Algorithmic Trading

**Three Quantitative finance projects**

* **The equal-weight version of the popular S&P 500 index**
* **Quantitative momentum strategy (Select the best stocks on variety of metrics)**
* **Quantitative value screener (Select stocks based on the number of value metrics)**

**Course Overview**

1. **Algorithmic Trading Basics**
2. **API Basics and Course Configuration**
3. **Project 1: Equal-Weight S&P 500 Screener**
4. **Project 2: Quantitative Momentum Screener**
5. **Project 3: Quantitative Value Screener**

**Algorithmic Trading Basics**

* This means using computers to make investment decisions.
* There are many different types of algorithmic trading. The main difference is their speed of execution.

The Algorithmic Trading Landscape (Big players in this field)

* Renaissance Technologies: $165B in AUM (Assets Under Management)
* AQR Capital Management: $61B in AUM
* Citadel Securities: $32B in AUM

**The Algorithmic Trading Process**

1. **Collect Data**
2. **Develop a hypothesis for a strategy**
3. **Backtest that strategy**
4. **Implement the strategy in production**

**API Basics and Course Configuration**

**API**

An API is an application programming interface.

API allow you to interact with someone else’s software using your own code.

In this course we will use IEX Cloud API

API Functionality

* GET
* POST
* PUT
* DELETE

GitHub Link to practice APIs

<https://github.com/public-apis/public-apis>

**Project 1 Equal-Weight S&P 500 Screener**

S&P 500 is the world’s most popular stock market index.

Code Overview:

1. Import libraries (numpy, pandas, requests, xlsxwriter, math)
2. Importing list of stocks i.e, reading the csv file which has all the S&P 500 stocks
3. Acquire API token, here we will use IEX Cloud API token in sandbox mode which is the free version.
4. After acquiring the token we will call API to get the data for example we can use API to get the current stock price for AAPL

**Project 2 Quantitative Momentum Screener**

Momentum investing means investing in assets that have increased in price the most.

For example, AAPL went up 35% and MSFT went up 20% last year, the momentum strategy will suggest to invest in AAPL for higher price return.

**Project 3 Quantitative Value Screener**

Value investing means investing in stocks that are trading below their perceived intrinsic value.

For example: You buy a $1 stock for 75 cents and sell it again for $1

The stocks are selected using investing strategies which relies on a concept called **multiples.**

**Multiples** are calculated by dividing a company’s stock price by some measure of t the company’s worth – like earnings or assets.

Common multiples used in value investing:

* Price to earnings (P/E)
* Price to book value (P/B)
* Price to free cash flow

Each multiples have its pros and cons, one way to minimize the impact of any specific multiple is by using a **composite.**