

**UNIVERSITI TEKNOLOGI MARA**

**AUTOMATIC ROOM FAN AND LIGHT SYSTEM  
WITH TEMPERATURE AND MOTION SENSOR**

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## ABSTRACT

In the current technological landscape, the important focus on automation has become universal as individuals increasingly integrate automated technologies into their daily lives. This common adoption is driven by multiple factors, ranging from heightened safety measures to enhanced convenience. Historically, automation systems were exclusive to specific businesses and industries due to substantial upfront costs. However, with the continuous evolution of technology, these systems have now become accessible to a broader audience. This study aspires to contribute to the realm of hardware development, with a specific emphasis on creating a system that integrates seamlessly into everyday life. The proposed system consists of three inputs, each serving a distinct purpose. For the control of fans and lights, two inputs are harnessed: motion detection facilitated by a Passive Infrared (PIR) motion sensor. Additionally, the system incorporates a third input for reminders and utilizing data from a DHT11 temperature sensor. This sensor not only provides real-time temperature information but also plays a crucial role in determining the overall condition of the room. The envisaged impact of deploying such a system is multi-faceted. Firstly, the integration of automation into daily living has the potential to positively influence human health and well-being. The dynamic control of environmental factors, such as lighting and temperature, contributes to creating spaces that promote comfort and enhance overall health. Furthermore, the system aims to be an advocate for energy and electricity conservation. By leveraging intelligent automation, unnecessary energy consumption can be curtailed, leading to sustainable practices that align with contemporary environmental concerns. In conclusion, this study postulates that the proposed hardware development, with its intricate configuration of inputs and applications, could usher in a new era of automation accessibility. By addressing key aspects of human comfort, energy efficiency, and health considerations, the envisioned system seeks to make a meaningful impact on the way individuals interact with and experience their living spaces.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Research Background

The research background of an automatic fan and light system with motion and temperature sensors encompasses the integration of advanced technologies to create an intelligent and energy-efficient environment. Leveraging motion sensors, such as Passive Infrared sensors, enables the detection of occupancy, allowing the system to dynamically adjust fan speed and lighting based on real-time presence data. Temperature sensors play a pivotal role in maintaining optimal comfort by providing ambient temperature information for fine-tuning environmental conditions. The seamless integration of these sensors, coupled with automation algorithms and connectivity features, facilitates a user-friendly interface and remote-control capabilities. This not only enhances energy efficiency by preventing unnecessary device operation in unoccupied spaces but also contributes to sustainability goals. Ongoing research in this domain focuses on refining sensor accuracy, developing sophisticated control algorithms, and exploring avenues for integration with emerging technologies, such as artificial intelligence, to further optimize user experience and adaptability.

### 1.2 Problem Statement

Nowadays, global warming continues to be a pressing issue as temperatures around the world reach record highs. The impacts of global warming are becoming increasingly evident, with more frequent and severe heatwaves and wildfires. However, it is important to note that global warming also can have effects on human health in various ways. Rising temperatures can lead to an increase in heat-related illnesses such as heat exhaustion, heatstroke, and dehydration. Global warming can also worsen air quality, leading to an increase in respiratory issues. Therefore, global warming can have a lot of impacts on humanity and nature.