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| progress review |
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|  | Decorative |
| SUMMARY |
| I have been working on technical indicator and news semantic data collection and preprocessing. Besides that, I have implemented hyperparameter search for Conv1D, LSTM, XGBoostClassifier, and XGBoostRegressor. This will save the best model for a particular ticker symbol, allowing us to load the model and continue training without worrying about the hyperparameters |

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| Decorative |
| Techincal indicator |
| We can use TA-Lib, an open-source library, to calculate over 100 technical indicators, including trend, momentum, volume, volatility, and candlestick patterns. TA-Lib supports various programming languages, including Python, and offers features like moving averages, RSI, MACD, Bollinger Bands, and pattern recognition, essential for developing trading strategies and analyzing market trends.  **Installing TA-Lib**  To install TA-Lib, run the following commands in the conda terminal:  **Install the Core Library**:  conda install -c conda-forge libta-lib  This command installs the core TA-Lib library from the conda-forge channel. The libta-lib package includes the necessary C library files required for TA-Lib to function.  **Install the Python Wrapper**:  conda install -c conda-forge ta-lib  This command installs the Python wrapper for TA-Lib from the conda-forge channel. The ta-lib package allows you to use TA-Lib functions in your Python code. |
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| The implementation code, which includes comments about the use and possible range values for each technical indicator, can be found at this link [Portfolio-Optimization/code/Data-Collection.ipynb at main · ngminteck/Portfolio-Optimization · GitHub](https://github.com/ngminteck/Portfolio-Optimization/blob/main/code/Data-Collection.ipynb) under the def get\_technical\_indicator(df): function.  his code also explains the purpose of each indicator and provides examples of when the indicator might rise, fall, or reverse. |
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A screenshot of a computer

Description automatically generated

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| NEWS sentiment analysis |
| For news sentiment analysis, I use NLTK with the Loughran-McDonald Master Dictionary, which can be found [here](https://sraf.nd.edu/loughranmcdonald-master-dictionary/). This dictionary is specifically designed for financial text analysis and includes sentiment categories such as negative, positive, uncertainty, litigious, strong modal, weak modal, and constraining.  For fetching feeds/news, there are two functions: one uses Feedparser and the other uses Requests along with BeautifulSoup. The purpose of using Feedparser is to search the query, but it mostly arranges the results by recent news. To overcome this issue, I created another method using Requests and BeautifulSoup to crawl Google search queries with a custom date range.  For the search query list for a specific ticker, I get related information from Yahoo Finance, such as the short name, sector, industry, country, and more. For example, ‘NVDA’ refers to Nvidia, which is in the semiconductor industry. We can add other methods to get queries for specific tickers later on.  All this implementation can be found in can be found at this link [Portfolio-Optimization/code/Data-Collection.ipynb at main · ngminteck/Portfolio-Optimization · GitHub](https://github.com/ngminteck/Portfolio-Optimization/blob/main/code/Data-Collection.ipynb) |
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| Decorative |
| Cov1D, LSTM,Transformer |
| The implementation for this 2 model can found in this github link [Portfolio-Optimization/code/CNN-LSTM.ipynb at main · ngminteck/Portfolio-Optimization · GitHub](https://github.com/ngminteck/Portfolio-Optimization/blob/main/code/CNN-LSTM.ipynb) , It is implemented in PyTorch and is simple to install on all platforms without needing Linux configuration. The code supports both CUDA and non-CUDA users. It has hyperparameter search implemented using Optuna. It also records the best performance metrics and saves the model to the corresponding folder, along with the feature importance, which can be loaded later to continue the training.  The Conv1D and LSTM implementations have been completed and support both classification and regression. The Transformer, Conv1D-LSTM, and Conv1D-Transformer model implementations are still in progress. The Conv1D and LSTM models were implemented with a residual block concept, allowing for easy addition of multiple layers if needed. |
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| 1. **Download and Install CUDA 12.4**:    * Visit the CUDA Toolkit Archive and download CUDA 12.4.    * Follow the installation instructions provided on the NVIDIA website. 2. **Download and Install cuDNN**:    * Go to the CUDA Deep Neural Network (cuDNN) page and download the latest version of cuDNN compatible with CUDA 12.4.    * Extract the files and copy them into the CUDA installation directory (usually C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v12.4). 3. **Set Up Environment Variables**:    * Add the following paths to your system environment variables:      + CUDA\_HOME: C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v12.4      + Add C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v12.4\bin and C:\Program Files\NVIDIA GPU Computing Toolkit\CUDA\v12.4\libnvvp to the PATH variable. 4. Install pytorch [Start Locally | PyTorch](https://pytorch.org/get-started/locally/) |
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| |  | | --- | | Decorative | | XGBClassifier And XGBRegressor | | The implementation for this 2 model can found in this github link [Portfolio-Optimization/code/XBClassifier-XGRegressor.ipynb at main · ngminteck/Portfolio-Optimization · GitHub](https://github.com/ngminteck/Portfolio-Optimization/blob/main/code/XBClassifier-XGRegressor.ipynb) . It supports both CUDA and non-CUDA users and has hyperparameter search implemented using Optuna. It also records the best performance metrics and saves the model to the corresponding folder, which can be loaded later to continue the training. The feature importance extraction also implemented, however it not useful for some case as all 0 out. | |  | |  | |  | |  | |

