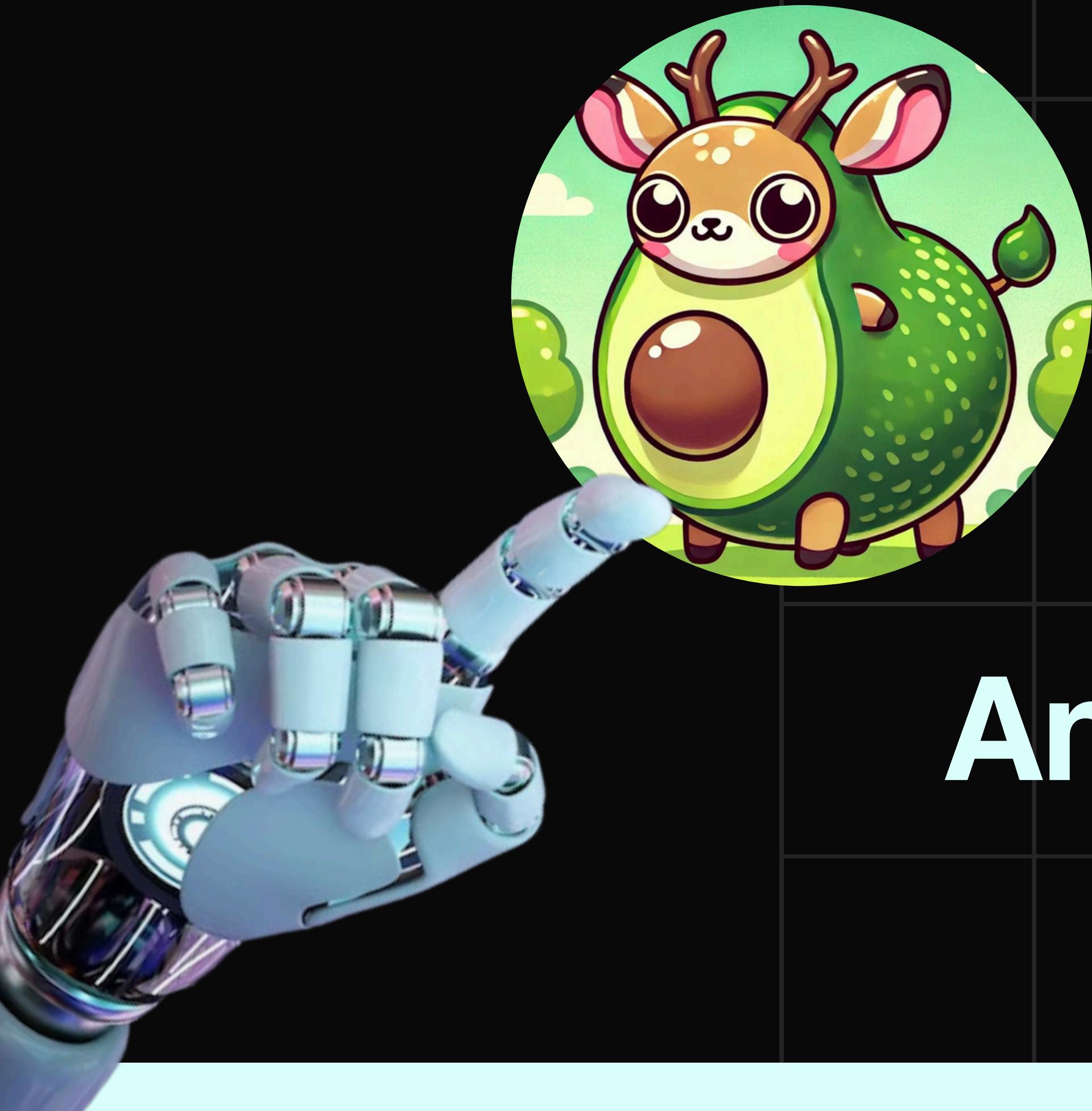


# Pipelining Financial Statement Analysis using AI

Presented by AvocadoImpala (AI)



