



# BHAGWAN MAHAVIR COLLEGE OF COMPUTER APPLIACATION



## ALGO TRADING

---

**Guided By:**

**Asst. Prof. Dr. Hetal Modi**

**Presented By:**

**Mr. Milan G. Bhimani**



# CONTENTS

- Introduction
- Why Algo Trading?
- Type Of Algo-Trading
- How it's Work?
- Benefits Of Algo-Trading
- Key Takeaways
- Conclusion

# INTRODUCTION

---

Algorithmic trading (also known as "algo trading") refers to the use of computer programs to execute trades in financial markets. These programs use mathematical algorithms and statistical models to analyze market data and make trading decisions in real-time. Algo trading can be used for a wide range of financial instruments, including stocks, bonds, currencies, and derivatives.

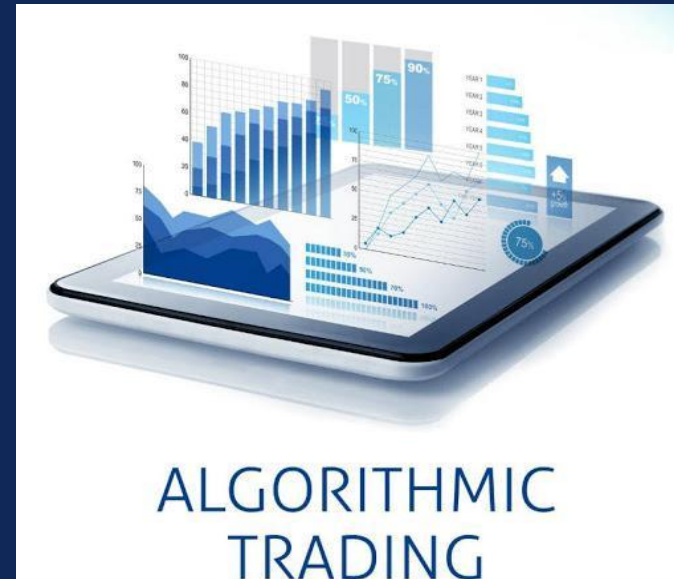
# WHAT IS ALGO-TRADING?

- Algorithmic trading (also called automated trading, black-box trading, or algo-trading) uses a computer program that follows a defined set of instructions (an algorithm) to place a trade.
- Algo trading can improve efficiency, reduce emotion-based decision making, and execute trades faster than manual trading. It's widely used by financial institutions, high-frequency traders, and institutional investors, but also accessible to retail traders with the right tools and knowledge.

# WHY ALGO-TRADING?

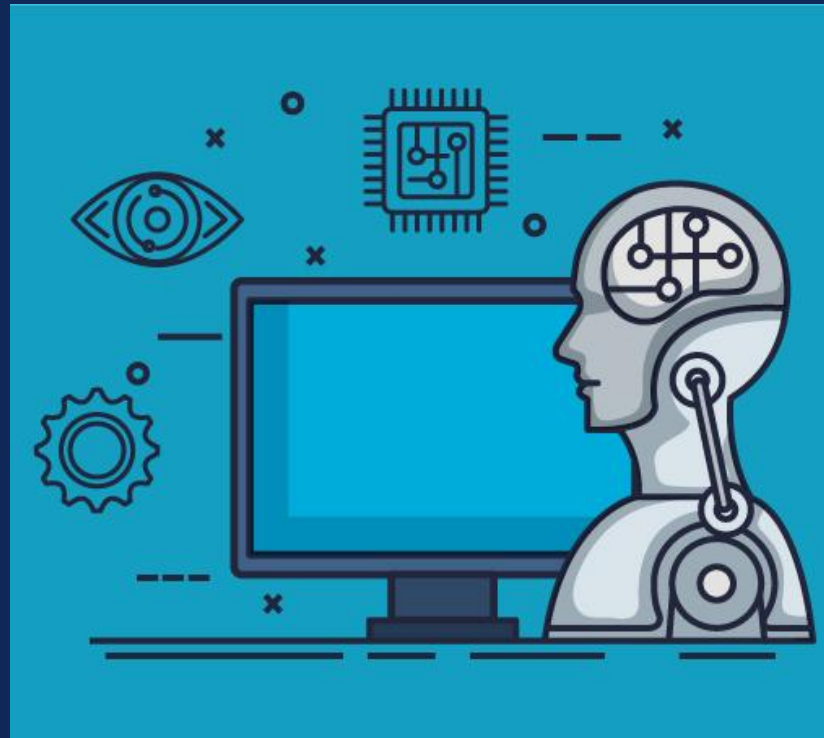
- **Algorithmic trading** is a method of executing trades automatically using a pre-defined set of instructions, or algorithms. There are several reasons why algo trading is becoming increasingly popular:

