Our Trading Strategy (trading.ipynb)

- **Core Idea**
  In this trading strategy, we use the predicted Close prices of gold futures based on the best model we implemented to make day-by-day trading decisions. The decisions are purely based on predictions, and we use actual prices to evaluate their performance. This ensures the strategy aligns with real-world scenarios, where traders make decisions without knowing future prices.

- **Key Decisions**

  We based our decisions on the predicted prices to ensure that the strategy is forward-looking and avoids overfitting to actual data, mimicking real trading conditions, this is done by calculating day-by-day change in the predicted price. Moreover, we use dynamic signal thresholds because market conditions are volatile, and fixed thresholds might not capture market nuances effectively, they also adapt to the market's current state by using volatility as a baseline, this is made by calculating rolling volatility and using a multiplier to set buy/sell thresholds based on this volatility. Also, we integrated Momentum filters to help align trades with broader market trends, this avoids counter-trend trades that are inherently riskier, we did it by using a simple moving average to determine the trend, this reduces the likelihood of false signals and improves win rate. In addition, we added Stop-Loss and Take-Profit rules to mitigate risk and ensure profits are locked in, preventing large losses during unexpected market movements, by doing that, we limit drawdowns and reduce emotional decision-making during adverse moves.

- **Performance and Metrics**
  We evaluated the performance using industry-standard metrics that are designed to assess a specific aspect of performance:
  I. **Sharpe Ratio (3.07%)**
     It reflects the strategy's risk-adjusted return. Its value is positive but low, this shows that it generates minimal return relative to its risk
  II. **Sortino Ratio (3.1%)**
     It focuses on downside risk rather than total volatility, it indicates that losses are relatively well-controlled compared to the strategy's returns
  III. **Max Drawdown (16.59%)**
     This measures the worst-case peak-to-trough loss, the value shows the strategy has managed to limit losses effectively
  IV. **Calmar Ratio (7.02)**
     This metric compares returns to drawdowns. Its value is excellent; it suggests that the strategy is efficient in terms of risk versus reward.

V. **Win Rate (54.55%)**
This indicates that more than half of the trades were profitable demonstrating solid decision-making in trading execution.

- **Conclusion**
Our strategy strikes a balance between adaptability, simplicity and risk management. It's realistic for real-world trading and provides a robust framework for future enhancements.