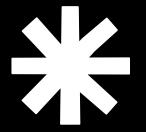


A HYBRID QUANTITATIVE TRADING APPROACH USING HMM AND XGBOOST



- What's Happening Real-life cases
- Problem Statement
 Current limitations in manual
 trading
- ObjectivesOur game plan

- Proposed SolutionOur plan execution
- Explanation & Demo How it works, really
- InnovationsWhat makes us different
- Conclusion



WHAT IS CURRENTLY HAPPENING?

Statistics from Grand View Research (grandviewresearch.com) illustrate that The size of the worldwide cryptocurrency industry was assessed at USD 5.70 billion in 2024, and it is expected to increase at a compound annual growth rate (CAGR) of 13.1% between 2025 and 2030.

No better time to venture into trading than now (if you haven't already).



PROBLEM STATEMENT



Inefficient method of trading

Manual trading takes a long amount of time because you need to manually click buttons to trade.

Emotional Appeal

Humans are prone to emotional bias when trading, which could greatly affect the potential profit and loss.

✓ Competitive market

With more and more traders competing in the market, the utilization of Al will be significant in ensuring players in the industry stay ahead.

OBJECTIVES

- Reliability and Efficiency
- Unbiased decision making
- Able to compete with other quant traders





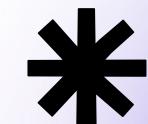


PROPOSED SOLUTION

A machine learning model, based on a hybrid of Hidden Markov Models (HMM) and XGBoost, that takes into account multiple variables to determine the best trading position to be in at a given time.

Codestar

FRAMEWORK



Strategy Engine

- Combines AI + TA
- Buy / Sell / Hold

Data Pipeline & Preprocessing

- Fetches historical crypto data
- Adds on-chain / exchange data
- Calculates technical indicators

Market Mood Detector (HMM)

• Detects Bull/Bear/Flat

Breakout Predictor (XGBoost)

Predicts large price moves

Portfolio Simulator & Tracker

- Tracks cash, positions, total value
- Logs each trade & action

Risk Control & Trade Execution

- Stop Loss (5%), Trailing Stop (4%)
- Take Profit (10%), Max Drawdown (10%)
- Cooldown after loss
- Position Sizing (60% base, 70% max)

Signal Aggregator & Decision Module

- Uses model confidence scores
- Filters with RSI, MACD, Trend, Volume
- Outputs trading signal with combined confidence





DEMONSTRATION AND EXPLANATION



INNOVATION

- Implimentation of a hybrid algorithm (HMM & XGBoost)
- Model is built based on breakout trends
- Has multiple safety features to protect your money





CONCLUSION





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