



Crypto Miner

CRYPTO MINER

Present by E-Rank Coders





MEET THE TEAM

FRONTEND DEVELOPMENT

- OH VOON KEAT
- WONG WEI SHEN

BACKEND ML DEVELOPMENT

- SHAWN SOON
- TAN HUI ZHE

DATABASE

- CHEN SHEN



PROBLEM STATEMENT

BACKGROUND OF DEVELOPMENT

- Get insight of on-chain data.
- Transparent ecosystems.
- Adapt to complex and rapid changes.
- Zero or reduction of data wastage.
- Reduce or eliminate noise trading.



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PROBLEM STATEMENT

EXPECTED DELIVERABLES



- Clean crypto data dashboard.
- AI Model Training Systems.
- Collections of Informations e.g. Global Minima/Maxima.
- Understand hidden patterns.
- Provide calculated trading strategies with maximum precision.
- Backtesting Tools to boost trader's confidence with past historical performance.





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APP FEATURES



1

Home Dashboard

2

News with Sentiment Analysis

3

Crypto Trading Interface

4

HMMCryptoLens

5

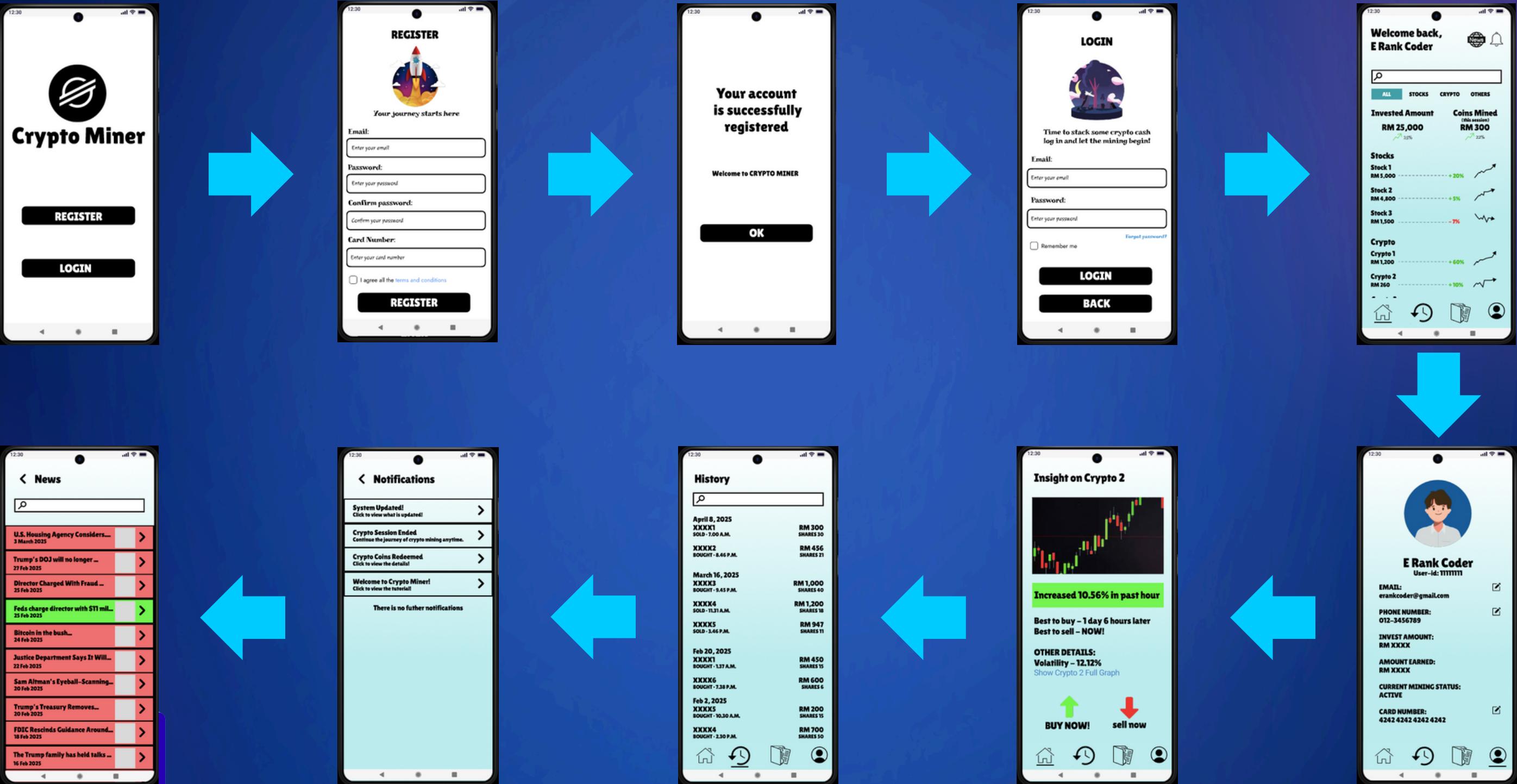
Crypto Portfolio

CONCEPTUAL DIAGRAM

INTERFACES



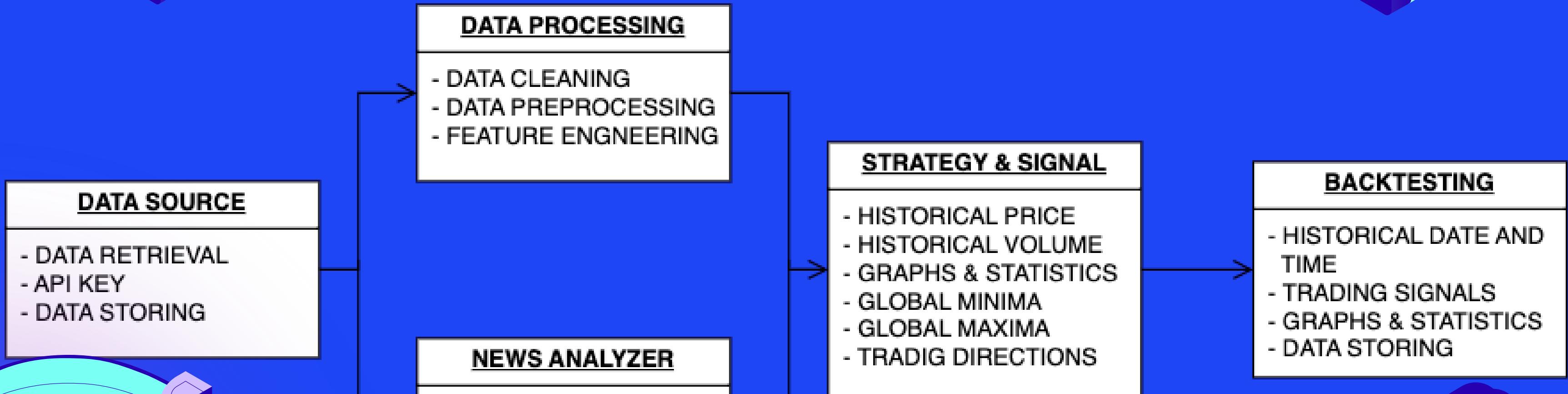
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CONCEPTUAL DIAGRAM DATA FLOWS





