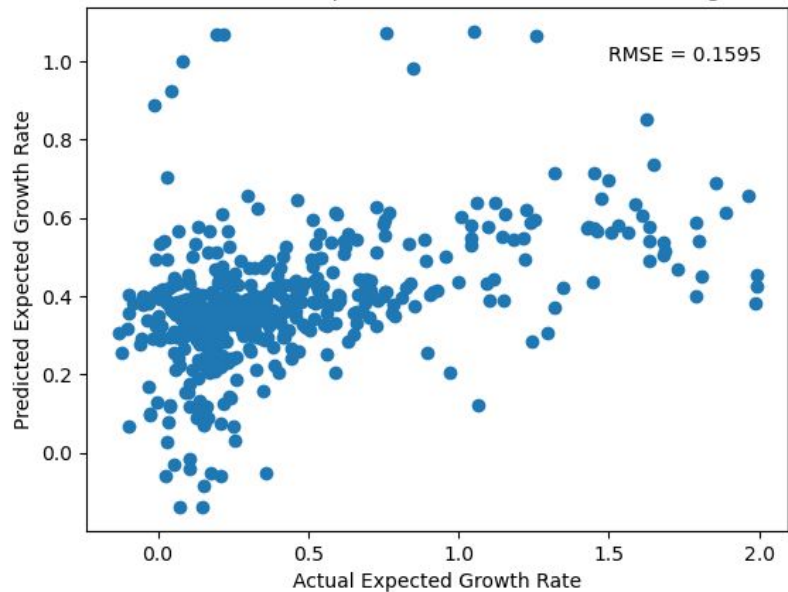
Predictive Variables:

Same Variables as Classification
Algorithms

Model Results

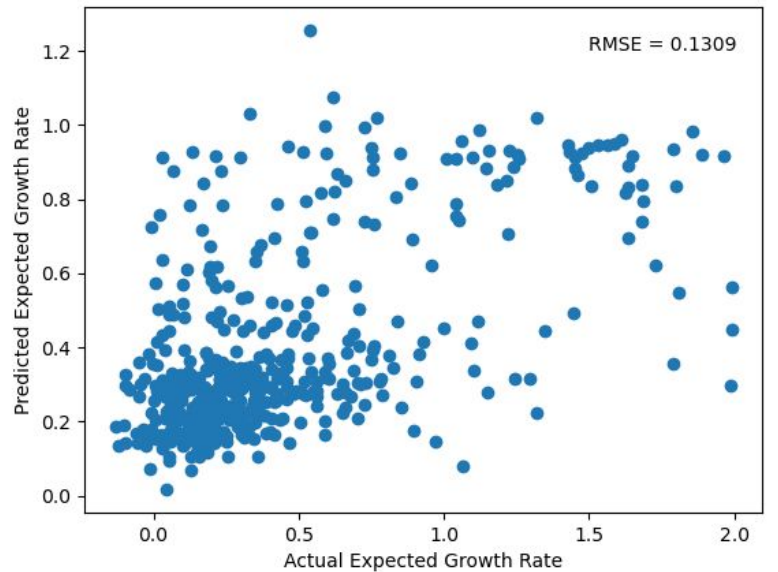
Linear Regression Model

Actual vs Predicted Expected Growth Rates- Linear Regression

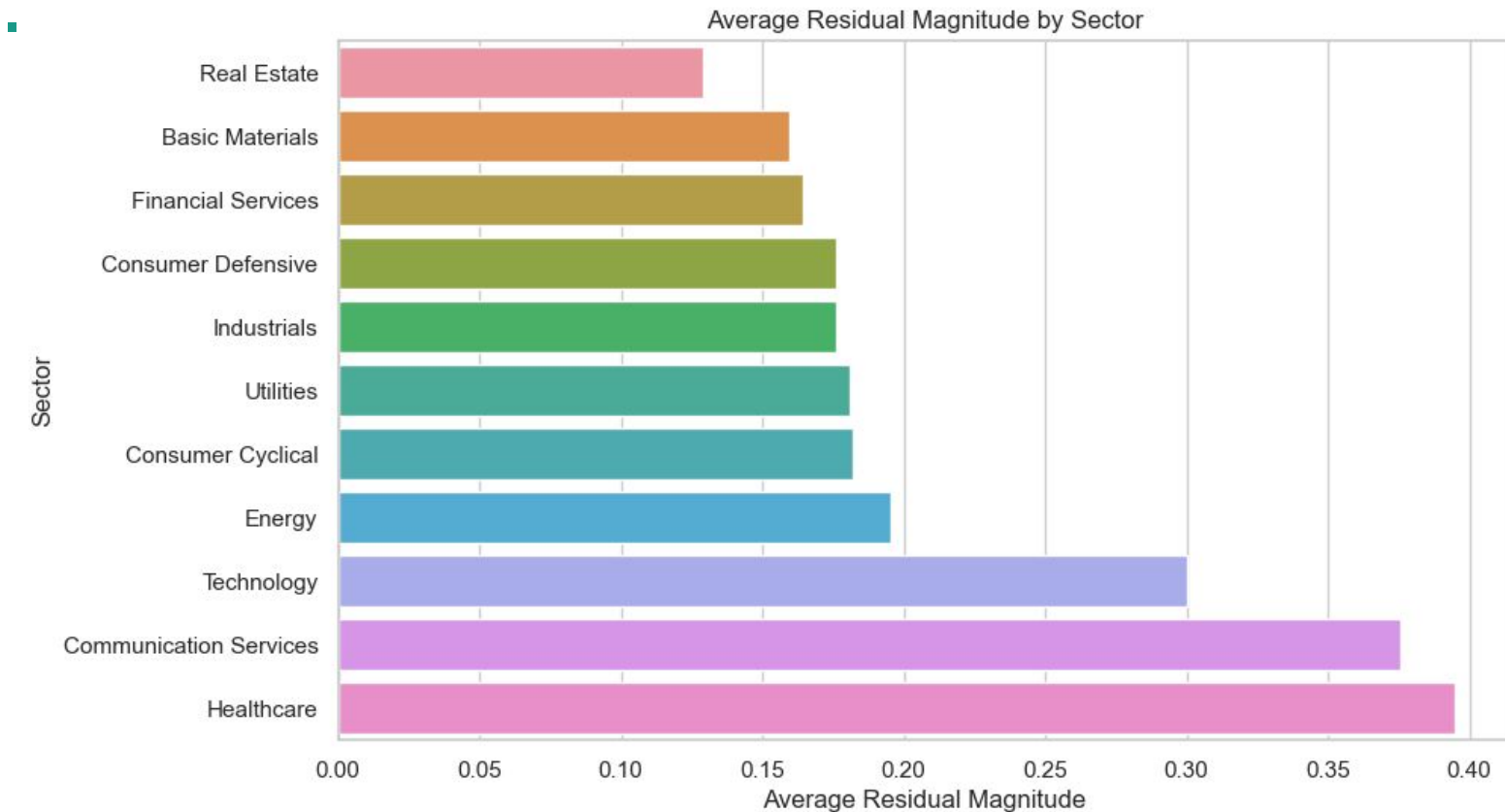


Feed Forward Neural Network

Actual vs Predicted Growth Rates- Feed Forward Neural Network



Sector Performance by Mean Absolute Error





Insights

- Valuation of Real Estate, Basic Materials, and Financial Companies most impacted by fundamentals.
- Healthcare, Communication, and Technology valuations barely impacted

Next Steps

- Deploy Model to help valuation of REIT, Materials, and Financial Stocks
- Test on actual market performance



Thank You!

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