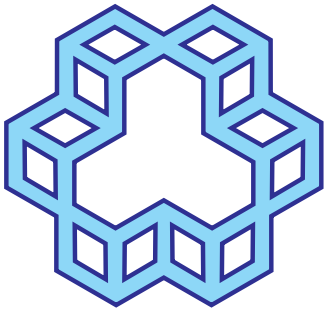

K. N. Toosi University of Technology

Faculty of Physics
Educational Group of
Atomic-Molecular and Astronomy

Special Topics I Final Projects (Project 7 - Electricity Price)

Dr. Mohammad Hossein Zhoolideh

Academic Year 1403-1404

Overview

Suppose you work in an industrial company and your business relies on a number of industrial machines that consume a lot of electricity. The company provides you a dataset of historical information about the actual cost of electricity consumed by these machines. The information provided to you is as follows:

Columns	**Description**
Date Time	Date and time of the record
Holiday	name of the holiday if the day is a national holiday
Holiday Flag	contains 1 if it's a bank holiday otherwise 0
Day of Week	contains values between $0-6$ where 0 is Monday
Week of Year	week of the year
Day	Day of the date
Month	Month of the date
Year	Year of the date
Period of Day	half-hour period of the day
Forcast Wind Production	forecasted wind production
System Load EA	forecasted national load
SMPEA	forecasted price
ORK Temperature	actual temperature measured
ORK Windspeed	actual windspeed measured
CO2 Intensity	actual CO2 intensity for the electricity produced
Actual Wind Production	actual wind energy production
System Load EP2	actual national system load
SMPEP2	the actual price of the electricity consumed

In this project, you must use this data and build a model that predicts the electricity consumption of machines (SMPEP2) using machine learning algorithms. You can download the dataset needed to answer this question from this link.[1]

Note: The given data is raw. To answer this question, you must first preprocess the data using the Pandas package.

[1] To save the dataset, you need to press Ctrl+S on the opened page and save the .csv file

Important Points

Be sure to

- Leave appropriate comments for different parts of your code.
- Completely explain about the algorithm(s) you use to answer this question.
- Use **model selection**, **feature engineering** and **feature scaling** in your code.
- Measure your model performance using model evaluation metrics and interpret the obtained result(s).
- If you used a specific book or article in your project, mention it in your notebook.

A part of your score will be allocated to these items.

***** You should write all the steps of your project in the **Jupyter notebook** and upload it as a file with the **.ipynb** extension on the vc site.