Home Automation Using Hand Gesture Recognition

Rakhi Biswas, Sunit Jana, Mrinmoy Pal, Koushik Pal, Antara Ghosal, Suparna Biswas

Department of Electronics & Communication Engineering

Guru Nanak Institute of Technology, Kolkata, India

Abstract: *Smart automation is being used in more and more modern homes to increase energy efficiency, convenience, and security. This project presents an easy-to-use gesture-controlled system that enables users to control household appliances without making physical contact. The setup recognizes hand movements using sensors, like vision modules or accelerometers, and makes use of Python and Arduino. The Arduino board uses relay circuits to activate or deactivate connected devices after processing these inputs in real time.*

This system's unique touch-free interaction makes it particularly useful for the elderly and people with mobility issues. Users can improve accessibility and comfort by controlling lights, fans, and other appliances with a hand wave. Its straightforward, reasonably priced, and readily scalable design provides a useful route.

Keywords: Arduino, Python, Hand Gesture Control, Smart Switches, Home Automation