1. Speed and efficiency
2. Consistency
3. Improved risk management
4. Increased transparency
5. Access to market data
6. Scalability



# TYPES OF ALGO-TRADING

- High-Frequency Trading (HFT)
- Statistical Arbitrage
- Market Making
- Trend Following
- News-Based Trading
- Event-Driven Trading





# HOW ALGO-TRADING WORKS?

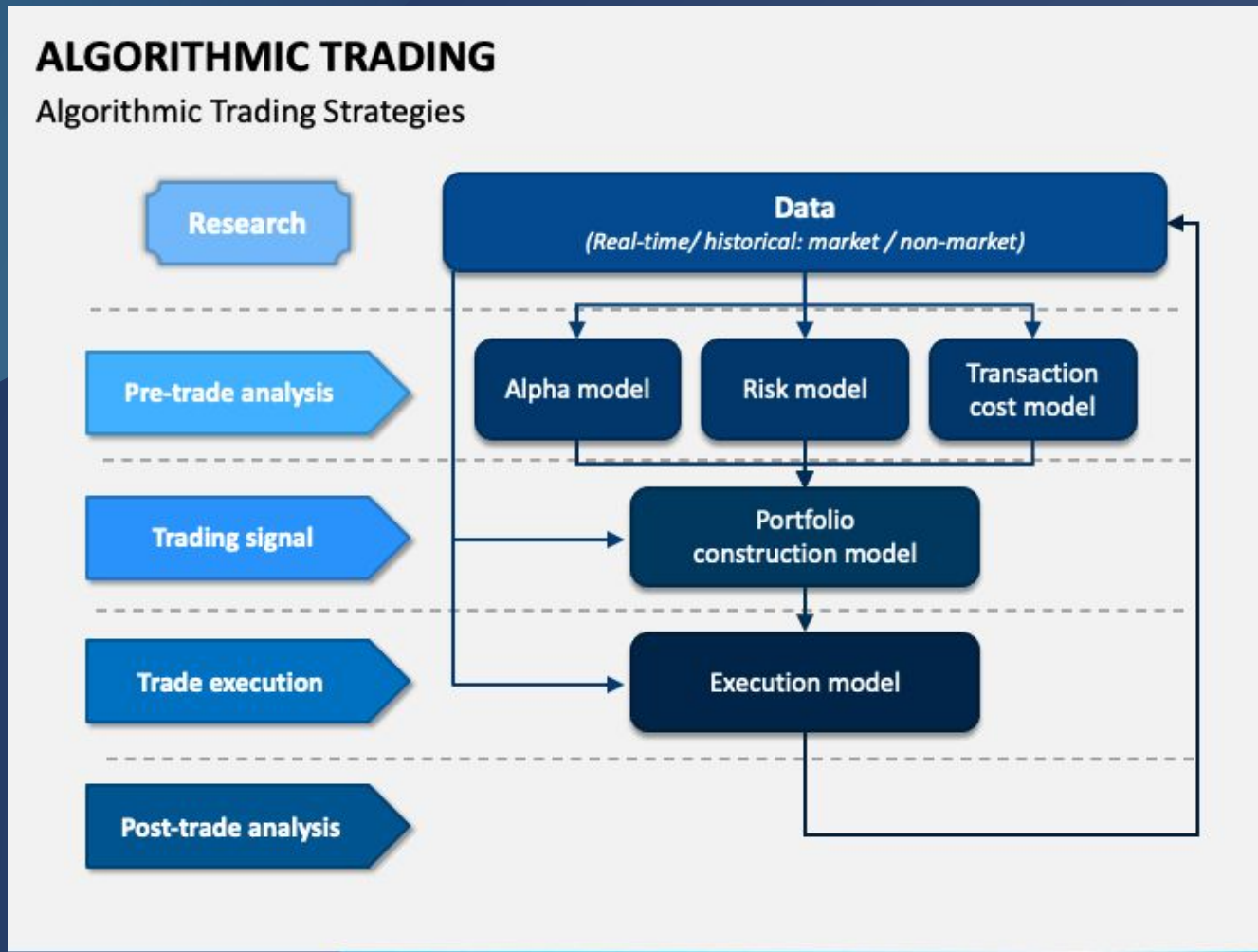


Figure 1



# ALGORITHMIC TRADING

## Algorithmic Trading System Architecture

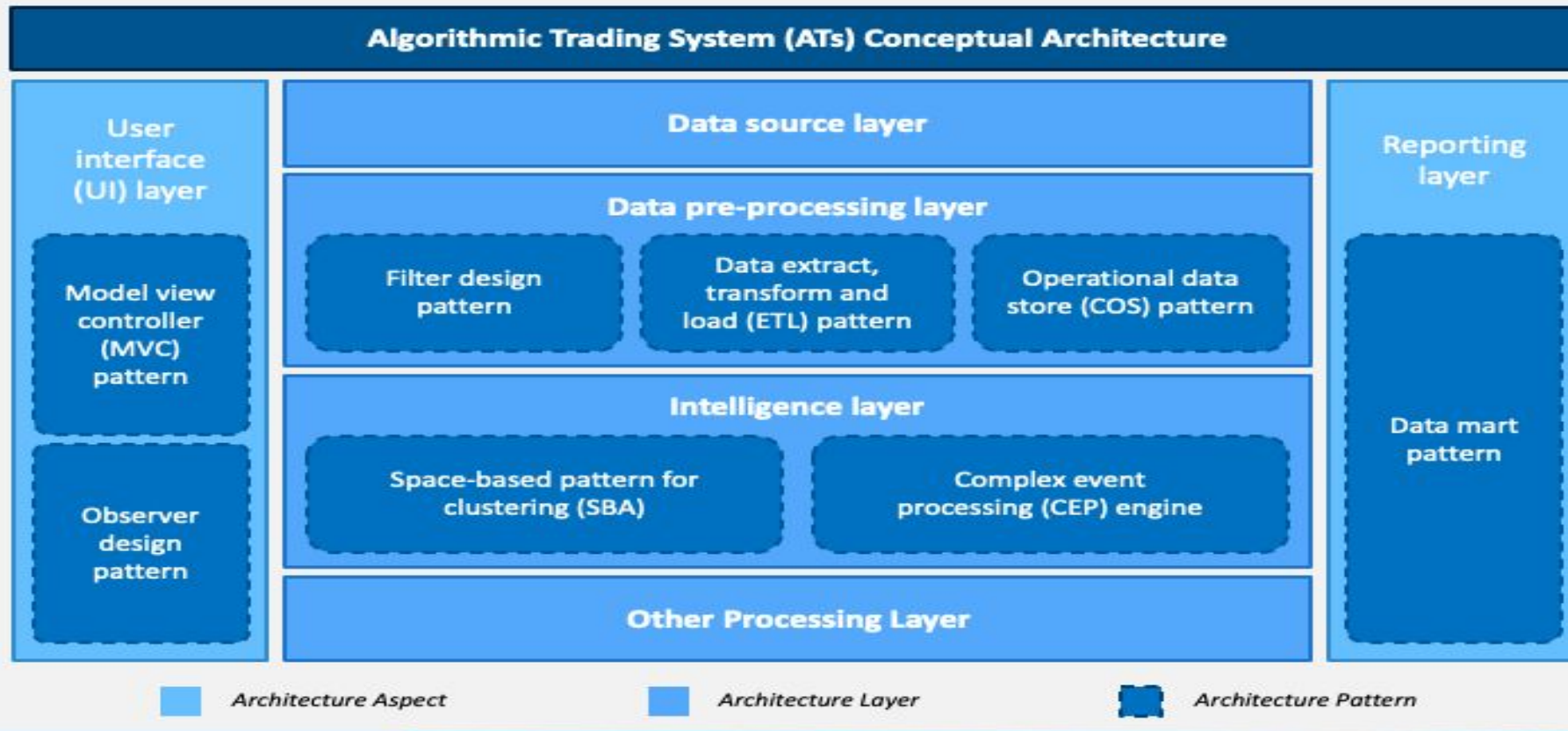


