Business Forecasting

ADIA Course

Day 5 – Session 2

Dr. Tanujit Chakraborty

Sorbonne University, Abu Dhabi, UAE

Sorbonne Centre for Artificial Intelligence, Paris, France

Research Areas: Time Series Forecasting, Machine Learning, Econometrics, Health Data Science

July 3, 2025

Projects

Project 1

SORBONNE UNIVERSITÉ

Utilize the ***monthly-milk-production-pounds.csv*** dataset to create the best forecasting model for 12 months ahead forecast of Milk production. Optimize your model with desired parameters and various transformations to get the best accuracy in terms of MAPE metric and the ability of the forecasts to detect the trend in the data.

Hint: Apply all the univariate techniques and compare the results.

Project 2

Utilize the ***us_macro_quarterly.xlsx*** dataset to calculate 'GDPGrowth' from 'GDPC96' and $TSpread = GS10 - TB3MS$**.** Using the computed data columns fit a suitable linear model for forecasting 12 quartiles *GDPGrowth* and *TSpread*. Optimize your model with desired parameters and various transformations to get the best accuracy in terms of MAPE metric and the ability of the forecasts to detect the trend in the data.

Hint: Apply both univariate and multivariate techniques and compare the results.

Project 3

SORBONNE UNIVERSITÉ

Fetch “AAPL” daily stock close price data (in $) from Yahoo Finance within the timespan 1st January, 2020 to 30th April, 2024. Build a suitable neural network architecture based on this dataset to 31 days ahead forecast using the following schemas:

- One step ahead
- Multi-step ahead
- Multi-output ahead

Optimize your network with desired parameters to get the best accuracy in terms of MAPE metric and the ability of the forecasts to detect the trend in the data.

Hint: You can apply various transformations on the data as well modify the architecture of your network.

Reference

SORBONNE UNIVERSITÉ

HAPPY FORECASTING

"A good forecaster is not smarter than everyone else, he merely has his ignorance better organised."