# **Problem Statement**

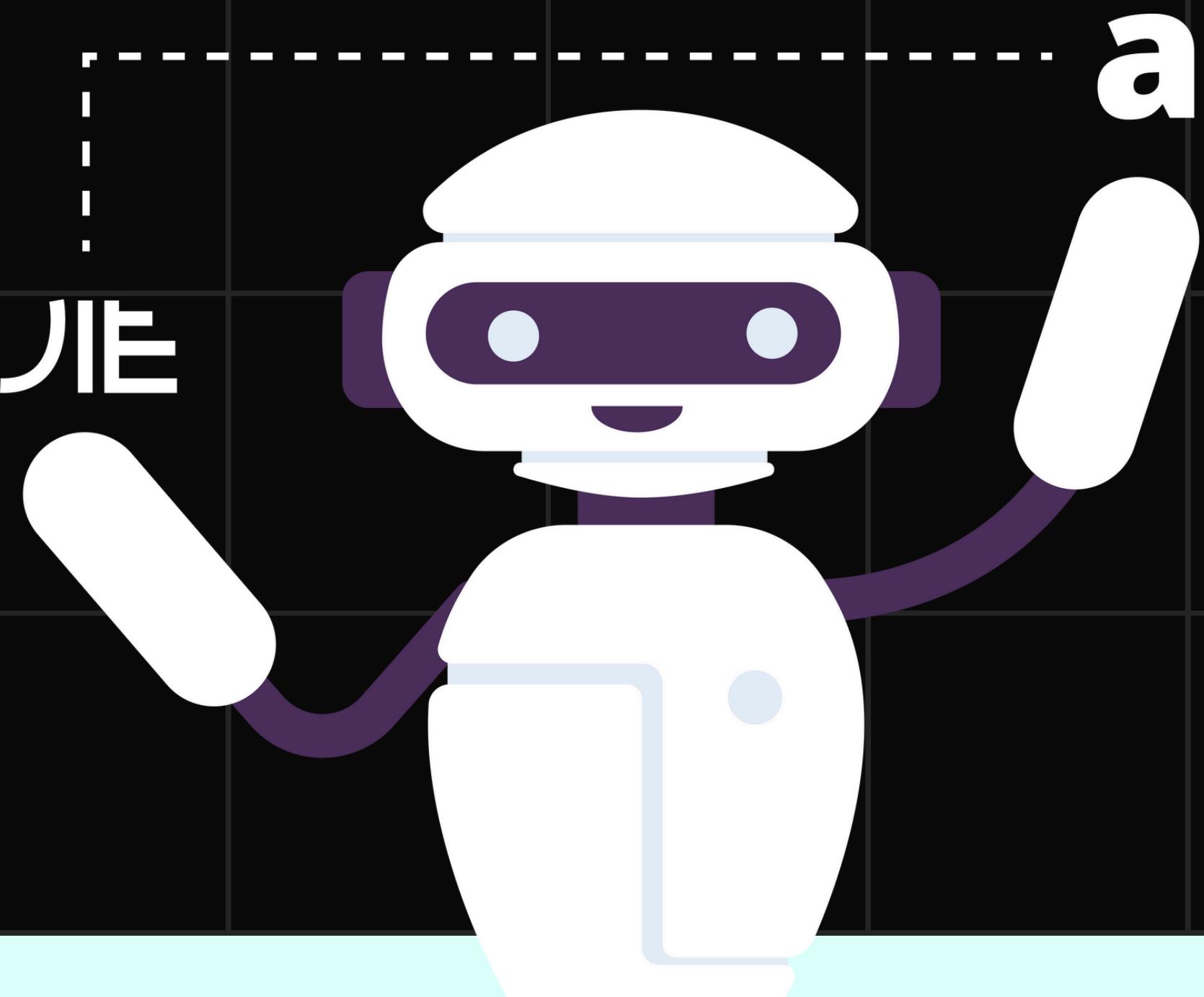
Since it's hard to extract information and infer financial data from financial statement

# **Objective and Aim**

We aim to pipeline and speed up this process by using AI.



# PDF \* Extraction



Text extraction

Prompt Engineering

Compare models

Compile results

**Leverage RAG (Retrieval Augmented Generation) technology to generate the business segment of the company.**

Tools used:

