Assignment Number 4
Please submit one single PDF file

Use regression and timeseries presentations to write a report on regression in general and time-series prediction in particular.

1. What is supervised learning in general and prediction in particular?
2. Examples of regression used in business applications such as product demand.
3. What are some of the popular prediction techniques?
   - Linear regression
   - Neural networks
   - Support vector machine
   - Optional: Regression tree (and its random forest generalization)
4. What is time-series analysis?
5. What are some of the popular time-series prediction techniques?
   - Holt Winters
   - Arima(p,d,q)
6. How do you measure the quality of prediction?
   - Mean Absolute Percentage Error (MAPE)
7. Use the presentation to write a report on the beer dataset.
8. Use the presentation to write a report on prediction of electricity demand. You should experiment with multiple machine learning techniques and model architectures. Please use the regression experiments from the previous week for inspiration.

Note for submission: Submit a pdf (no word processor files) file describing your data processing efforts and analysis. Add the Generative AI Sessions, programs, R commands, and queries in appendix. The file will also contain a 5-10 minute video presentations, where we expect students to run the scripts in real-time to confirm that they have done the work and explain the results. The video should be privately hosted on youtube.com and accessible to an account setup by the tutor.