Data-driven prediction of energy use of appliances

The data set is at 10 min for about 4.5 months. The house temperature and humidity conditions were monitored with a ZigBee wireless sensor network. Each wireless node transmitted the temperature and humidity conditions around 3.3 min. Then, the wireless data was averaged for 10 minutes periods. The energy data was logged every 10 minutes with m-bus energy meters. Weather from the nearest airport weather station (Chievres Airport, Belgium) was downloaded from a public data set from Reliable Prognosis (rp5.ru) and merged together with the experimental data sets using the date and time column. Two random variables have been included in the data set for testing the regression models and to filter out non-predictive attributes (parameters).

date time year-month-day hour:minute:second

Appliances, energy use in Wh (Dependent variable)

lights, energy use of light fixtures in the house in Wh (Drop this column)

T1, Temperature in kitchen area, in Celsius

RH*1, Humidity in kitchen area, in % T2, Temperature in living room area, in Celsius RH*2, Humidity in living room area, in %

T3, Temperature in laundry room area

RH*3, Humidity in laundry room area, in % T4, Temperature in office room, in Celsius RH*4, Humidity in office room, in %

T5, Temperature in bathroom, in Celsius

RH*5, Humidity in bathroom, in % T6, Temperature outside the building (north side), in Celsius RH*6, Humidity outside the building (north side), in %

T7, Temperature in ironing room , in Celsius

RH*7, Humidity in ironing room, in % T8, Temperature in teenager room 2, in Celsius RH*8, Humidity in teenager room 2, in %

T9, Temperature in parents room, in Celsius

RH*9, Humidity in parents room, in % To, Temperature outside (from Chievres weather station), in Celsius Pressure (from Chievres weather station), in mm Hg RH*out, Humidity outside (from Chievres weather station), in %

Wind speed (from Chievres weather station), in m/s

Visibility (from Chievres weather station), in km

Tdewpoint (from Chievres weather station), Â°C

rv1, Random variable 1, nondimensional

rv2, Random variable 2, nondimensional

Where indicated, hourly data (then interpolated) from the nearest airport weather station (Chievres Airport, Belgium) was downloaded from a public data set from Reliable Prognosis, rp5.ru. Permission was obtained from Reliable Prognosis for the distribution of the 4.5 months of weather data.