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Real Time Virtual Mouse with Flash Integration using Hand Gesture

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Abstract: *A gesture-based cursor control system enables users to click and move the cursor using hand gestures instead of a conventional mouse. Utilizing OpenCV and MediaPipe, the system quickly detects and tracks hand movements via a camera, ensuring seamless interaction. As soon as the webcam is turned on, the system starts functioning automatically, eliminating the need for manual setup. This provides a touchless and sanitary alternative to traditional input devices, making it particularly useful in environments where hygiene is a priority. With minimal latency, the system ensures a smooth, quick, and highly responsive user experience. It enhances accessibility, offering an intuitive solution for individuals with mobility impairments. Additionally, it proves beneficial for interactive displays, making presentations and digital interactions more engaging. General computing tasks become more convenient with gesture-based control, adding a futuristic touch to everyday activities. In unusual settings, such as public kiosks or medical facilities, this technology reduces the need for physical contact with shared devices. The system's efficiency and accuracy make it a viable option for gaming, creative applications, and virtual reality interfaces. By integrating advanced computer vision techniques, it recognizes precise hand movements, enabling fluid navigation. The implementation of OpenCV and MediaPipe ensures lightweight performance, making it suitable even for lower-end systems. Gesture- based interaction represents a cutting-edge innovation, revolutionizing human- computer interaction. This approach not only modernizes input methods but also highlights the vast potential of AI-driven interfaces. As touchless technology gains momentum, such solutions pave the way for a more immersive and user-friendly digital experience*

Keywords: gesture-based cursor control system.

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