**MOORE CAPITAL – CASE STUDY – OWEN THACKER**

SUMMARY

The project overall was more complex than what I first had imagined. I rather easily made the change from downloading data from Quandl to reading from the provided CSV, ensuring consistent formatting with the previous method. However, I had other issues with other areas of the code that had no relation to the changing of downloading data. Issues started with an incompatible requirements folder for my system, as well as crashing of code. I have kept code integral to what it was using previously, however, the only necessary change that opposes this is a different callback tuning method, which I’m unsure aligns with the previous approach. Other changes involved ensuring compatibility with updated packages, as well as some undefined variables and more. The status of the project is I have been able to run the LSTM model (not other models due to crashes). I also added a plot to show the cumulative return over the test period for each asset. I validated the results by reading a snippet of the research paper in which it was notably mentioned that “The LSTM exhibits very poor performance during this experiment”. When I took a look at the results file (a 5% annual return and a low Sharpe (0.7)) It seemed to align with the paper's result. AI/LLMs were very beneficial in helping me quickly find solutions to problems that I was uncertain about, such as if I hadn't come across them before/if they weren’t self-explanatory, or if they had required context from the rest of the code.

A graph of different colored lines

Description automatically generated

CSV SPECIFIC

For the CSV-specific code, I started by ensuring that I understood the formatting the Quandl data was returning originally (as in theory getting this step right would then mean I would not need to change the rest of the code). The original format was having each ticker in its own CSV file in a folder named quandle, with the column named ‘Settle’ and the index named ‘Date’. When reading in the CSV it reads in the whole CSV together with the ticker names as the column. To then modify this I used a for loop to loop over each column, copied the column data, modified the column name and then saved It to its own CSV file to align with the original code.

LIST OF CHANGES

1. DATA

Download Quandl Data

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| --- | --- |
| What I did: | How: |
| Changed all code to read CSV data instead, however, keeping the same output format. | Line [0-34]. Used co-pilot to solve a directory issue I was having. Prompt “I have an error that states the directory doesn’t exist {error}. Can you provide me code that correctly points to inside the data\quandl directory and makes a folder if one doesn’t already exist”. |

Pull Data

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| --- | --- |
| What I did: | How: |
| Made a small change in the renaming from Date to Dates to align with the given CSV file. | Line [14]. |

2. EXAMPLES

Run Classical Strategies

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| --- | --- |
| What I did: | How: |
| Changed the interval range due to the date range in the CSV file. | Line [4]. |

Run DMN Experiment

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| What I did: | How: |
| Changed default parameter values for training and testing boundaries. | Line [154, 162, 170]. |

3. MOM TRANS

Backtest

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| --- | --- |
| What I did: | How: |
| File names must end in .weight.h5. Added the .weight.h5 extension will be added to the required file. | Line [517-520], prompt “What’s the error here and how do I fix it {error}”. |

Classical Strategies

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| What I did: | How: |
| Removed empirical imports of Sortino ratio and downside risk as they use outdated np.NINF. Used co-pilot to add custom downside risk and Sortino function. | Line [19-37]. Prompt “I am having this issue {error}. The downside and sortino imports use the outdated NumPy versions, can you instead make me custom metrics as functions instead”. |

Data Prep

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| --- | --- |
| What I did: | How: |
| Added to\_numeric line to ensure pandas data frame are read as numeric values and not strings. | Line [76]. |
| Used co-pilot to fix the week of the year. | Line [122]. Prompt “I am having issues with {error}. Can you fix the issue and help me understand what is happening”. |

Deep Momentum Network

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| --- | --- |
| What I did: | How: |
| Updated Keras Random Search tuner import to match current version importing. | Line [7]. |
| Changed np.NINF to np.inf as outdated. | Line [72, 86]. |
| Removed self.\_reported\_step as too many arguments were provided. | Line [192]. |
| Added default value for self.\_reported\_step = 0 as was not previously assigned. | Line [180]. |
| Changed callback model to early stopping. | Line [201]. |
| Used co-pilot to fix updated model build calling. | Line [206-209]. Prompt “I am having issues with {error}. I am using the latest version of Keras, can you update the model build call”. |
| Removed all Multiprocessing arguments, Hence, had to remove all Worker arguments as they were not recognised. |  |
| Adjusted Adam optimiser call to update from ‘lr’ to ‘learning\_rate’. | Line [529]. |

Model Inputs

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| --- | --- |
| What I did: | How: |
| Changed the train & test boundaries to 2024 & 2025 respectively. | Line [75, 76]. |
| Np.int is no longer available in the current version. Changed to int. | Line [565]. |
| Trainvalid was being called before being assigned, so I assigned a value to it. | Line [179]. Prompt “I’m getting this error {error}. Can you assign trainvalid an appropriate value”. |

4. SETTINGS

Default

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| --- | --- |
| What I did: | How: |
| Changed the ticker list to match those in the CSV file rather than in Quandl. However, I have not separated them based on asset class. | Line [20-124]. |

Requirements

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| --- | --- |
| What I did: | How: |
| Removed all requirements as incompatible with Python software potentially. Many prompts trying to fix errors around this. |  |

5. OTHERS

Other errors

* Environment Issues, potentially due to conflicting packages and different Python software versions.