

Gesture Control Virtual Mouse with Voice and Alphabet Typing Support

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Abstract: *This paper presents a Gesture Control Virtual Mouse with Voice and Alphabet Typing Support system that enables users to interact with computers without using traditional hardware such as a mouse or keyboard. The system uses a webcam to detect hand gestures and control cursor movement, clicking, and scrolling operations. In addition, voice commands allow users to perform actions and type text using speech recognition. Alphabet gesture recognition enables users to type characters through hand signals. The system is developed using MediaPipe for hand tracking, OpenCV for image processing, and speech recognition for voice input. The proposed solution provides a contactless and natural human-computer interaction method, which is especially useful for assistive technologies, healthcare environments, and smart systems. Experimental results show that the system works effectively under normal lighting conditions and provides an efficient alternative to traditional input devices.*

Keywords: Gesture Recognition, Virtual Mouse, Hand Tracking, Voice Recognition, Human-Computer Interaction (HCI)

