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The electrical demand forecasting problem can be regarded as a nonlinear time series prediction problem depending on many complex factors since it is required at various aggregation levels and at high temporal resolution. To solve this challenging problem, various time series and machine learning approaches have been proposed in the literature. As an evolution of neural network-based prediction methods, deep learning techniques are expected to increase the prediction accuracy by allowing stochastic formulations and bi-directional connections between neurons. In this paper, we investigate a newly developed deep learning model for time series prediction, namely Factored Conditional Restricted Boltzmann Machine (FCRBM), and extend it for electrical demand forecasting. The assessment is made on the EcoGrid dataset, originating from the Bornholm island experiment in Denmark, consisting of aggregated electric power consumption, local price and meteorological data collected from 1900 customers. The households are equipped with local generation and smart appliances capable of responding to realtime pricing signals. The results show that for the short-term (5 minute to 1 day ahead) prediction problems solved here, FCRBM outperforms the benchmark machine learning approach, i.e. Support Vector Machine.

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