**“EN TANT QUE …. , JE VEUX POUVOIR FAIRE …. AFIN DE …. (objectif) »**

**Business requirements : besoin interne précis de l’équipe marketing pour client : cb de détection sur le dernier mois par ex**

# Analytical Use-case: Fraud Detection using Stock Market Prediction

As a banker, I want to be able to detect fraud in the financial and stock markets, in order to protect and inform savers, to ensure the stability of these financial systems and thus prevent systemic risk and competition between financial centres.

Fraud detection in stock markets is an important use-case that requires advanced analytical techniques to identify patterns that indicate market manipulation or insider trading. The primary objective of fraud detection is to prevent illicit activities that undermine the integrity of the stock market and cause financial losses for investors.

Fraud detection is one of the most crucial use cases in the financial industry. In the context of stock markets, fraud can occur in various forms, such as insider trading, market manipulation, pump-and-dump schemes, etc. Analyzing patterns in stock market data can help identify such fraudulent activities, enabling regulators to take necessary action to prevent such occurrences. This analytical use case involves the following **business requirements**:

* Data Collection: Collecting stock market data from various sources such as stock exchanges, news feeds, social media, etc., to identify patterns and trends.
* Data Preprocessing: Cleaning and processing the collected data to remove noise, errors, and inconsistencies.
* Feature Extraction: Extracting relevant features from the preprocessed data to identify patterns and trends.
* Model Development: Developing machine learning models that can analyze patterns in the data and idendify fraudulent activities.
* Model Deployment: Deploying the developed models to monitor stock market data in real-time and generate alerts when suspicious activities are detected.

**Business requirements:** To detect fraud in stock market, there is a need to analyze large volumes of financial data in real-time. The analysis should be able to detect any unusual or abnormal patterns in trading activity, such as a sudden surge in trading volumes, abnormal price fluctuations or changes in trading patterns. The system should also be able to flag any suspicious activity for further investigation by regulatory authorities.

or the analytical use-case of fraud detection using stock market prediction, the precise internal needs of the fraud detection team could include:

* The ability to monitor and detect fraudulent activities in real-time to prevent financial losses.
* The ability to generate alerts and reports that highlight potential fraudulent activities and provide actionable insights to prevent future incidents.
* Access to historical fraud data and analytics to identify patterns and trends in fraudulent activities and improve fraud prevention strategies.
* The ability to integrate with existing fraud detection workflows and tools to streamline fraud management processes and minimize the risk of fraud.
* The ability to customize fraud detection rules and parameters based on the company's specific industry, fraud risk profile, and regulatory requirements.

**State of the art:** Several machine learning algorithms have been applied to detect fraud in stock markets, including regression, decision trees, support vector machines, neural networks, and deep learning. However, the most commonly used methods for fraud detection in stock markets are clustering, anomaly detection, and classification.

Machine learning techniques such as classification, clustering, and anomaly detection are commonly used for fraud detection in stock markets:

* Pattern recognition: This technique involves the identification of patterns in historical stock market data to detect potential instances of fraud. It involves the analysis of trading volumes, price movements, and other market indicators to identify patterns that indicate market manipulation.
* Anomaly detection: This technique involves the identification of abnormal behavior in stock market data. It uses statistical models to identify outliers that indicate fraudulent activities such as insider trading or market manipulation.
* Network analysis: This technique involves the analysis of relationships between traders and their trading activities to detect potential instances of fraud. It involves the use of network analysis tools to identify clusters of traders that exhibit suspicious behavior.
* Sentiment analysis: This technique involves the analysis of social media and news data to identify potential instances of fraud. It involves the use of natural language processing techniques to analyze sentiment and identify trends that may indicate market manipulation.

There are various approaches to fraud detection in stock markets, including statistical methods, machine learning, and deep learning techniques. Statistical methods involve analyzing financial data to identify trends and patterns that indicate fraudulent activities. Machine learning algorithms, on the other hand, use historical data to train models that can identify fraudulent behavior in real-time. Deep learning techniques can analyze vast amounts of data and identify patterns that are not easily discernible to the human eye.

**Adopted Methods/Techniques**: The adoption of specific methods and techniques for fraud detection in stock markets would depend on various factors such as the size and complexity of the data, the type of fraud being targeted, and the availability of resources. However, some of the commonly adopted techniques include machine learning algorithms such as Random Forest, SVM, and Neural Networks. These algorithms are capable of processing large volumes of data and identifying patterns.

The most effective approach to detecting fraud in the stock market would be to use a combination of statistical methods and machine learning algorithms. Statistical methods can be used to identify any suspicious activity, and machine learning algorithms can be trained to recognize patterns that indicate fraudulent activities. The use of deep learning techniques can be considered in case of complex and challenging scenarios.

# Analytical Use-case: Utilizing Stock Market Prediction to Optimize Buy and Sell Strategies

As a trader, I want to use stock market prediction to make informed investment decisions, to optimize my buy and sell strategies, and maximize my returns on investment.

This use case is for traders looking to predict stock market movements to determine the optimal time to buy or sell stocks. The objective is to use predictive analysis algorithms to identify trends and patterns in real-time and historical stock market data to predict future price movements. Traders can then use these predictions to make informed decisions about which trades to make, which can improve the profitability of their investments. The algorithms used can range from simple technical indicators to more sophisticated machine learning models. Speed and accuracy of predictions are key factors for traders, as market movements can be very fast and unpredictable.

Predicting stock market prices can be used by traders to determine when to buy or sell stocks. This analytical use-case involves analyzing patterns in stock market data to identify trends and make informed investment decisions.

**Business requirements:** Traders need to analyze large volumes of financial data in real-time to make quick decisions about when to buy and sell stocks. The analysis needs to be able to identify patterns and trends in stock market data, such as changes in trading volumes, price fluctuations, and trading patterns. The system should also be able to make accurate predictions about future price movements and provide traders with actionable insights.

For the analytical use-case of utilizing stock market prediction to optimize buy and sell strategies, the precise internal needs of the trading team could include:

* The ability to access accurate and timely stock market prediction data to inform buy and sell decisions.
* The ability to generate trading signals and alerts based on the stock market prediction data to identify optimal entry and exit points.
* Access to historical trading data and analytics to track performance and evaluate the effectiveness of trading strategies.
* The ability to integrate with existing trading platforms and tools to automate trading processes and maximize efficiency.
* The ability to customize trading strategies and parameters based on the trader's specific risk profile, trading goals, and investment objectives.

**State-of-the-art solutions:** There are various approaches to predicting stock market prices, including statistical methods, machine learning, and deep learning techniques. Statistical methods involve analyzing historical financial data to identify trends and patterns that indicate future price movements. Machine learning algorithms, on the other hand, use historical data to train models that can predict future price movements in real-time. Deep learning techniques can analyze vast amounts of data and identify patterns that are not easily discernible to the human eye.

**Adopted methods/techniques:** To predict stock market prices accurately, traders can use a combination of statistical methods and machine learning algorithms. Statistical methods can be used to identify any trends in stock market data and make predictions about future price movements. Machine learning algorithms can be trained to recognize patterns that indicate future price movements and provide traders with insights and actionable recommendations.