Figure 2

# ALGORITHMIC TRADING

## Conceptual Model of Algorithmic Trading

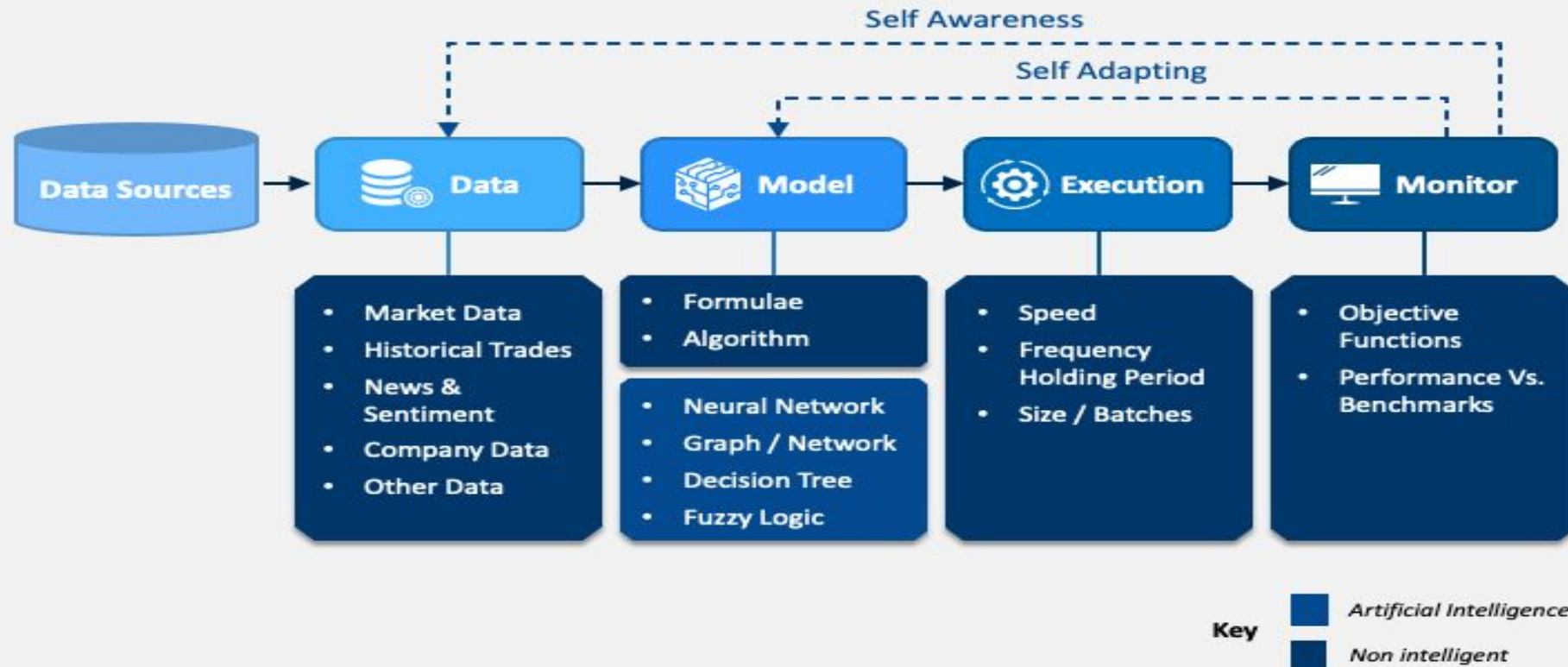
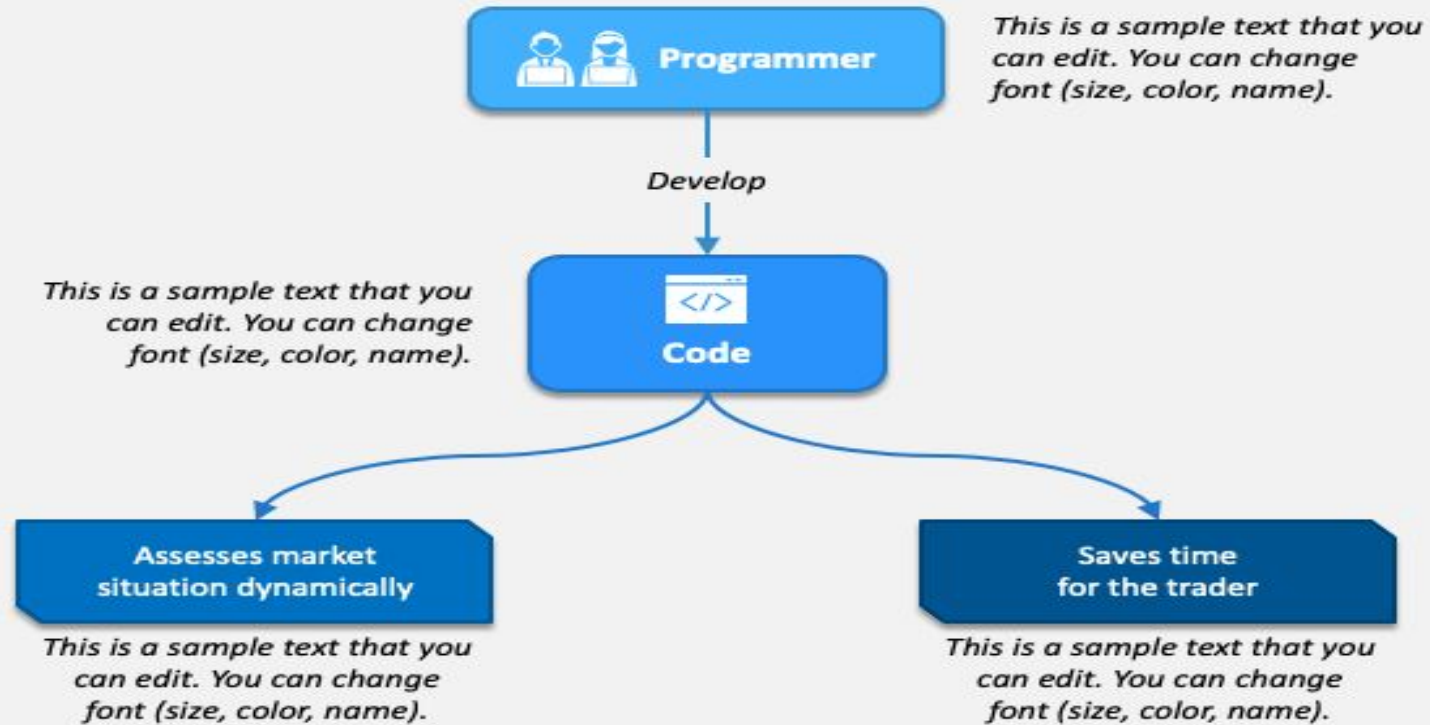


Figure 3

# ALGORITHMIC TRADING

Enter your sub headline here



Sources: Investopedia

Figure 4

# MODELS OF ALGO-TRADING

Algo trading works by using mathematical models and statistical analysis to automatically make trading decisions. Here's a high-level overview of the process:

- 1. Data collection and analysis:** The first step in algo trading is to collect large amounts of data related to financial markets and the assets being traded. This data is then analyzed to identify patterns, trends, and relationships that can be used to inform trading decisions.
- 2. Development of trading algorithms:** Based on the data analysis, trading algorithms are developed and tested. These algorithms incorporate mathematical models, statistical analysis, and other decision-making methods to determine when to buy or sell assets.
- 3. Back testing:** The algorithms are tested using historical market data to determine how they would have performed in the past. This helps to refine and optimize the algorithms before they are deployed in live trading.
- 4. Implementation:** Once the algorithms have been tested and refined, they are implemented and integrated with trading systems. The algorithms are then used to automatically execute trades in the financial markets based on the parameters set by the traders.
- 5. Monitoring and updating:** Algo trading systems are continually monitored and updated to ensure they are performing as expected and to make any necessary adjustments.

# ALGO-TREADING Vs MANUAL TRADING



## Algo Trading Vs Manual Trading

### Algo Trading

- No Instinct or Emotion only Calculation
- No Human Errors
- Large Trade, Less Time
- Accurate, Real-time Trade Placement
- Market Scenarios Inspection even during Nap

### Manual Trading

- Decisions based on Instinct or Emotions
- Chances of Human Errors
- Large Trade takes Time
- Trade Placement Depends upon your ability to beat time
- You Have to Let go of that Nap to check Market Scenarios



# BENEFITS OF ALGO-TRADING

Better Prices	Improved accuracy	Increased Speed	Low transaction cost
			

# BENEFITS OF ALGO-TRADING

○ Now that you know what algorithmic stock trading entails, you're likely already guessing the advantages it can bring. Just to be sure, let's go over some of the main ones.

- ◆ **Better prices.** With algo-trading, trades are executed at the best possible price thanks to being instantly timed to avoid large price fluctuations.
- ◆ **Improved accuracy.** If a computer executes a trade instead of a person, there's a lower likelihood of a mistake being made. The human factor often affects the levels of accuracy. Hence, when a computer algorithm is involved, precision is increased.
- ◆ **Increased speed.** Since algorithms are pre-written and executed automatically, the speed at which trades are carried out is significantly boosted.
- ◆ **Lower transaction costs.** Thanks to traders not needing to monitor the markets as closely and execution being carried out without their involvement, their time is freed up. Thus, transaction costs are reduced and traders can engage in other activities.