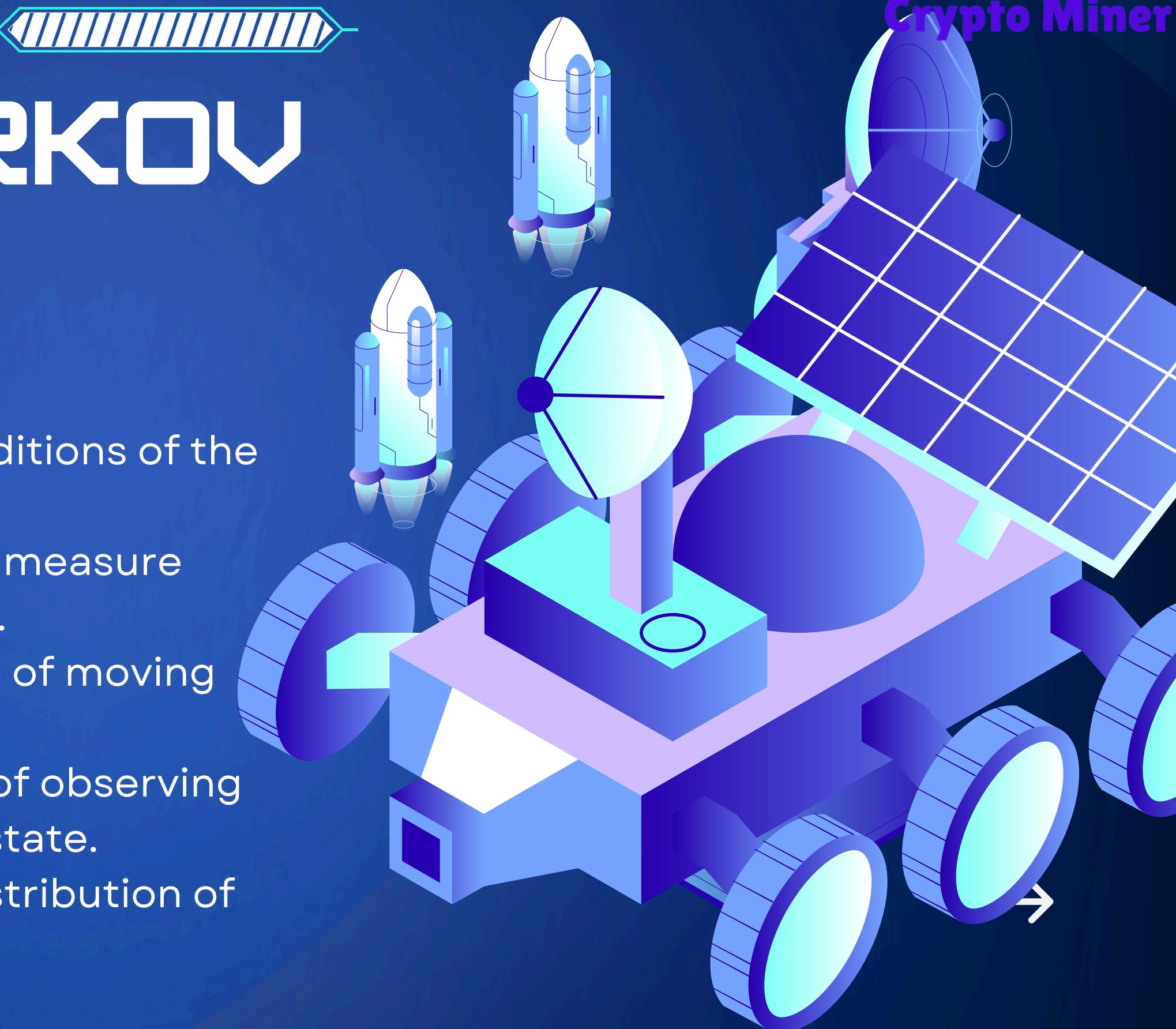
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MACHINE LEARNING

HIDDEN MARKOV MODEL (HMM)

