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Water End-Use Classification with Contemporaneous Water-Energy Data and Deep Learning Network

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Abstract : ‘Water-related energy’ is energy use which is directly or indirectly influenced by changes to water use. Informatics applying a range of mathematical, statistical and rule-based approaches can be used to reveal important information on demand from the available data provided at second, minute or hourly intervals. This study aims to combine these two concepts to improve the current water end use disaggregation problem through applying a wide range of most advanced pattern recognition techniques to analyse the concurrent high-resolution water-energy consumption data. The obtained results have shown that recognition accuracies of all end-uses have significantly increased, especially for mechanised categories, including clothes washer, dishwasher and evaporative air cooler where over 95% of events were correctly classified.

Keywords : deep learning network, smart metering, water end use, water-energy data
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