

## **Gesture Control Mouse**

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### **Abstract:**

Human–computer interaction has evolved toward more intuitive modes of communication. Among these, gestures represent one of the most natural and expressive forms of human interaction. However, vision-based hand gesture recognition remains a challenging task due to the complexity and high degree of freedom in human hand movements.

This project presents a **Gesture Control Mouse** system that enables users to interact with a computer using hand gestures captured through a webcam, eliminating the need for a traditional mouse. The proposed system employs a skin detection algorithm to segment hand regions from the background, followed by contour and convex hull algorithms to identify hand boundaries and detect fingertips. These detected gestures are then mapped to mouse cursor movements and button actions.

Experimental results demonstrate that the system performs effectively in real time, allowing users to navigate and control computer interfaces seamlessly using natural gestures. The implementation showcases the potential of vision-based HCI systems in promoting touchless interaction, offering a cost-effective, hygienic, and accessible alternative to physical input devices.

### **References:**

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