

Stock Market Prediction

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Abstract

1 Introduction

1.1 Introduction

1.2 Project motivation

1.3 Importance and prevalence of the problem

Explain size of the financial industry affected by the problem and why having better tools to predict the stock market may be important to the average person

1.4 Project goals

1.5 Project outline

How the project will meet those goals

2 Background

2.1 The Stock Market

2.1.1 What is the stock market

2.1.2 How the stock market works

2.1.3 Components of the stock market

2.1.4 Terminology

2.2 Analysis of the problem

2.2.1 Explanation of the difficulty of the problem

2.2.2 Separation of profitability and accuracy

2.2.3 Temporal reach of prediction

2.2.4 Formal definition of the problem

2.3 Review of existing work

3 Methodology and Data

3.1 Tools Used

3.1.1 Python, Numpy, Pandas

3.1.2 Quantopian/Zipline and Pyalgotrade

3.1.3 Statsmodels

3.2 Data Used

3.2.1 Data sources

3.2.2 Format of the data

3.2.3 Adjusted prices

3.3 Simulation of strategies

Similarity to real life

3.4 Defining a successful model

Statistical significance of a model

4 Attacking the problem - Fundamental Analysis

4.1 PE Ratio

5 Attacking the problem - Technical Analysis

5.1 Hobbyist Approaches

5.2 Review of Metrics

5.3 OLMAR algorithm

5.4 StatsModels

6 Attacking the problem - Machine Learning

6.1 KNN on metrics