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HAR can be treated as a typical pattern recognition (PR) problem. Conventional PR approaches have made tremendous progress on HAR by adopting machine learning algorithms such as decision tree, support vector machine, naive Bayes, and hidden Markov models [34]. It is no wonder that in some controlled environments where there are only a few labelled data or certain domain knowledge is required (e.g. some disease issues), conventional PR methods are fully capable of achieving satisfying results. However, in most daily HAR tasks, those methods may heavily rely on heuristic hand-crafted feature extraction, which is usually limited by human domain knowledge [5]. Furthermore, only shallow features can be learned by those approaches [66], leading to undermined performance for unsupervised and incremental tasks. Due to those limitations, the performances of conventional PR methods are restricted regarding classification accuracy and model generalization.