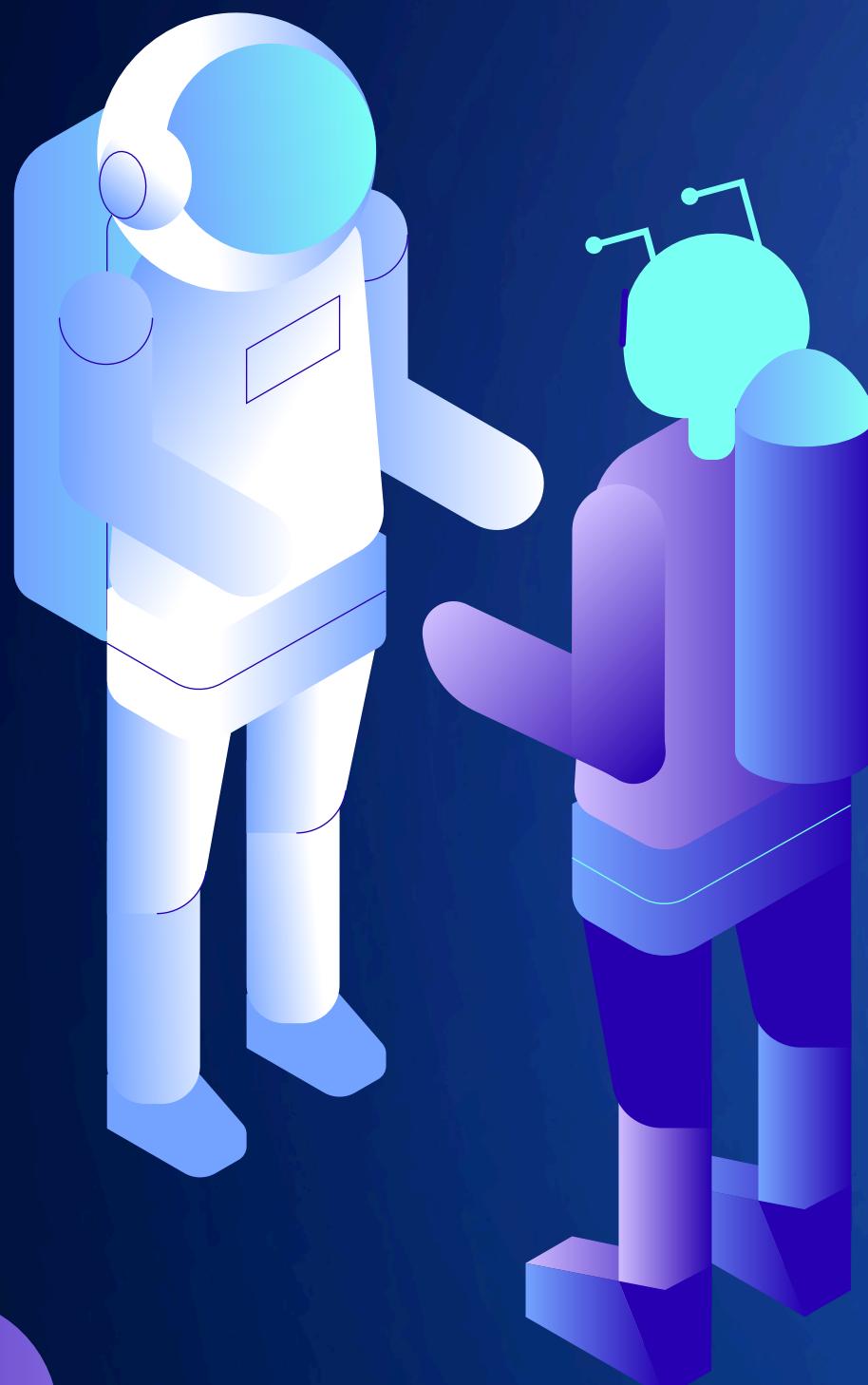
Key Elements:

1. States: Represent the underlying conditions of the system (e.g., market conditions).
2. Observations: The data we can see or measure (e.g., stock prices or news sentiment).
3. Transition Probabilities: The likelihood of moving from one state to another.
4. Emission Probabilities: The likelihood of observing a certain outcome given a particular state.
5. Initial Probabilities: The probability distribution of the initial state.





CRYPTO ANALYSER



How it works:

1. Data Retrieval:

- Fetches data using the CyboTrade API and saves it to a CSV.

2. Data Processing:

- Loads, cleans, and preprocesses the data (removes duplicates, fills missing values, converts timestamps).
- Adds engineered features (e.g., bid-ask ratios).

3. HMM Training:

- Trains a Hidden Markov Model (HMM) on the preprocessed data using selected features.
- Predicts hidden market states to detect trends.

4. Output:

- The program outputs a DataFrame with predicted market states, which can be used for further analysis or trading decisions.



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NEWS ANALYSER



⚙️ How It Works:

- 1. Fetch News:** Uses NewsAPI to get recent crypto news articles
- 2. Train AI Model:**
 - Uses pre-labeled and auto-labeled news samples
 - Applies CountVectorizer to convert text to numbers
 - Trains a Naive Bayes classifier to learn sentiment patterns
- 3. Predict Sentiment:**
 - Classifies each new article as GOOD or BAD
- 4. Visualize Market:**
 - Retrieves Bitcoin prices with yfinance
 - Displays chart using matplotlib



TRADING STRATEGY METRICS



How It Works:

1. **Data Fetching** – Fetches hourly BTC/USDT data from CyboTrade API (OHLCV format).
2. **Feature Engineering – Calculates:**
 - Momentum
 - Volatility
 - Moving Averages (MA10, MA50)
 - Price-to-MA ratio
3. **HMM Model Training** – Trains a Gaussian Hidden Markov Model (3 states) using the engineered features.
4. **State Prediction & Signal Generation** – Predicts the most stable/favorable state → assigns buy signals.
5. **Backtesting – Evaluates strategy using:**
 - Sharpe Ratio (risk-adjusted return)
 - Max Drawdown
 - Trade Frequency