- Pinecone (database)
- GPT 4o from Azure
- text-embedding-ada-002 from Azure

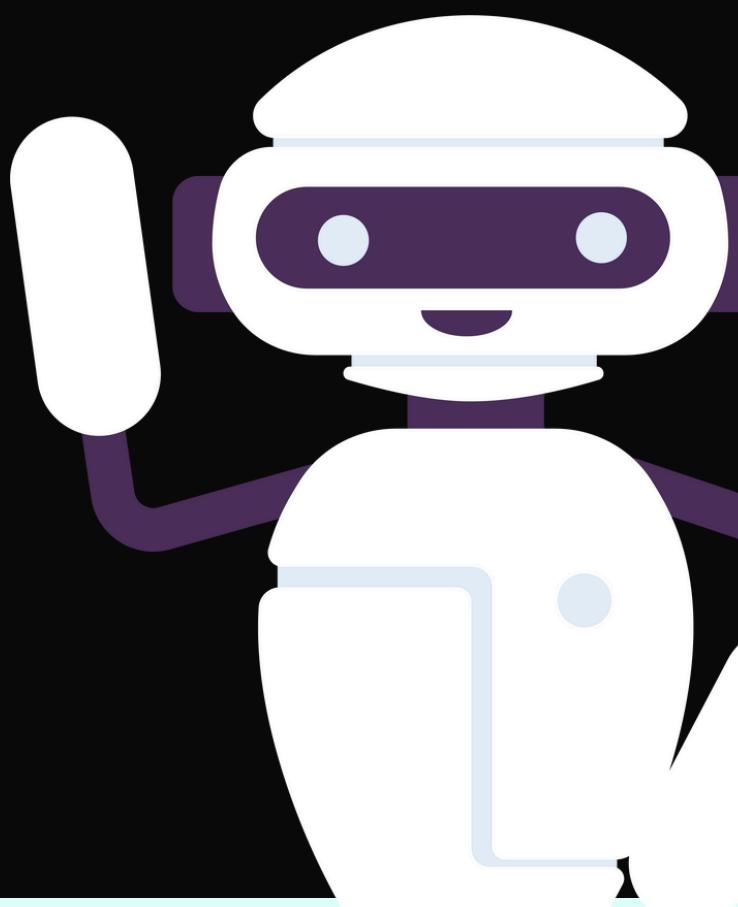
At this stage, we are focused on the Maxis annual financial report.



# Financial Ratio Analysis

## Compute ratio such as common financial ratio

- **Profitability ratio**
  - Metrics and ratio that measure how well the company is generating profit
- **Liquidity ratio**
  - Metrics that measure the company ability to pay its short-term debt
- **Efficiency ratio**
  - Metrics that assess how effectively the company is utilizing its assets
- **Solvency ratio**
  - Metrics that evaluate the company long-term financial stability
  - Is their business able to remain profitable in the future based on how their current cost of operation
- **Investment valuation ratios**
  - Metrics used to assess the relative attractiveness of an investment in a company's stock
  - Help investors determine whether a company's stock is overvalued, undervalued, or fairly priced



