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REPORT

**MULTI-PURPOSE REMOTE AC
DEVICE CONTROLLER**

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ABSTRACT

The Multi-purpose Remote AC Device Controller project aims to modernize the way people use and control their AC devices by utilizing advanced technology. At its core is the ESP32 microcontroller, which connects to an IoT-enabled web interface, an IR sensor, a touch sensor, and a potentiometer. With these components working together, users have better ways to manage and automate their AC devices. Using the potentiometer, people can determine how long they want their AC devices to run. If someone is moving around, the built-in IR sensor will instruct the AC devices to turn on after a set time. However, if someone moves away from the sensor, the AC devices will start a timer to switch off, ensuring they run only when needed. Additionally, there is a quick way to turn everything off using the touch sensor. The objective of this project is to develop a working prototype of a multipurpose remote AC device controller using an ESP32 microcontroller, with inputs such as an IR and touch sensor, a potentiometer, and mobile devices. The outputs will include an OLED display, a relay, and AC devices, allowing for control of the AC devices via IoT by connecting the ESP32 to a web-based platform. This innovative solution has a broad impact across various domains. Environmentally, it promotes energy conservation by managing AC device operations, thereby reducing energy waste. Socially, it enhances user comfort by ensuring that AC devices work based on real movements, promoting a more eco-friendly and comfortable living space. In the industry, this project opens doors for more smart home devices to connect to the internet, demonstrating progress in making homes smarter. In simple terms, this project combines smart technology, energy savings, and user-centric design to pave the way for a future that is both tech-savvy and eco-friendly.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

In today's world of amazing technology, smart home automation is like a symbol of innovation, adding incredible convenience and possibilities to our daily lives. A smart home brings together different devices that work together to make life better, offering advantages such as improved efficiency, security, and personalized control over various household tasks. Even though smart devices are everywhere, there's still a big challenge – making all these technologies seamlessly work together in one home automation system. This challenge highlights the need for creative solutions that go beyond the usual ways of doing things, changing how we interact with our living spaces.

The heart of today's home automation is the Internet of Things (IoT). IoT links everyday devices to the internet, allowing them to share information. This creates a higher level of connection that boosts functionality, efficiency, and automation in homes. In response to this technological push, the Multi-purpose Remote AC Device Controller project smartly uses advanced technologies like the ESP32 microcontroller, sensors, and IoT capabilities. By doing this, it doesn't just change how we control AC devices but also sets an innovative example for how entire home automation systems can evolve.

This project has many practical applications, especially in creating a home environment that is connected and responsive. By using the ESP32 microcontroller as the central coordinator, the project brings together various features, like IR and touch sensors, to make the system more aware of human presence. This not only helps in energy efficiency but also adds an extra layer of safety by allowing emergency shutdowns. The project's flexibility makes it suitable for different situations, making it a versatile solution for homes that want a smart and efficient automation system customized to their specific needs.