



Time series Modeling and Analysis

DATS 6313

Final Term Project- Proposal

The final term project for DATS6313 has three phases:

1- **Proposal**

2- Writing a formal final report

3- Presentation

We are launching the first phase of the final term project at this moment. The first step in the proposal is the dataset selection. You need to select a time series dataset that satisfies the following criteria:

- It must be a non-stationary, either seasonal or trendy or both time-series dataset.
- It must be equal sampled dataset. If not, then you need to make it equal.
- It must be a multivariate dataset. It must have at least 5 continuous numerical features.
- It must at least 5000 samples.
- It must be a public and non-classified dataset.
- If two students select the same dataset, the dataset will be assigned to the first student, and the second student needs to pick another dataset. First come first serve.

Then you need to **write a proposal** that answers the following:

1. What is the forecast variable and what are the numerical independent variables.[10pts]
2. Plot the time series versus time. Is it non-stationary? Provide the rolling mean/variance and ADF test result to prove your claim. [15pts]
3. Is non-stationarity due to the trend or seasonality? Find the strength of trend and seasonality. [10pts]
4. Plot the ACF of the time series. Explain why the ACF of the selected time series is appropriate for modeling using the Autocorrelation approach method. [15pts]

Resources available to acquire datasets i.e.

- <https://www.kaggle.com/>
- <https://archive.ics.uci.edu/ml/index.php>

Submission Guidelines

1. The deadline for submitting the term project proposal and the selected dataset is **Saturday 22/2/2025**.
2. Submit the pdf of the proposal before the deadline.
3. Upload the Excel, CSV, JSON... of the selected dataset through the course BB shell under proposal and dataset.
4. Fill out the following shared Excel sheet with the selected dataset before the deadline:

<https://docs.google.com/spreadsheets/d/1MXevUYANxG8JwMYquQKCDPnGMIRBliGvPQRK-xZhxn0/edit?usp=sharing>

Please note: Make sure to sign in with your GWU email address to access the sheet to add your dataset details.