**CS 4701 – Final Project – Predicting Financial Markets**

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**Overview:**

This project attempts to recognize the factors that affect financial indices of the stocks which form the Dow Jones Industrial Average index and ultimately to use these factors to predict these indices. We used day-to-day historical financial data over the past fourteen years for our training and test sets.

We have also kept in mind our over-arching goal of being able to reliably extend tthis project to predict macro-economic trends such as GDP Growth, Inflation, Consumer Price Index (CPI), etc. As a result our algorithms are as general as possible to ensure minimum effort and cost to extend them.

**Motivation – The Efficient Market Hypothesis:**

The Efficient Market hypothesis claims that financial markets are “information efficient”. In other words, the prices of shares in an efficient financial market encapsulate all information about that stock. Thus, one cannot receive returns in excess of average market returns on a risk adjusted basis, given the information available at the time of purchase. In such an environment, it is impossible to “beat the market” – to purchase undervalued stocks or sell stocks at inflated prices. All investments in such a market zero net present value.

The Efficient Market Hypothesis by no means asserts that trading in shares in an efficient market is not profitable even though it is impossible to beat the market per se. All it asserts is that there is no “privileged information” about a share that one investor would have that another that knows the price of the share does not.

The question we attempted to answer was: Are the shares which make up the Dow Jones Industrial Average part of an efficient market as per the Efficient Market Hypothesis?

**Research:**

**Implementation:**

**Findings:**

Since our project had two facets we present our findings under two separate categories. We used the factors we found to be the most important in affecting share prices to predict the indices.

1. **Factors affecting the indices:**
2. **Prediction of these indices:**

**Conclusion – Are the stocks on the Dow Jones part of an efficient market?**