# Financial Ratio Analysis

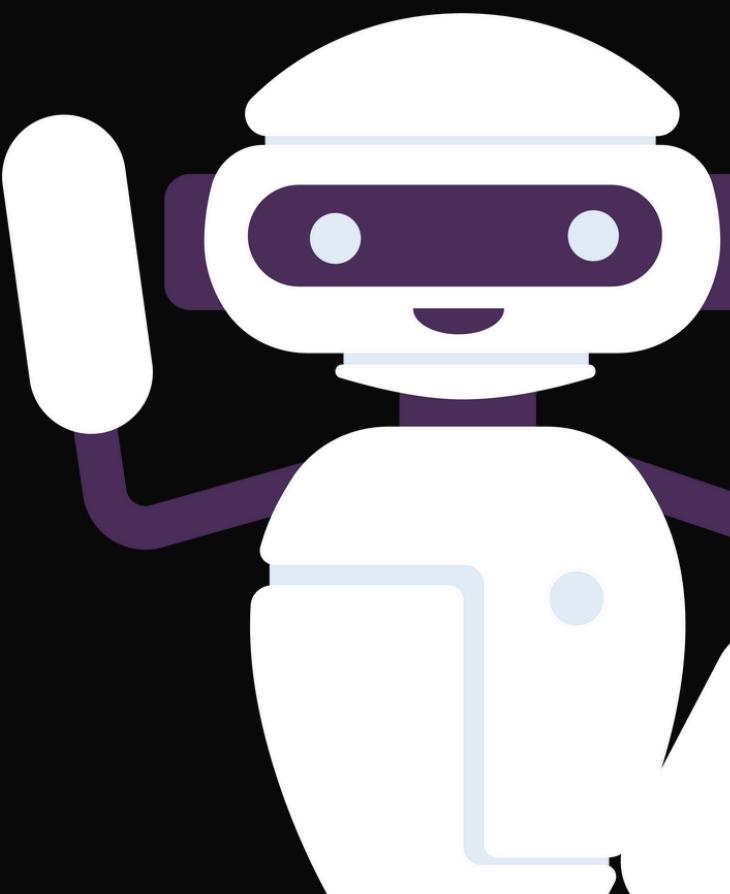
## CAPM related metrics

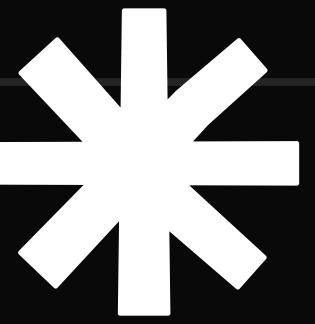
- Metrics used to determine assets performance in relative market risk

## Credit risk statistical score

- Test such as Altman Z score which measure take in account profitability, leverage, liquidity, solvency, and activity ratios.

\* The purpose of the ratios is to close the knowledge gap between those technical and non-technical allowing for easy interpretation



