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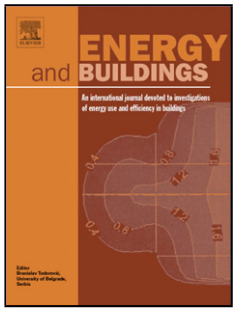

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Recognition of air-conditioner operation from indoor air temperature and relative humidity by a data mining approach

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Abstract: The variety of occupant behaviors in buildings have led to a significant mismatch between simulated building energy performance and measured one. It is crucial to collect real occupant behaviors in buildings to achieve accurate simulation purpose, although there exists a great challenge due to the cost of monitoring devices and privacy concerns. This study proposed an inexpensive and minimally intrusive method, to recognize behavior information from environment parameters by data mining approach. To validate this method, experiments were conducted in three bedrooms. Two types of classification algorithms were developed to recognize AC operations from the experiment data of indoor air temperature and relative humidity. Two types of recognition rules were generated from algorithm training in one dataset, and tested in the other datasets. Based on the testing results, the performance of the two algorithms were evaluated and compared. The results indicated that the C4.5 decision tree algorithm was not suitable for mining AC operations, while the curve description algorithm had good performance in processing the time-series curves of air temperature and relative humidity. Through this experiment, it is confirmed that AC operations can be recognized from indoor air temperature and relative humidity by data mining approach. The

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