

## **SENSOR BASED AIR CONDITIONING MANAGEMENT TOOL FOR EFFICIENT CONSUMPTION OF ELECTRICITY**

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Waste of electricity has become one of the huge problems to humankind, which have drawn the attention of many researchers, developers and activists. Air Conditioning (AC) systems are generally controlled manually. However, there is a high chance of electricity wastage due to the improper management of AC, although it has some embedded intelligent components like Fuzzy Logic controller. Aim of this study is to develop a smart AC management system to effectively manage the electricity consumption based on Artificial Intelligence techniques. The system is suitable for any type of building such as homes, laboratories, store rooms, hospitals, etc. The proposed system in this study uses three sensors, one is used to detect whether the doors and windows are closed properly. If the answer is negative, the system checks if there are any increase or decrease of occupancy through the door by using CCTV data. If there is no such change in occupancy detected, then the system gives an alarm to close the building properly. The second sensor is used to detect the power consumption and the third sensor detects the temperature of the building, dew point and the climate, which are considered as inputs for controlling the AC. The system has the capability to detect the occupancy, motion of the occupancy and the population of the residence, thereby to produce an output to maintain and adjust the temperature and fan direction of ACs and also to turn off any unnecessary ACs. In addition, an android application was developed so that the users can monitor the usage of AC and the consumption of electricity. Artificial Intelligent (AI), IoT, image processing and Fuzzy logic are the techniques employed to develop the system. In summary, the proposed smart air conditioner could provide a comfortable environment, energy conservation and environmental protection with a higher efficiency compared to the traditional systems.

**Keywords:** *Air Conditioning (AC), Fuzzy logic, IoT, Artificial Intelligent (AI)*