Synopsis

Recessionary analysis and Predictive Modeling

Problem Statement: It's 2023 and Germany is in a technical recession. The whole market is currently quite volatile and is anticipating a long term recession. Hiring is being cut down, increased yield rate and startups cutting down on their spending, cash burn. These are undeniably correlated, however they do point at a deeper systematic problem in the economy and a sliver of correction. Analysing this is what Economists do. Why not use Algorithms and ML for the same?

Introduction: Technical recession is defined as negative growth in Nominal National GDP for a span of 2 consecutive quarters or 6 financial months. Various factors such as:
1. Unemployment figures(in the form of either civilian unemployment or nonfarm payrolls for 3-month vs 12-month trend line)
2. Stock market 50-day moving average.
3. US Treasury Bond market
4. Real estate market
5. Commodities futures
6. Yield rate
...etc.
Recession has happened 9 times since 1955 and hence, on a time-series graph, it's a rare anomoly event. Hence of the aforementioned factors, we are limited to picking up few of them due to small dataset present.

Proposed solution:
Using exploratory data analytics and time-series ML techniques for mapping these factors as weak and strong params for the prediction on a 6-month, 12-month and a 24-month time-scale i.e "Will recession happen after X months?", we will build a model using existing data and then calibrate the model continuously(at a fixed date of every month) to plot a realtime graph using FRED API to source our data.

References:
https://www.census.gov/topics/families/families-and-households.html

https://fred.stlouisfed.org/docs/api/fred/

https://deeplearningcourses.com/c/ai-finance

https://www.youtube.com/watch?v=W6PFKC_99Gc&ab_channel=EPBResearch

https://github.com/tzhangwps/Recession-Predictor

https://towardsdatascience.com/recession-prediction-using-machine-learning-de6eee16ca94