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Abstract

Smart Homes are smart spaces that contain devices are connected with each other to get information about user's activities; these devices can be controlled through one central point. Like door locks, thermostats, televisions, home monitor and lights. Behavior recognition in dynamic environments is one of the most challenging issues in this research area, each behavior has a specific number of activities to be performed. In this paper, a new approach to recognize the human behaviors based on finding the minimum number of activities to perform the behavior by determining the membership degree of each activity for each behavior. The proposed approach learns the performed behaviors and uses that knowledge to recognize the behavior through applying a threshold and Alpha cut concept on the membership degree of each activity. In addition, it can adapt to environment modifications, variations in human habits. The conducted simulation results show that the proposed approach achieves better performance than existing approaches in terms of accuracy, recall, and f-measure metrics.

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Index Terms

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Keywords

Smart home, activity recognition, Naïve Bayes