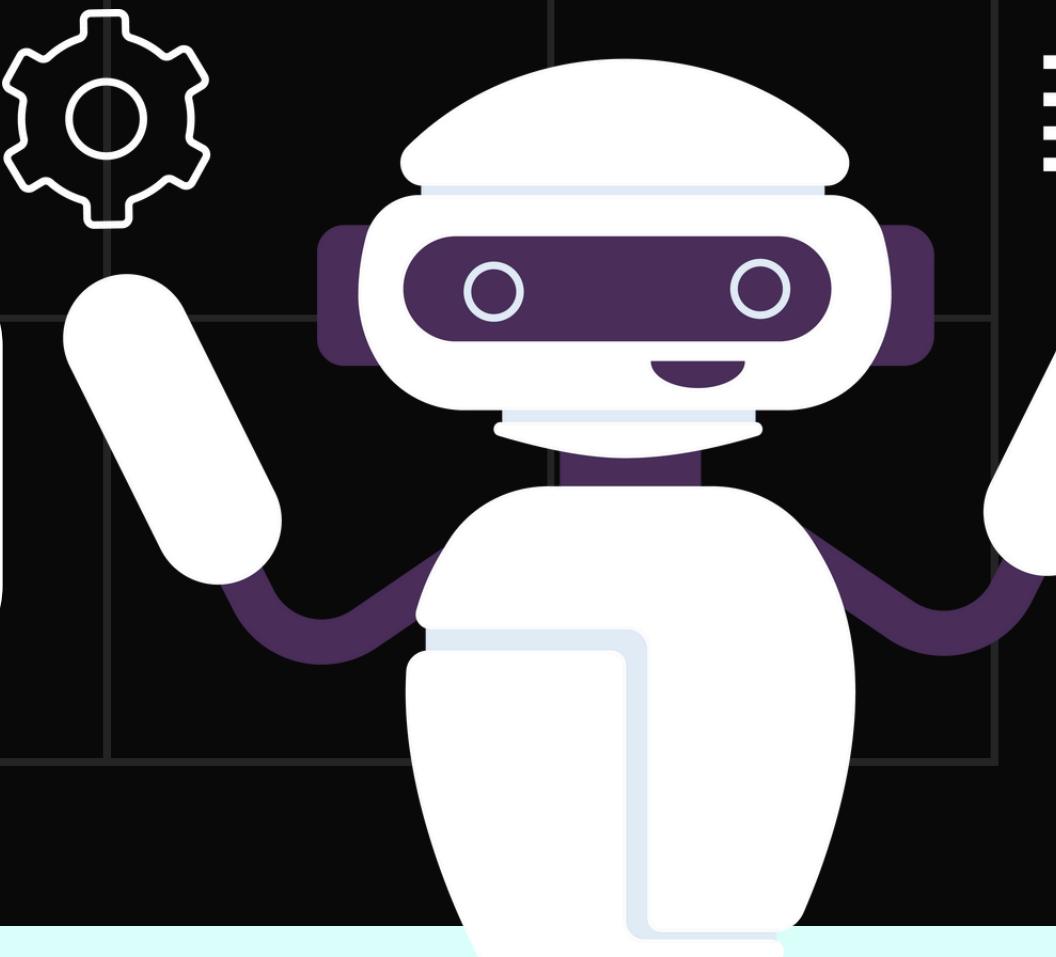


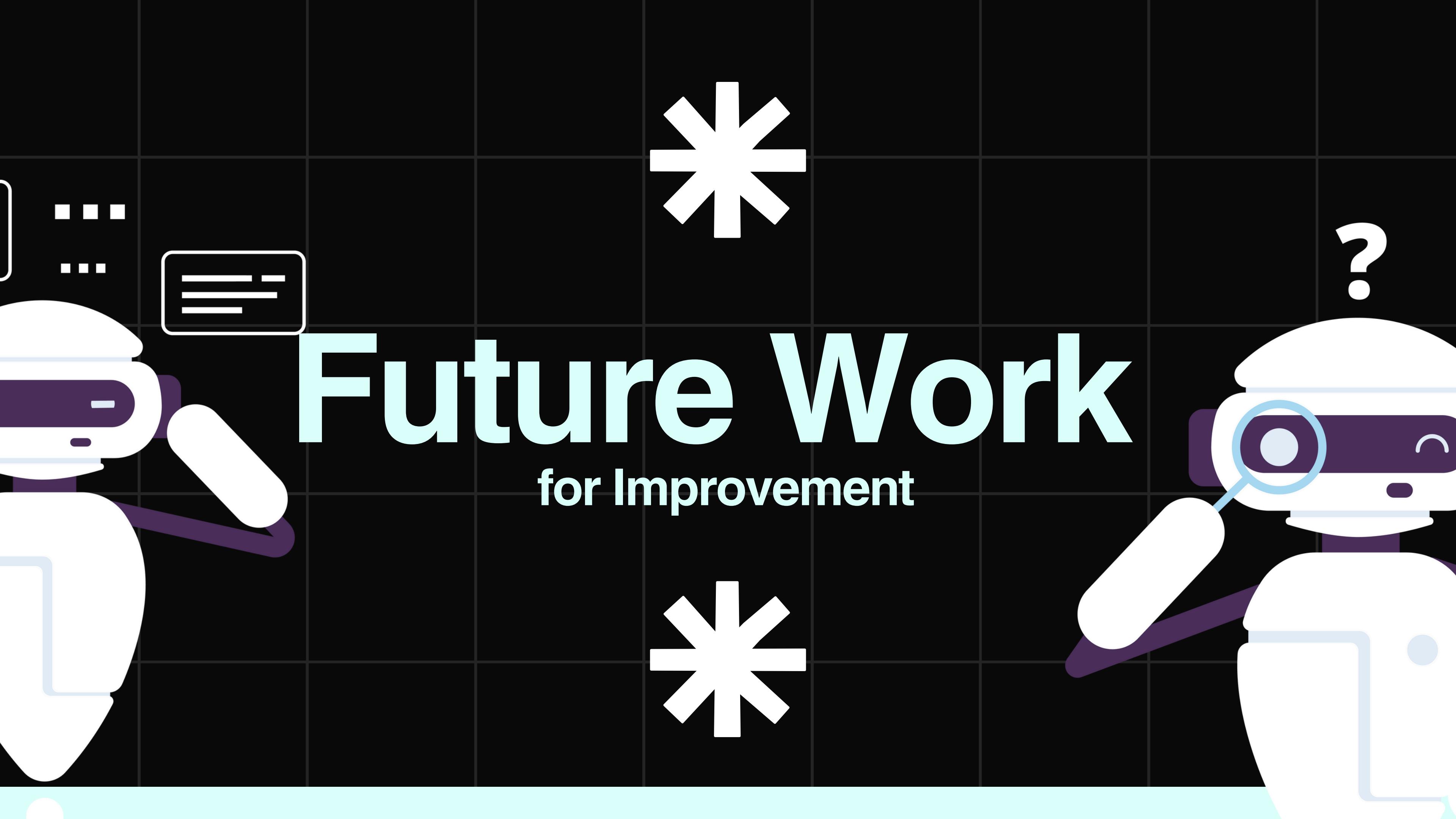
## Revenue, total liabilities and projection

Treat Revenue, Total Liabilities and Profit as time series, use ARIMA and SARIMAX model to fit and forecast.

