About:
This project leverages macroeconomic indicators and market data to **predict the probability of a recession in Canada**. Key features include:

- Macroeconomic Indicators: GDP growth, unemployment rate, inflation rate, policy rate, debt to GDP ratio, PPI, US GDP growth, and lag features.
- Market Data: treasury spread, credit spread, stock market index.

Key Findings: **When the credit spread exceeds 2%, the likelihood of entering a recession significantly increases.**

Limitations:
1. Limited Data Size & Time Range

- The dataset only starts from 2001, covering a small number of recessions (e.g., 2008 financial crisis, COVID-19 recession).
- Fewer recession events make it harder for the model to learn patterns effectively.

2. Potential Data Quality Issues

- Revisions in Economic Data: Macroeconomic indicators (e.g., GDP growth) are often revised after initial release, leading to potential look-ahead bias if using finalized data.
- Lag in Data Availability: Some indicators (e.g., GDP) are reported with delays, making real-time predictions challenging.

3. Feature Selection & Simplification

- The model may not include all relevant economic and financial factors (e.g., consumer confidence, housing market data, business investment).
- Relationships between macroeconomic indicators and recessions may be nonlinear or time-varying, which logistic regression may not fully capture.