**i was thinking of making portfolio optimization website based on nepse stock data. First i had studied the lstm paper, i had o little theorical knowledge about lstm so i was think of getting past data of 100 top stocks of nepal(using columns: published\_date open high low close per\_change traded\_quantity traded\_amount status) and making portfolio optimization website but i found this tft research paper which used more fansy technology which intreged me, can i combine this to techniques for my fyp for these user features: Portfolio optimization ma chai aile samma research gareko bata chai: 1.Customizable Risk Tolerance Levels: Users can adjust their risk tolerance, which can influence the weight allocation in the portfolio. 2. Investment Horizon Selection: evaluates portfolios over different holding periods, indicating that users can select their preferred investment horizon (short-term, medium-term) to see how expected returns change accordingly . 3. Scenario Analysis: Users can analyze how portfolios perform under different market conditions, as the paper tests the model during both bullish and bearish scenarios. This allows users to understand potential performance in varying economic contexts . 4. Rebalancing Strategies: the concept of portfolio optimization implies that users could implement rebalancing strategies based on the predicted returns and volatility metrics discussed in the research . 5. Performance Tracking and Reporting: The paper emphasizes benchmarking portfolios against the nepse Index and equally weighted portfolios, suggesting that users can track and compare their portfolio performance against these benchmarks . 6. User-Defined Constraints: optimization process can be adapted to allow users to set limits on specific stocks or sectors based on their preferences, leveraging the mean-variance framework .**

**Ani proper research garna baki bhayeko tara try garna sakine chai:**

**1. Incorporating Additional Factors: my research focuses on return predictions using LSTM models, which could be extended to include other factors if users wish to enhance their portfolio optimization beyond historical data. Mainly i was thinking about sentiment analysis of stocks based on news**

**2. Feedback Loop for Model Improvement: refinements based on user experiences and outcomes**

Your idea of creating a portfolio optimization website based on NEPSE stock data is both innovative and practical, especially considering the growing interest in stock market investments in Nepal. Combining LSTM and Temporal Fusion Transformers (TFT) can enhance your project significantly. Here’s how you can integrate the features you mentioned with the two techniques:

**Combining LSTM and TFT for Portfolio Optimization**

* 1. **Customizable Risk Tolerance Levels**:
     + **Implementation**: Use LSTM to predict stock returns based on historical data. Allow users to set their risk tolerance levels, which can adjust the weight allocation in the portfolio. For instance, higher risk tolerance could lead to a higher allocation in volatile stocks predicted to have higher returns.
     + **TFT Contribution**: The TFT model can provide more nuanced predictions by capturing complex temporal patterns, which can help in better understanding the risk associated with different stocks.
  2. **Investment Horizon Selection**:
     + **Implementation**: Allow users to select their preferred investment horizon (short-term, medium-term). Use LSTM to generate return predictions for different time frames, and apply TFT to analyze how these predictions change over time.
     + **TFT Contribution**: The TFT can help in understanding how different stocks behave over various horizons, providing insights into long-term trends versus short-term fluctuations.
  3. **Scenario Analysis**:
     + **Implementation**: Create a feature that simulates portfolio performance under different market conditions (bullish and bearish). Use historical data to train both LSTM and TFT models to predict how portfolios would have performed in past scenarios.
     + **TFT Contribution**: The self-attention mechanism in TFT can help identify which stocks are more sensitive to market changes, allowing for a more detailed scenario analysis.
  4. **Rebalancing Strategies**:
     + **Implementation**: Develop a rebalancing strategy based on predicted returns and volatility metrics. Users can set intervals for rebalancing their portfolios based on the predictions from both models.
     + **TFT Contribution**: Use the insights from TFT to inform users when to rebalance based on changing market dynamics and stock performance predictions.
  5. **Performance Tracking and Reporting**:
     + **Implementation**: Allow users to track their portfolio performance against the NEPSE Index and equally weighted portfolios. Provide visualizations and reports that highlight performance metrics.
     + **TFT Contribution**: The TFT model can provide more accurate benchmarks by considering multiple factors and temporal dependencies, enhancing the performance tracking feature.
  6. **User-Defined Constraints**:
     + **Implementation**: Enable users to set constraints on specific stocks or sectors. This can be integrated into the optimization process, allowing for personalized portfolio construction.
     + **TFT Contribution**: Use the insights from the TFT model to suggest optimal portfolios that respect user-defined constraints while maximizing expected returns.

**Additional Research Areas**

* 1. **Incorporating Additional Factors**:
     + **Sentiment Analysis**: Integrate sentiment analysis of news articles related to the stocks. This can be done using natural language processing (NLP) techniques to gauge market sentiment and its potential impact on stock prices. Combine this data with LSTM predictions to enhance the model's accuracy.
     + **TFT Contribution**: The TFT model can incorporate these additional factors as exogenous inputs, allowing for a more comprehensive analysis of stock performance.
  2. **Feedback Loop for Model Improvement**:
     + **Implementation**: Create a feedback mechanism where users can provide input on their investment outcomes. This data can be used to refine the models over time, improving prediction accuracy.
     + **TFT Contribution**: Use the feedback to adjust the parameters of the TFT model, ensuring it learns from real-world performance and user experiences.

**Conclusion**

By combining LSTM and TFT, you can create a robust portfolio optimization website that not only predicts stock returns but also provides users with customizable features to enhance their investment strategies. The integration of sentiment analysis and a feedback loop will further enrich the user experience and improve the model's predictive capabilities. This approach will not only make your project technically sound but also highly relevant to the needs of investors in the NEPSE market. Good luck with your final year project!