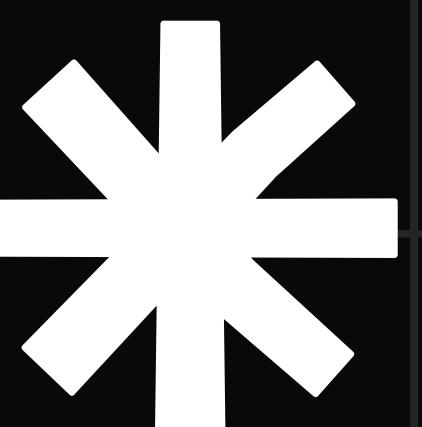
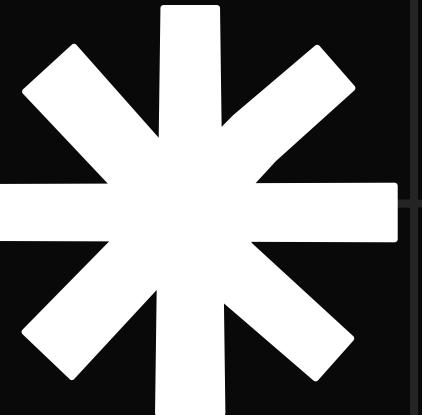
## Regime switching models

Switches between market state such as bull and bear, or climate change to avoid catastrophic losses





# Future Work for Improvement



## Abnormal Value Detection

- Looking at outlier of all past revenue, liabilities and earning percentage change and determine their outlier
- Possible if there are additional features we can perform classification algorithm and machine learning method to increase precision and recall metrics

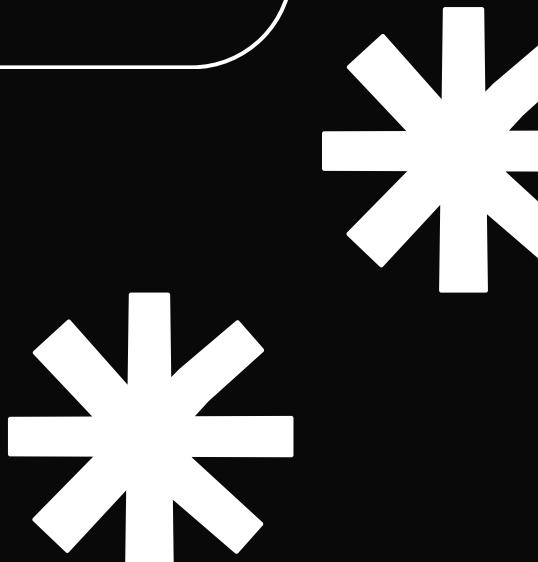
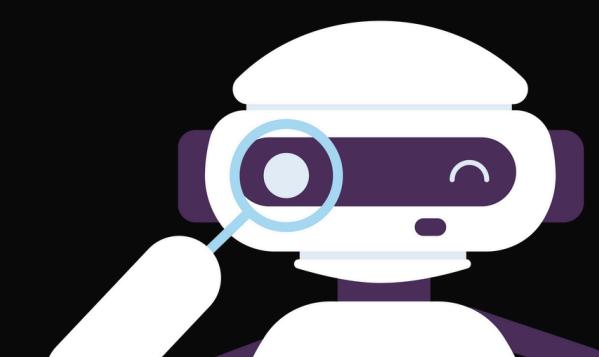
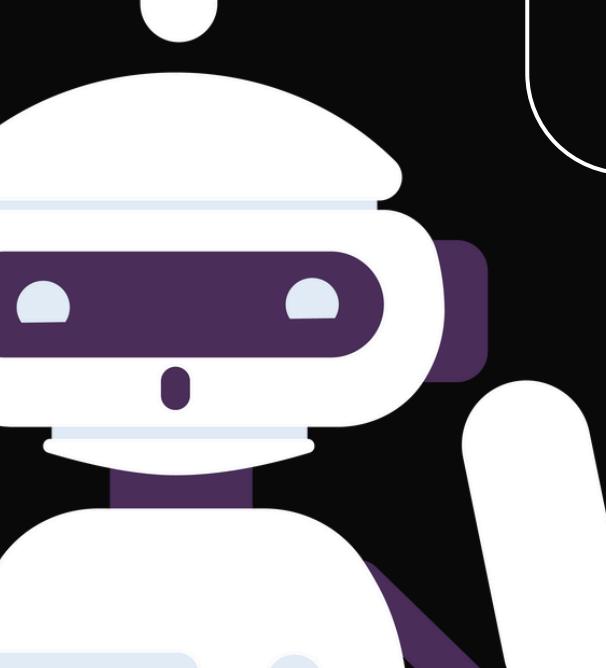
## Training an LLM to detect specific sections in the annual report

