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Paper 896 summary

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Here is submission summary.

Track Name: ICCDS2025

Paper ID: 896

Paper Title: AI-Powered Face Detection for Energy-Efficient Home Automation: An IoT-Integrated Computer Vision Approach

Abstract:

Smart home automation has advanced significantly with the integration of computer vision (CV) and the Internet of Things (IoT). Traditional systems predominantly depend on Passive Infrared (PIR) sensors to detect motion through thermal changes; however, these sensors often fail to identify stationary individuals and are prone to false triggers from ambient heat sources. Although continuous CV-based gesture recognition offers an intuitive interaction method, its high computational and energy demands hinder its practical real-time deployment. To overcome these limitations, this work introduces a novel hybrid system that combines CV with microwave sensors, augmented by a Raspberry Pi equipped with a camera module for precise eye tracking. A dedicated gesture recognition module enhances accessibility for individuals with disabilities by enabling natural, non-contact control. In addition, a customizable web/mobile application is developed to facilitate user configuration—allowing users to assign specific finger gestures to corresponding home automation options. This app features a color-based, high-contrast interface designed to be visually accessible, particularly for users with visual impairments, ensuring that even those with limited vision can effortlessly distinguish and set up their preferred gesture controls. This multi-modal approach delivers a context-aware, energy-efficient solution that not only mitigates the shortcomings of conventional sensors but also significantly enhances system usability and accessibility for all users

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Submission Questions Response: Not Entered

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