AuraTherm/Aura - Motion Sensored Thermostat with Smart App

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ABSTRACT

In recent years, the integration of smart technology in homes has changed the way we manage our daily tasks and utilities. In particular, smart thermostats have gained widespread popularity for their ability to optimize heating and cooling systems, improving comfort and energy efficiency. The scope of this project lies within home automation and energy management, aiming to create smarter, more sustainable living environments by utilizing technology to enhance efficiency and convenience.

Most thermostats, including some smart ones, manage the temperature of the entire house, even when only a few rooms are occupied. This inefficient heating and cooling method not only increases utility costs but also reduces the lifespan of HVAC systems, adding to maintenance expenses. Additionally, excessive energy use contributes to a higher carbon footprint and strains energy resources. Although thermostats have been improving over the years, there is still an opportunity to enhance their adaptability and efficiency.

This project aims to improve energy efficiency by ensuring that heating and cooling resources are only used when necessary. Our smart thermostat, AuraTherm, uses motion sensors to detect occupancy and regulate room temperatures, disregarding unoccupied spaces. Homeowners will receive notifications about temperature adjustments in occupied rooms and summaries of energy usage through the Aura smart app. AuraTherm actively monitors occupancy in real-time and dynamically adjusts settings for maximum efficiency. This approach reduces energy waste, lowers utility costs, and extends HVAC system longevity. By eliminating unnecessary energy consumption, AuraTherm will not only reduce energy usage and utility costs but also contribute to environmental sustainability while improving household comfort and HVAC system maintenance.