ML Project: Forecasting Electricity Consumption using Supervised Learning in the UK

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Unit of Analysis: Each row of our dataset is a smart-meter reading covering half an hour of electricity consumption. Each row includes the date-time of the reading, the number of kilowatt hours consumed, and geographic/demographic information (e.g. what part of the UK the meter is in, whether the meter is for a household or not).

What are you trying to predict? We are trying to forecast electricity consumption at both the regional and national level using data from the electricity smart meter consumption. We might also try and adopt a 'hierarchy construction' approach to organize the data at different levels of aggregation as done in Taieb et al., 2017.

What will you use to make that prediction? Our primary features are electricity consumption and geographic identifiers. Now to make predictions we will apply supervised learning approach and incorporate the hierarchy construction methodology to understand consumption at regional and national levels.

How would this prediction be used in a decision-making context? Electrical grids need to consistently match electricity consumption to demand to prevent failures and variation in voltage. Most electrical grids have minimal storage capacity and must continuously supply the exact amount of electricity consumed. Accurate forecasting of consumption is essential for grid architecture and is needed by all grid operators.