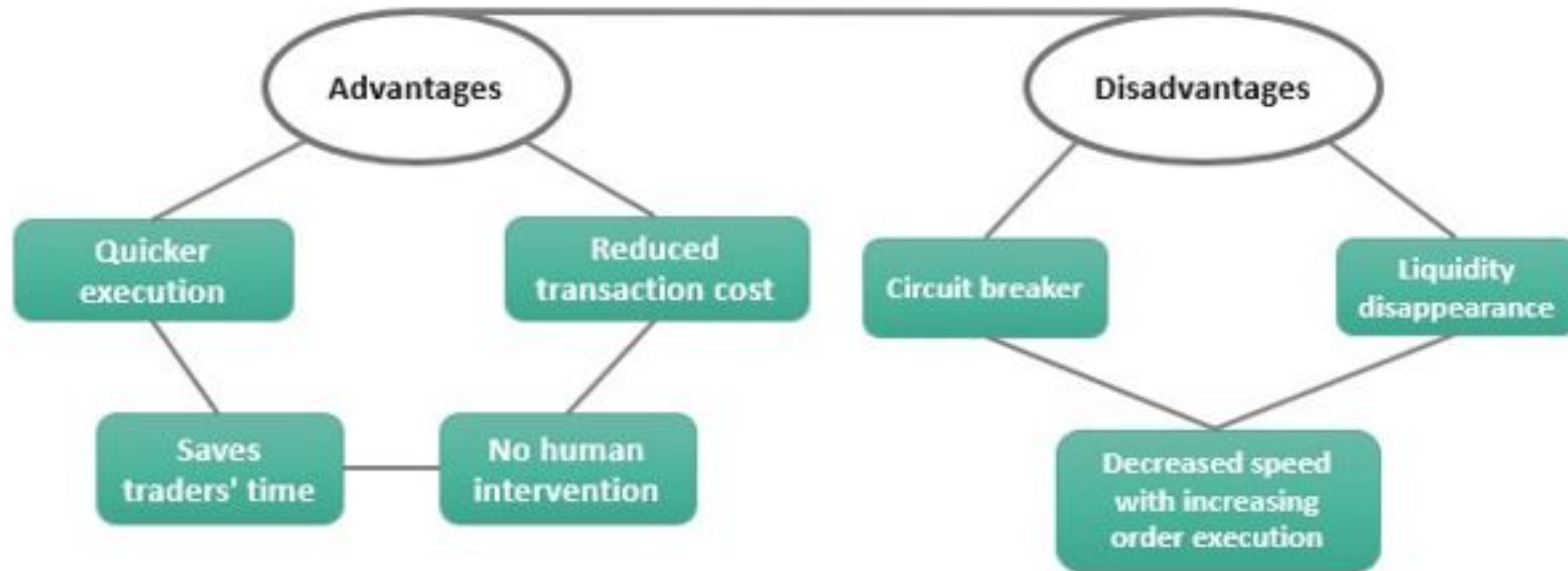


# KEY TAKEAWAYS

- Algorithmic trading is automated trading that involves the usage of computerized platforms, advanced mathematics, and computer programming tools to drive trading transactions in the financial markets.
- The computer program dynamically assesses the market situation and implements a hedging strategy according to market sentiments.
- The regulatory authorities always install circuit breakers, limiting the functionality of algo-trades.
- The devising of the algorithm can be very complex and challenging, but when deployed well makes execution faster.

# ADVANTAGES & DISADVANTAGES

## Algorithmic Trading Pros & Cons



# ADVANTAGES & DISADVANTAGES

- As there is no human intervention, the possibilities of errors are quite less, given the coded instructions are right. Based on the codes, the system identifies the trade signals of the financial market and accordingly decides whether to opt for it.
- The algorithmic trading software helps systems feed the requirements of both buyers and sellers. The trade opens and closes instantly as soon as the algo identifies an ideal match. The execution process is fair and fast enough. As a result, traders have to complete the deals as soon as they are notified of a match. If the chance is missed, they have to wait for another match to be found.
- The regulatory authorities always install circuit breakers, limiting the functionality of algo-trades. In addition, the liquidity provided by algo-traders can almost disappear instantly or in seconds.
- The execution speed of algo-trades without the intervention of humans can adversely impact live trades and settlements, which further limits the functionality of trading platforms and financial markets. Moreover, the algo-trades, if not monitored, can trigger unnecessary volatility in the financial markets.

# ALGO-TRADING Vs MACHINE LEARNING

- Algo trading and machine learning are related concepts but they are not the same thing.
- Algo trading is the use of algorithms and computer programs to execute trades automatically in financial markets.
- It is a form of automation of the trading process that aims to make decisions based on mathematical models and statistical analysis, without human intervention.
- So while algo trading and machine learning both involve using computers to make trading decisions, they differ in terms of their approach. Algo trading relies on pre-defined rules and logic, while ML relies on training algorithms to identify patterns in data and make decisions based on that learning.
- In practice, algo trading and ML can be used together to create powerful trading strategies. For example, an algo trading system could use real-time market data to make trades based on pre-defined rules, while a separate ML model could analyze historical data to identify potential new trading rules that could be incorporated into the algo trading system.

# CONCLUSION

---

Trading is extremely difficult for both full time and especially part time traders. The best road to gain profit is finding your own trading strategies. Once you got it, is your goals and objectives. No, trading strategies lasts forever and find myself constantly reinventing my strategy. I learned all of these lessons, and many more from trade academy.



**THANK YOU**

---

For Your Attention!