- Understanding where the business segment is and ignore the rest
- Summarise this part and understand what the business about

## More robust regime switching models

- Implement feature and additional layers of different frameworks, different method of computing switching probabilities

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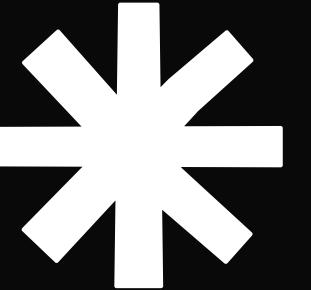
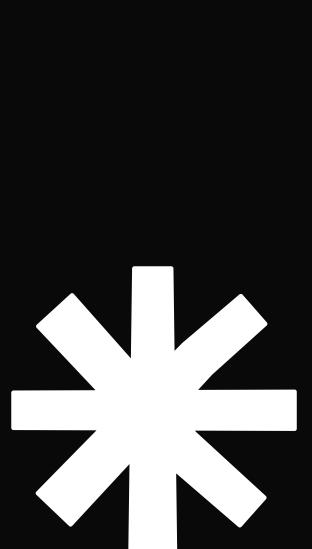
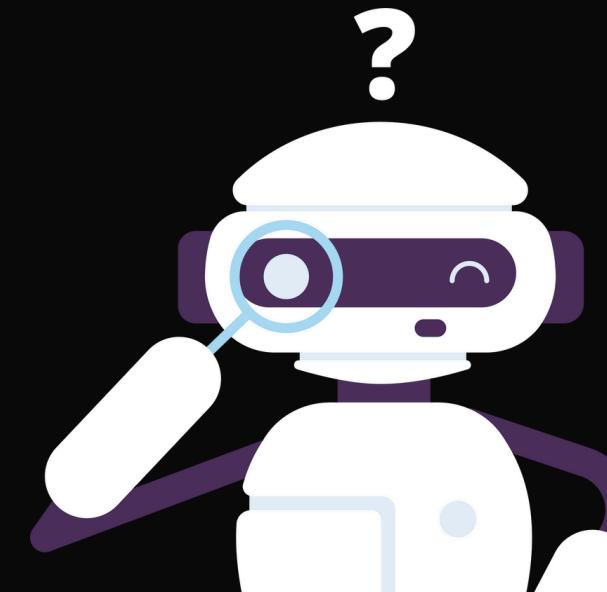


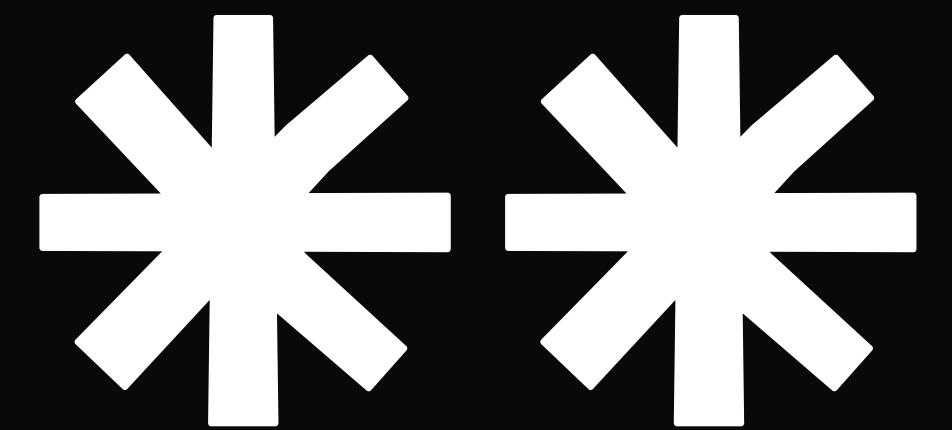
## Scenario testing

- Scenario testing using a large language model (LLM) for a company involves creating hypothetical situations to evaluate how the model responds to various inputs, ensuring it can generate relevant and accurate information aligned with the company's context and objectives

## Hierarchical Structuring for financial performance

- Decision matrix
- Since different industries would prioritize different ratios, so assigning it based on a hierarchical ranking to each of these different ratios





# Thankyou

Avocadolmpala