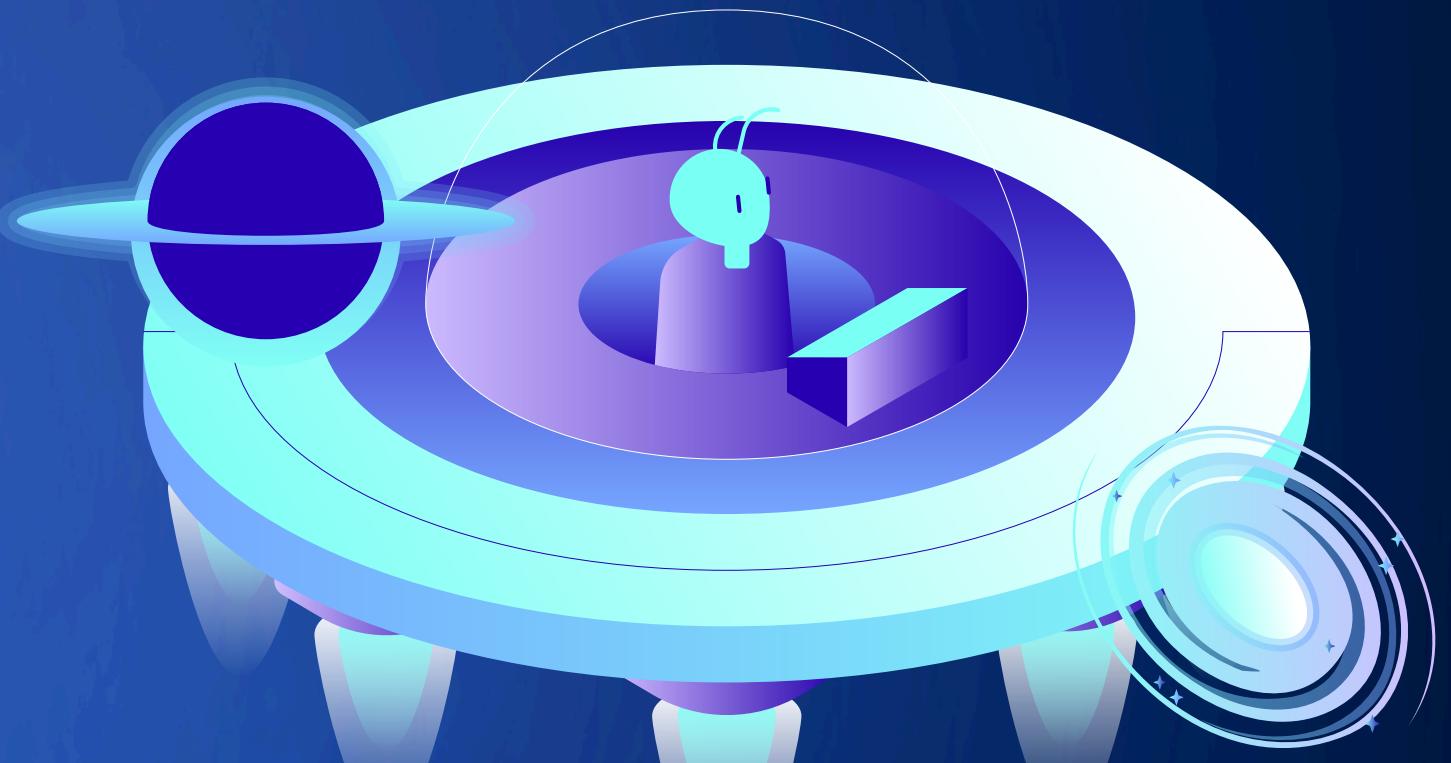


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RESOURCES & LIBRARIES

APIs:

- **CyboTrade API:** Fetch cryptocurrency market data.
- **NewsAPI:** Fetch cryptocurrency news articles for sentiment analysis.
- **yFinance:** Fetch Bitcoin price data for analysis.





RESOURCES & LIBRARIES

2. Libraries:

- **requests**: For HTTP requests to APIs.
- **pandas**: Data manipulation and analysis.
- **numpy**: Numerical computations.
- **hmmlearn**: Hidden Markov Models for time series prediction.
- **sklearn**: For machine learning (e.g., Naive Bayes, feature scaling).
- **textblob**: Sentiment analysis of news articles.
- **matplotlib**: Data visualization for Bitcoin price.



THANK YOU FOR
YOUR TIME!

