Application of neural networks to determine the customer connectivity based on smart meters

Abstract: Along with the massive installation of Smart Meters in the distribution grid, new applications, e.g. state estimation, have been developed in order to improve the operation of the electrical network. Such applications require a faithful knowledge of the network topology, specifically the feeder and phase where the customers are connected to. Classical solutions for this complex combinatorial problem usually fail in such mission. Fortunately, with the development of artificial intelligence techniques, such as machine learning through neural networks, this kind of problems can be solved much more efficiently. This works shows the results of applying, to different currently-operating distribution grids, artificial neural networks which discover the customer connectivity to the network using smart meter measurements.

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