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| Decorative |
| Model performer result |
| The model performer result can found in this csv [Portfolio-Optimization/ticker-best-model.csv at main · ngminteck/Portfolio-Optimization · GitHub](https://github.com/ngminteck/Portfolio-Optimization/blob/main/ticker-best-model.csv) |
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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Ticker Symbol | Cov1D  Classification | LSTM  Classification | XGBCLASSIFER | Transformer  Classification | | CL=12 (CRUDE OIL) | 0.76 | 0.81 | 0.73 | ? | | NVDA | 0.55 | 0.77 | 0.73 | ? | | SDUSD=X | 0.6 | 0.86 | 0.69 | ? | | USDSD=X | 0.66 | 0.86 | 0.71 | ? | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | Ticker Symbol | Cov1D  Regression | LSTM  Regression | XGBRegressor | Transformer  Regression | | CL=12 (CRUDE OIL) | 1.39 | 1.21 | 1.24 | ? | | NVDA | 4.17 | 3.76 | 4.06 | ? | | SDUSD=X | 0.0017 | 0.0017 | 0.0016 | ? | | USDSD=X | 0.0028 | 0.003 | 0.0028 | ? | |
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| Bar graph with upward trend BUSINESS  PRIORITIES   * Someone sponsor please  List ADDED  PRIORITIES   * Improve social media presence * Ensure the cost of development stays below budget  Group brainstorm EMPLOYEE OPPORTUNITIES   * Interns begin * Indoor rec leagues * Chess tournaments |  | What next |
| Finish implement transformer Lorem ipsum dolor sit amet consectetur adipiscing. Nisi lacus sed viverra tellus. Orci eu lobortis elementum nibh tellus molestie nunc non. Laoreet suspendisse interdum consectetur libero id faucibus nisl tincidunt. Pharetra massa ultricies mi quis hendrerit dolor. Non tellus orci ac auctor augue mauris augue neque gravida. implement load best model and resume training Lorem ipsum dolor sit amet consectetur adipiscing. Nisi lacus sed viverra tellus. Orci eu lobortis elementum nibh tellus molestie nunc non. Laoreet suspendisse interdum consectetur libero id faucibus nisl tincidunt. Pharetra massa ultricies mi quis hendrerit dolor. Non tellus orci ac auctor augue mauris augue neque gravida.   ADD HYBRID MODEL CNN-LSTM, CNN-TRANSFOMER Lorem ipsum dolor sit amet consectetur adipiscing. Nisi lacus sed viverra tellus. Orci eu lobortis elementum nibh tellus molestie nunc non. Laoreet suspendisse interdum consectetur libero id faucibus nisl tincidunt. Pharetra massa ultricies mi quis hendrerit dolor. Non tellus orci ac auctor augue mauris augue neque gravida.  Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Quis eleifend quam adipiscing vitae proin sagittis nisl rhoncus mattis. At tellus at urna condimentum mattis. Odio aenean sed adipiscing diam donec adipiscing tristique. Molestie ac feugiat sed lectus vestibulum mattis ullamcorper velit sed. Cursus in hac habitasse platea dictumst quisque sagittis purus sit. Cursus sit amet dictum sit amet justo donec |