Indoor thermal comfort controls optimized by deducing rules

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***Abstract*—A novel approach based on an optimization method is developed to deduce the rules of learning human thermal comfort states. In order to achieve a desired thermal comfort level and energy savings, the study constructs a mechanism with varied control strategies by using the deduced rule set. The proposed method is superior to other indoor thermal comfort based controls in that it produces interpretable rules and generates appropriate set-points for control systems. Analytical results of this study demonstrate that the proposed thermal comfort control mechanism can also be implemented with wireless sensor network (WSN) to achieve thermal comfort and energy savings with limited computational resources. In other words, the solution enables the ubiquitous control of indoor thermal comfort.**

***Keyword*—Classification, Energy saving, Rule-based system, Thermal comfort.**

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