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Gesture based home automation using FPGA

Gesture control and home automation have emerged as prominent areas of research, aiming to enhance the convenience and interactivity of smart homes. This project focuses on implementing gesture control for home automation on a Field-Programmable Gate Array (FPGA) using VHDL (Very High-Speed Integrated Circuit Hardware Description Language). By leveraging the capabilities of an FPGA, the project aims to develop a robust and real-time gesture recognition system that can interpret hand movements and trigger corresponding actions in a home automation setup. VHDL is employed to design and describe the hardware components required for gesture recognition, including image acquisition, preprocessing, feature extraction, and classification stages. The integration of gesture control with home automation offers a seamless and intuitive user experience, allowing homeowners to control various devices and systems through simple hand gestures, thereby increasing convenience, efficiency, and accessibility in smart home environments.

Keywords—hand gesture, FPGA

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