

UNIVERSITI TEKNOLOGI MARA

IoT Intelligent Fan

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ABSTRACT

This project addresses the demand for energy-efficient and convenient cooling solutions by creating an IoT-based intelligent fan with human presence detection, which allows automatic fan speed adjustment based on the presence of person in the room. The goal of this project is to design an IoT-based intelligent fan that can detect human presence and change its speed automatically for improved energy efficiency and convenience. This report aims to design a intelligent fan that will conserve energy using Arduino Microcontroller. If any human presence is detected, the fan will be turned on while maintaining a specific speed according to the room temperature and all of the current status such as 'Motor ON', current temperature and fan speed will be displayed on LCD. Based on the simulation and the hardware build, shows that this project is convenient for human and electricity usage can be decreased. This project provides everybody a convenient cooling solution as the weather currently is very high and this project could likely decrease the chance of getting heatstroke by a margin. Further enhancements can be investigated for future development, and the system's functioning can be improved.

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CHAPTER ONE

1.1 Research Background

The intelligent fan system with motion detection and temperature control is a ground breaking project that combines motion detection and temperature sensing to create an energy-efficient and comfortable living environment. Statistical data indicates that a significant amount of energy is wasted due to the constant operation of HVAC systems in unoccupied spaces [6]. By incorporating a PIR sensor and temperature control, this project aims to optimize energy consumption by activating the fan only when human motion is detected and adjusting its speed based on the ambient temperature. This innovative solution not only reduces energy wastage but also enhances user comfort by maintaining an ideal room temperature.

The continuous operation of standard fan systems in vacant places not only wastes energy but also contributes to higher electricity bills and a negative impact on the environment. Furthermore, relying entirely on fixed fan speeds regardless of ambient temperature might cause pain as well as inefficient cooling or heating. Previous research has shown that combining motion detection and temperature control can enhance energy economy and user comfort greatly. However, there is still a market gap for an integrated intelligent fan system that integrates these functions seamlessly. This project intends to solve this issue by creating a comprehensive solution that not only activates the fan based on human presence but also dynamically adjusts the fan speed